



**SECOND REAL TIME EVALUATION OF FAO's WORK ON
THE HIGHLY PATHOGENIC AVIAN INFLUENZA**

EVALUATION REPORT

FAO Office of Evaluation

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Acronyms

AED	Academy of Educational Development
AGA	Animal Production and Health Division
AGAH	Animal Health Service
AGAL	Livestock information, sector analysis and policy branch
AGAP	Animal Production Service
AVET	Applied Veterinary Epidemiology Training
CG	Consultative Group
CHL	Communications for a Healthy Living
CMC	Crisis Management Centre
CTA	Chief Technical Advisors
CVO	Chief Veterinary Officer
DLS	Department of Livestock Services
ECTAD	Emergency Centre for Transboundary Animal Diseases
FAO	Food and Agriculture Organization of the United Nations
FCC	Food Chain Crisis Emergency framework
FETPV	Field Epidemiology Training Program for Veterinarians
FMD	Food and Mouth Disease
GAINS	Global Avian Influenza Network Strategy
GF-TAD	Global Framework for the progressive control of Transboundary animal diseases
GLEWS	Global Early Warning System for Major Animal Diseases
HPAI	Highly Pathogenic Avian Influenza
HQ	FAO headquarters
INAP	Integrated National Action Plans
KAP	Knowledge, Attitudes and Practices
LDCC	Local Disease Control Centre
M&E	Monitoring and Evaluation
NGO	Non Governmental Organizations
NSWP	National Strategic Working Plan
OFFLU	Joint OIE/FAO network of expertise on animal influenza
OIE	World Organization for Animal Health
OWOH	One World One Health
PDSR	Participatory Disease Surveillance and Response To be completed
PPLPI	Pro Poor Livestock Policy Initiative
PVS	Performance of Veterinary Services
RAP	Regional Office for Asia and the Pacific
RTE	Real Time Evaluation
SMS	Short Message Service
TAD	Transboundary Animal Diseases

TCE	Emergency Operations and Rehabilitation Division
UMA	Maghreb Arab Union
WCS	Wildlife Conservation Society
WHO	World Health Organization
WI	Wildlife International

Executive Summary

This report describes the Second Real-Time Evaluation (RTE2) of the responses of the Food and Agriculture Organization (FAO) of the United Nations to the occurrence of Highly Pathogenic Avian Influenza (HPAI), conducted by an independent external evaluation team. In reviewing the FAO avian influenza programmes and activities, the evaluation team has been blessed with the privileges of hindsight. The RTE2 team recognizes that some of the comments and judgements it makes are aided by experiences gained by many people as the programmes in different countries have evolved.

RTE2 has attempted to provide a forward looking approach to the evaluation, using experiences and observations of the performance of FAO's programmes over the last few years to recommend to FAO, its members and its partners, on how to optimize FAO's future contributions to the control of Highly Pathogenic Avian Influenza (HPAI), of other priority disease threats, and to global pandemic preparedness. The evaluation team adopted an open consultative approach, seeking opinions and feedback from the widest possible range of stakeholders in the different countries visited.

The RTE2 has been conducted in three phases. These included an in-depth preparatory phase entailing the assembly and synthesis of background information at country and programmatic levels, an independent evaluation of the largest FAO HPAI initiative (the Participatory Disease Surveillance and Response programme in Indonesia), and a series of missions to FAO headquarters, member countries (Nigeria, Côte d'Ivoire, Egypt, Bangladesh, Cambodia and Vietnam) and (sub-) regional ECTAD offices (located in Bamako, Nairobi and Bangkok). The latter missions were conducted in two stages, first in Africa and then in Asia, and included the holding of regional stakeholder workshops (held in Nairobi and Bangkok) at the end of each regional mission.

In the inception report, the RTE2 team developed a framework for the evaluation and provided details on the criteria for assessing the relevance, efficiency and effectiveness of FAO's contribution to national preparedness and response programmes. The framework, which was expanded as a result of the RTE2 team interactions in the field, has six pillars, considered to be central to any preparedness and response programme:

- a) Policy development and programme coordination;
- b) Disease surveillance mechanisms;
- c) Disease diagnosis, differential diagnosis and infection characterization;
- d) Disease control and eradication;
- e) Epidemiological data synthesis, analysis, presentation and use; and
- f) Disease prevention.

The RTE2 team then assessed the achievements of the FAO country programmes in terms of the milestones included in the FAO/OIE Global strategy, and consider the broader implications of the preparedness and response measures on wider disease surveillance capacity, and on pandemic preparedness. Finally, the team considered the implications on broader agriculture, livestock and poverty reduction aspirations of the countries studied.

As mandated in the terms of reference, the RTE2 reviewed FAO's HPAI programmes at the country level in particular, to allow for greater detail and focus on the efficiency and effectiveness of HPAI preparedness and response mechanisms in the field.

Our emerging messages for each of the countries and (sub-) regional ECTAD units visited are targeted at those groups, with contributions discussed, strengths and weaknesses identified, and a series of country/region-specific recommendations made. We also have broader messages emerging from a synthesis of the multiple country assessments and from the regional stakeholder workshops, which are targeted at FAO as a whole.

At the country level, the RTE2 sees effective and maturing relationships between FAO's HPAI programmes and their government partners in all countries visited. These relationships generally acknowledge FAO as the leading international partner on technical issues related to HPAI preparedness and response, and draw on FAO's in-country, regional and in some cases international (headquarters) advice.

The RTE2 finds that substantial progress has been made in the preparedness and response mechanisms directed at HPAI. This has occurred at several levels. These include improved planning and policy development, better communications and collaborations between national and international partners, greater capacity in the field services of veterinary authorities, greater laboratory capacity, and in many cases progressively increasing credibility of the national livestock services. In most cases, these improvements have also been accompanied by reductions in the numbers of outbreaks of HPAI in poultry, and the number of human cases occurring. The reported progress certainly owes much to the commendably high level of commitment, engagement and tenacity of FAO's in-country teams and the support received from FAO units at HQ and in the regions. As noted in the country reports, however, it is difficult to assign a direct cause and effect relationship between FAO's contributions and the decreasing incidence of HPAI in most countries. The limited availability of good quality data and systems to monitor and evaluate the effectiveness of FAO-supported activities, together with the low priority often given at country level to learning from experiences, have been major contributors to this.

The disease and the responses to it have also seen a change in the awareness of the importance of livestock enterprises to building national economies and to enhancing processes of pro-poor growth. The spread of outbreaks of HPAI across Asia and Africa has raised awareness of the rapid growth of poultry industries that had been taking place during

the years prior to their occurrence. Of the countries visited, this factor was particularly important in Indonesia, Bangladesh, Egypt and Nigeria, all of which have the full range of poultry enterprises from backyard to industrial.

The major overall weakness has been the lost opportunity of adding greater substantive strategic value to many of the preparedness and intervention approaches that FAO has supported in individual countries. FAO could arguably have exploited more its comparative advantage as a widely experienced, well recognized international body working on HPAI in so many different settings with many different sets of expertise. Furthermore, in several settings FAO was seen to pursue a rather narrow uni-disciplinary approach to emergency responses to HPAI at country level. International disease response mechanisms, including the One World One Health (OWOH) initiative, increasingly demand broad multidisciplinary approaches, and FAO has the inherent capacity to deliver these.

The RTE2 believes that there are four main, and interrelated, contributors to these weaknesses.

The first is the inadequacy of strategically-applicable support tools on HPAI preparedness and response to country programmes, such as situation analysis, active and passive surveillance standards and cost effectiveness guidelines, policy tools dealing with issues such as compensation, and the stronger application of value chain analysis in risk-based surveillance and in impact assessment. The evaluation team felt that FAO, in collaboration with its development partners, could have pulled together a more structured set of support tools, building on the general guidelines put forward in the early years, to bring greater value to country programmes. The availability of such tools, which need to be built and tested over time to ensure universal applicability, would support the process of adding strategic value to FAO's country approaches. The RTE2 team notes that this inadequacy did not prevent a number of recommendations from being made and implemented in some countries, but notes that this area offers substantial opportunities for new initiatives.

The second is the inadequate integration of the livestock (poultry) production, marketing, livelihoods' attributes and socio-economic aspects of the preparedness and response mechanisms with the veterinary aspects in the support provided, and the missed opportunity of developing more integrated multidisciplinary approaches. This element has been compounded by the continued weak and inadequate engagement of the private poultry sectors as a true partner. For example, results of FAO value chain studies, HPAI impact studies or poultry sector data and reviews, with some exceptions, have yet to be effectively used, integrated and ultimately influence programme development and implementation at country level. Shortcomings in the multidisciplinary approach, in particular the building of strong and effective working relationships between staff and consultants from different disciplines, are evident from and highlighted in this report. It is important for FAO to explore ways to improve the existing processes for building and

supporting multidisciplinary teams and to engage with other agencies so as to avoid segregation of efforts across disciplines. This will require engagement of compatible experts from a range of disciplines in policy formation and implementation at an early stage in future disease control and preventive programmes.

The third is the missed opportunity to learn lessons from experiences in countries where FAO is engaged, promoting and learning from successes, even if they had nothing to do with FAO. The RTE2 team notes that new iterations of global and regional strategies and some country strategies clearly indicate that many lessons have been taken on board, including the need for a shift towards longer term programmes in endemically infected countries (which is evident in documents issued by FAO and UN partners from 2007 onwards), but considers that there has been inadequate uptake and cross-fertilization of these and other lessons at country level. The need for more sharing of lessons and cross-fertilization between field programmes was echoed by FAO staff in the Bangkok workshop. The effective compensation programme in Nigeria, the innovative SMS gateway system in Bangladesh and the Pen Digital Technology in southern Africa are illustrative examples of experiences that might lend themselves to be further mainstreamed and potentially applied in other settings in the future.

The fourth is the lack of a common ground between the implementation of emergency response programmes to deal with immediate dangers of diseases which present a risk to humans, and the now urgent need to capitalise on the substantial investments which have been made to ensure that they also address broader longer term livestock development and human wellbeing issues. The majority of projects reviewed by the evaluation team were indeed formulated with a narrow focus on emergency preparedness or response to control avian influenza. While several donors have required specificity to HPAI in their support, in a majority of cases there has been inadequate consideration by FAO of how measures can be made more broadly applicable to other priority diseases, and to broader livestock development aspirations of countries concerned. Furthermore, there is clear evidence that some donors are quite amenable to exploiting the short-term nature of project funding to revise the emphasis of activities, and this deserves greater attention by FAO in iterative dialogue processes with donors.

The RTE2 team concludes that FAO has demonstrated the capacity to provide strong leadership and performance in supporting countries in avian influenza preparedness and response, and should continue to work in this area to ensure that the important gains made so far are not lost. Rather than these gains are further exploited in continued efforts to bring HPAI under control, and to extend the benefits of investments made into broader areas of improved animal health and human wellbeing.

In addition to the more than 70 recommendations made in each of the country and (sub-) regional ECTAD reports, the RTE2 makes a series of broad recommendations, listed below.

In subsequent sections of the report on each of the 6 pillars, the evaluation team provides specific recommendations for each area analysed in the report.

- 1. The development of a more integrated and multi-disciplinary approach to international, regional and country level programmes.** It is recommended that FAO adopt centrally, regionally and nationally a much clearer and more cohesive multidisciplinary approach to HPAI responses, and indeed to all activities of ECTAD. This approach should be built upon mutual trust, recognition and engagement of the multiple disciplines of agricultural economics, epidemiology, laboratory sciences, communications etc. that form part of the contributions appropriate for a leading UN organization and result in measurably stronger interactions (such as joint projects, publications or events) with relevant FAO units (including AGAH, AGAL, AGAP, the Investment Centre, etc.)
- 2. The development of a clear and cohesive interface between emergency responses to HPAI.** It is recommended that FAO strengthen the interface between emergency responses and development programmes at the country level, to ensure that there is effective harmonization of the emergency responses to HPAI and the longer term development aspirations of governments in the livestock health sector.
- 3. The exploitation of HPAI capacity built to cater for broader preparedness and response programmes for other priority livestock diseases.** It is recommended that FAO urgently seek to broaden the range of impacts from recently installed HPAI capacity development to the wider sphere of other livestock diseases of priority in each country. This will require FAO to engage at a different level with its member countries and development partners to explore jointly the sustainable benefits that can be achieved by such an approach.
- 4. Regular updating of strategies, approaches, protocols on the basis of outcomes and impacts.** It is recommended that FAO place greater emphasis on learning from its engagement over five years in HPAI preparedness and response, and on using this learning to regularly review and update, as appropriate, its strategies, approaches and operating procedures at country level. This should be done by paying much more attention to how well definable outputs and achievements have been met, with a view of feeding back such learning to global and regional strategies.
- 5. Active engagement with the private poultry sectors in affected countries.** It is recommended that FAO take a much more pro-active role in assisting governments in engaging with the private poultry industry sectors at various levels to improve the effectiveness and credibility of the HPAI preparedness and response programmes. This is important both at the higher levels of sectors 1 and 2 of the poultry industry in countries such as Bangladesh, Cambodia, Côte d'Ivoire, Egypt, Indonesia, Nigeria

and Vietnam, and at the emerging sector 3 level in many countries. In particular, it is recommended that:

- a. FAO strengthen the technical base of ECTAD units serving endemic countries, with international consultants with strong knowledge and personal experience in commercial poultry enterprises, to advise and mentor on the design and implementation of preparedness and response initiatives; and
- b. FAO support the initiation or strengthening of small and medium holder poultry producer and marketer representation, with a view to strengthening the voice of small- and medium-scale poultry sector entrepreneurs, and to facilitate stronger linkages between them and government, and the more industrial enterprises. This ambitious recommendation is considered essential if FAO wishes to exploit fully its honest broker role, its responsibility to improving the effectiveness of HPAI control, and its need for support to poultry enterprises as implements of sustainable and inclusive growth and food security.

1. Introduction

This second real-time evaluation (RTE2) has attempted to provide a forward looking approach, using experiences and observations of the performance of FAO's programmes over the last few years to recommend to FAO, its members and its partners, on how to optimize FAO's future contributions to the control of Highly Pathogenic Avian Influenza (HPAI), of other priority disease threats, and to global pandemic preparedness.

FAO's HPAI global programme was started in 2004 following reports of H5N1 virus outbreaks in Southeast Asia. After a wave of outbreaks of HPAI in many regions of the world, there has been a progressive reduction in the number of countries affected, and the number of outbreaks recorded in most of the countries still affected. However, the disease stubbornly persists in some areas of Asia and Africa; it appears to be endemic in Egypt, Bangladesh, China, Indonesia, Vietnam and perhaps elsewhere. New influenza virus threats (particularly the H1N1 virus) have emerged since the first real-time evaluation was conducted in 2007¹. It was therefore necessary to assess the relevance and efficacy of continuing preparedness and response measures in the light of these dynamics.

As part of its global response, FAO established the Emergency Centre for Transboundary Animal Diseases (ECTAD), which was set up to complement the Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (EMPRES) and to strengthen FAO's capacity to respond to HPAI. ECTAD is run as a partnership between the technical division of Animal Production and Health (AGA) and the operational division of Emergency Operations and Rehabilitation (TCE), with overall leadership in the hands of the technical group. As of October 2009, the FAO HPAI programme includes over 160 projects, managing funds from 33 donors, with a total budget of over US\$ 300 million, employing over 500 staff and covering 95 countries. This presents a major task in terms of administration, finance and logistics.

The first real-time evaluation reviewed the entire HPAI programme of FAO, including institutional issues, global partnerships, global and normative work of the Organization as well as country-level assistance. In the report of a Peer Review Panel convened to assess the evaluation's work², the panel recommended certain adjustments in terms of the second RTE. It advocated that FAO place greater emphasis on monitoring progress at outcome and impact levels, rather than input and activity reporting, in order that issues of relevance, efficiency and effectiveness be accurately assessed in subsequent evaluations. The HPAI Consultative Group (HPAI-CG) at its meeting in January 2008³ suggested that the second RTE should focus on the assessment of country-level assistance to national HPAI preparedness

¹ <http://www.fao.org/pbe/pbee/common/ecg/362/en/HPAIRTEFinalReport.zip>

² Peer Review Panel Paper – Issues Arising and Priorities for the Future (September 2007).

³ Record of the Meeting of the Consultative Group for the Real Time Evaluation (RTE) of FAO's Work on the Highly Pathogenic Avian Influenza (HPAI), Wednesday 9 January 2008.

and control initiatives and specifically indicated that this evaluation should not focus on global partnerships and institutional issues.

The current evaluation has therefore focused primarily on country-level assistance provided through national interventions. Global and regional support from FAO headquarters and its decentralized offices has been considered in so far as they are linked to and affect field delivery at the country level. Standard Evaluation Criteria have been applied to assess the relevance, efficiency, effectiveness, sustainability and – to the extent possible - impacts of FAO’s HPAI work. In assessing country-level work, the evaluation team has paid particular attention to the interface with global and regional programmes handled from FAO headquarters and from (sub-) regional ECTAD units, as well as to partnerships and gender aspects of the response. In addition, the second evaluation takes into account, and follows up on, the findings, conclusions and recommendations reached in 2007 relating to country-level activities, as well as the FAO management response and follow-up report⁴ to those recommendations.

One reason that the HPAI-CG recommended a focus on assessing country-level assistance to HPAI preparedness and response was due to the enormous task of assessing programmes at the global level, and that such a broad view may limit the level of detail attainable on any particular component of the programme. A country-level approach certainly opens the door to such detail. However, it is important to recognize that a “focus” on in-depth studies in seven affected countries and three (sub-) regional ECTAD units is also an enormous task. Nevertheless, it is hoped that by grappling with some of the fundamental issues affecting the contributions by FAO in each country or region, a different set of insights at a higher level of resolution has been provided. These have been complemented by desk studies on FAO’s work in regions not visited by the evaluation team (particularly North and southern Africa).

The report comprises six specific country assessments, three (sub-) regional ECTAD assessments and an overview report. The earlier review of the Participatory Disease Surveillance and Response Programme (PDSR) is also presented as an annex. This overview report makes use of the evidence gathered in these reports and pulls together key issues emerging in the different country and regional assessments, as well as those raised in the stakeholders’ workshops and desk reviews conducted during the preparatory phase.

⁴ <http://www.fao.org/pbe/pbee/common/ecg/362/en/Managementresponse.zip>

2. Evaluation process

The second RTE has been conducted in three phases. These included an in-depth preparatory phase entailing the assembly and synthesis of background information at country and programmatic levels, the evaluation of the PDSR programme in Indonesia, and a series of missions to FAO headquarters, member countries and (sub-) regional ECTAD offices. Additional details can be found in the evaluation's terms of reference and the inception report, both available in Annex 1.

Phase 1: In-depth preparatory phase (July 2008 – July 2009)

Given the emphasis on country-level assistance and the volume and variety of the programmes in countries, an in-depth preparatory phase was undertaken.

The first phase involved:

- i. A review of key documentation and materials available on FAO's Field Programme Management Information System and the Animal Production and Health Division (AGA) and the Emergency Operations and Rehabilitation Division (TCE) web sites;
- ii. Discussions with FAO staff at HQ and the field on the HPAI programme; and,
- iii. The conduct of preparatory missions.

The preparatory missions comprised visits to 10 countries (Kenya, Ethiopia, Egypt, Uganda, Thailand, Myanmar, Laos, Cambodia, Bangladesh and Vietnam) and to the (sub-) regional ECTADs in Nairobi, Tunis and Bangkok. The visits focused on collecting information about FAO HPAI activities, the Organization's role and partnerships and, identifying possible areas/issues for evaluation. The preparatory missions also paid particular attention to identifying key stakeholders who should be included in the interviews by the RTE2 team in phase 3.

Phase 2: Evaluation of the Participatory Disease Surveillance and Response (PDSR) Programme in Indonesia (May – July 2009).

An in-depth review of the PDSR programme in Indonesia was undertaken, involving a country-wide beneficiary assessment, the holding of extensive discussions with FAO staff and other stakeholders, accompanied by a series of field visits to different sites in the country. A separate report was prepared and submitted to FAO⁵, and a FAO management response⁶ was prepared. Ten of the 14 recommendations presented in the evaluation report were fully accepted and four were partially accepted. No recommendations were rejected by FAO management.

Phase 3: Full Independent Evaluation (August 2009 – February 2010)

The third phase has included the following:

⁵ <http://www.fao.org/docs/eims/upload/262940/PDSR%20evaluation%20report%2030%20July%20final.pdf>

⁶ http://www.fao.org/docs/eims/upload/264420/Management%20Response%20to%20PDSR%20Evaluation_Final_FAO_cleared_3Sept09.doc

- *Interviews with programme stakeholders*

The RTE2 team travelled to FAO headquarters to interview FAO staff and representatives of partner agencies involved in the programme during the period 15-22 September 2009. Some members of the RTE2 team then went to Paris to meet with the World Animal Health Organization (OIE) on 23 September 2009.

- *Documentation review*

The team has reviewed the extensive documentation available, and assembled an inventory of documents covering the different facets of FAO's HPAI programmes at national and regional levels. As part of this review, desk studies of FAO responses in areas not visited by the evaluation team (such as southern and North Africa) were conducted. Following the interviews with programme stakeholders and the documentation review the RTE2 team prepared an inception report for the evaluation which can be found in Annex 1.

- *Country and regional programme assessments*

A sample of countries and (sub-) regional ECTAD units was visited by the team. Countries included Nigeria, Egypt, Côte d'Ivoire, Bangladesh, Cambodia and Vietnam. Earlier in the process some members of the evaluation team had visited Indonesia to assess the PDSR programme. In addition, the ECTAD offices in Bamako, Nairobi and Bangkok were visited. In each country, the team met with a wide range of stakeholders, ranging from government departments, ministries of agriculture and health, laboratory staff, UN bodies, NGOs, private sector organizations, farmers and other private individuals engaged in poultry enterprises. The RTE2 team also established contact with former CTAs and key informants from within or outside FAO in each of the countries. For virtually all countries and (sub-) regional ECTAD visits there was a debriefing on the preliminary observations of the mission with the FAO team. The reports of these country and regional visits are presented in Annex 2.

- *Regional stakeholder workshops*

At the end of the missions to Africa/Near East and Asia, workshops were organized in Nairobi and Bangkok to discuss the preliminary observations of the team with FAO national and regional staff and to explore options for improved HPAI control with FAO's partners and government representatives. These workshops were forward looking, set under the general theme of "helping to shape future FAO responses to better meet national and regional requirements". The proceedings of the two workshops held are presented in Annex 3.

- *Peer review panel*

At the end of the evaluation process, a peer review panel met at FAO headquarters to comment and review the draft evaluation report. Feedback from the panel was taken into account by the RTE2 team in finalizing the evaluation report. The report of the peer review panel appears in Annex 4.

3. Evaluation framework

The RTE2 team presented a series of evaluation criteria in their inception report for assessing the relevance, efficiency and effectiveness of FAO's contribution to national preparedness and response programmes. Their Strategic Evaluation Framework itemised the three broad outputs pillars and FAO objectives, centred on contributions that have been made to:

- a) HPAI prevention and response;
- b) Broad surveillance system development; and
- c) Pandemic preparedness.

During the evaluation process, this framework was further elaborated and supplemented with components from various sources, in particular an operational matrix developed by FAO for use in Bangladesh. The framework now has six pillars, considered to be central to any preparedness and response programme:

- a) Policy development and programme coordination;
- b) Disease surveillance mechanisms;
- c) Disease diagnosis, differential diagnosis and infection characterization;
- d) Disease control and eradication;
- e) Epidemiological data synthesis, analysis, presentation and use; and
- f) Disease prevention.

For each pillar the evaluation team has identified candidate objectives and candidate outcomes, with the understanding that the specifics of these are likely to vary from country to country. In the same way, the team has identified candidate components in each of the six pillars (see Figure 1).

In assessing country-level assistance, the evaluation team has paid particular attention to the interface between national HPAI programmes and FAO ECTAD HQ, the contributions of the (sub-) regional ECTAD units, as well as the effectiveness of partnerships and the consideration given to gender aspects in the response.

In assessing the outcomes of FAO's HPAI field programme, the evaluation team took into account the short- and medium-term country-level outputs and outcomes of the updated Global Strategy for Prevention and Control of Highly Pathogenic Avian Influenza, developed in partnership by the FAO and the World Organization for Animal Health (OIE). It also took into consideration progress on the implementation of the First RTE recommendations as reported by FAO senior management (see Annex 5).

Figure 1. Framework for the assessment of national FAO HPAI programmes

	1 Policy development and programme coordination	2 Disease surveillance mechanisms	3 Disease diagnosis, differential diagnosis & pathogen characterisation	4 Disease control & eradication	5 Epidemiological data synthesis, analysis, presentation & use	6 Disease prevention
Objectives	The development of a clear and technically sound policy for HPAI preparedness and control, effectively communicated to all stakeholders	Establishment and revision of effective, sustainable and affordable surveillance systems for HPAI in target domestic and wild bird populations	Establishment and maintenance of internationally recognised laboratory capacity to confirm and where appropriate characterise HPAI infections	Plan and implement technically sound, effective, affordable, sustainable and socioeconomically acceptable intervention measures to control or eradicate HPAI	Collect, synthesise and analyse data on the dynamics and impacts of HPAI, and use the outputs to inform policy and strategy for HPAI control	Put in place technically sound, affordable and socially viable measures to minimise the risk of HPAI spread, and reduce the risk of human infection
Candidate components	<ol style="list-style-type: none"> 1. Legal framework 2. National policy 3. National strategy 4. Contingency planning 5. Benefit:cost considerations 6. Research prioritisation 7. Industry development 8. Poverty reduction interface 9. Identification, engagement and communication with all stakeholders 	<ol style="list-style-type: none"> 1. Passive surveillance 2. Active surveillance 3. Wild bird surveillance 	<ol style="list-style-type: none"> 1. Sample collection & shipment 2. Cold chain viability 3. Lab facility development 4. Lab equipment & reagents 5. Lab network & interface 6. Capacity building of lab staff 	<ol style="list-style-type: none"> 1. Intervention measures (depopulation, decontamination, disposal, movement control, awareness raising, vaccination, poultry restocking, etc) 2. Compensation 	<ol style="list-style-type: none"> 1. Epidemiological data handling, processing and analysis 2. Data flow and communication 3. Data reporting, use and presentation 4. Poultry population demography 5. Outbreak investigation 6. Value chain studies 7. Risk assessment (based on Critical control points) 8. Socioecon impact 	<ol style="list-style-type: none"> 1. Biosecurity 2. Communication 3. Human protection 4. Vaccination 5. Farm/unit registration 6. Market and slaughter practices 7. Industry restructuring
Outcomes	Sound HPAI policy in place All stakeholders involved and informed	HPAI infection status effectively determined and internationally recognised	Optimal sensitivity and specificity of diagnostic tools established and results in international public domain	Disease outbreaks effectively contained and status recognised internationally	Quality data received and disease control strategy regularly updated through sound evidence base	Progressive reduction in disease incidence which is independently verifiable. No new human cases.

4. Assessment of national responses

Overview of country-level programmes

The task of the evaluation team was to review FAO's HPAI programmes at the country level in particular. Our emerging messages for each of the countries and regional ECTADs visited are targeted at the FAO programmes in those countries, with contributions discussed, strengths and weaknesses identified, and a series of country/region-specific recommendations made. The team also has broader messages emerging from a synthesis of the multiple country assessments and from the regional stakeholders' workshops, which are targeted at FAO as a whole.

At the country level, the RTE2 team sees effective and maturing relationships between FAO's HPAI programmes and their government partners in all countries visited. These relationships generally acknowledge FAO as the leading international partner on technical issues related to HPAI preparedness and response, and draw on FAO's in-country, regional and in some cases international (headquarters) advice. In all the countries visited, there is often some inherent tension in the relationship between the FAO programmes and their government hosts, underscored by the governments' wish to ensure that they are, and are seen to be, the leaders of the disease control processes. In some cases, this tension was coupled with a degree of jealousy held over the terms of service of FAO staff, such as with support given to the parallel system of Local Disease Control Centres (LDCCs) in Indonesia.

The RTE2 finds that substantial progress has been made in the preparedness and response mechanisms directed at HPAI. This has occurred at several levels. These include improved planning and policy development, better communications and collaboration between national and international partners, greater capacity in the field services of veterinary authorities, greater laboratory capacity and, in many cases, progressively increasing credibility of the national livestock services. In most cases, these improvements have also been accompanied by reductions in the numbers of outbreaks of HPAI in poultry, and the number of human cases occurring. The reported progress certainly owes much to the commendably high level of commitment, engagement and tenacity of FAO's in-country teams and the support received from FAO units at headquarters and in the regions. As noted in the country reports, however, it is difficult to assign a direct cause and effect relationship between FAO's contributions and the decreasing incidence of HPAI in most countries. Limited availability of good quality data and systems to monitor and evaluate the effectiveness of FAO-supported activities, together with low priority often given at country level to learning from experiences, have been major contributors to this⁷.

⁷ The RTE2 team noted that some country programmes were more advanced than others in this regard. In Indonesia the PDSR programme had developed a database with a built-in monitoring and evaluation (M&E) system which is now being used to monitor the effectiveness of the programme. In Vietnam there were a number of ongoing M&E initiatives. Projects in Egypt and other countries also had some M&E systems built in.

The FAO country programmes have also benefited from a closer collaboration at international level between FAO, OIE and WHO, in particular through the tools that this partnership has created and developed, notably GLEWS and OFFLU, which have provided certain specialized backstopping services.

The disease and the responses to it have also seen a change in the awareness of the importance of livestock enterprises to building national economies and to enhancing processes of pro-poor growth. The spread of outbreaks of HPAI across Asia and Africa made people aware of the rapid growth of poultry industries that had been taking place during the years prior to their occurrence. Of the countries visited, this factor was particularly important in Indonesia, Bangladesh, Egypt and Nigeria, all of which have the full range of poultry enterprises from industrial to backyard.

The major overall weakness has been the lost opportunity of adding greater substantive strategic value to many of the preparedness and intervention approaches that FAO has supported in individual countries. FAO could arguably have exploited more its comparative advantage as a widely experienced, well recognized international body working on HPAI in so many different settings with many different sets of expertise. Furthermore, in several settings FAO was seen to pursue a rather narrow unidisciplinary approach to emergency responses to HPAI at country level. International disease response mechanisms, including the One World One Health (OWOH) initiative, increasingly demand broad multidisciplinary approaches, and FAO has the inherent capacity to deliver these.

The RTE2 believes that there are four main, and interrelated, contributors to these weaknesses.

The first is the inadequacy of strategically-applicable support tools on HPAI preparedness and response to country programmes, such as situation analysis, active and passive surveillance standards and cost-effectiveness guidelines, policy tools dealing with issues such as compensation, and the stronger application of value chain analysis in risk-based surveillance, and in impact assessment. The evaluation team felt that FAO, in collaboration with its development partners, could have pulled together a more structured set of support tools, to bring greater value to country programmes. The availability of such tools, which need to be built and tested over time to ensure universal applicability, would support the process of adding strategic value to FAO's country approaches. The RTE team noted that this

In most cases, however, these systems were geared to collect "output" level data for specific activities and were doing so at irregular intervals, and without corrective action necessarily being taken. At regional level USAID has sponsored the development of a Guide for Monitoring and Evaluating Avian Influenza Programs in Southeast Asia (Measure, September 2008) with major inputs from the ECTAD unit at the FAO Regional Office for Asia and the Pacific (ECTAD-RAP). At the global level FAO has developed a logical framework to monitor achievements of the Global Programme. The RTE2 team noted that difficulties in getting good quality data have affected the operationalization of these very valuable frameworks and believe that greater interest and resources should be attached to the improvement of country-level M&E systems.

inadequacy did not prevent a number of recommendations from being made and implemented in some countries, but noted that this area offers substantial opportunities for new initiatives.

The evaluation team noted that some branches of FAO such as the Pro Poor Livestock Policy Initiative (PPLPI) programme have entered into multi-institutional partnerships on the livelihood and risk assessment aspects of HPAI, and there is undoubtedly a role for wider engagement with academic institutions in the different countries with programmes, international research institutions, and other partners to build a stronger science and evidence base to its country programmes.

The second is the inadequate integration of the livestock (poultry) production, marketing, livelihoods' attributes and socio-economic aspects of the preparedness and response mechanisms with the veterinary aspects in the support provided, and the missed opportunity of developing more integrated multidisciplinary approaches. This element has been compounded by the continued weak and inadequate engagement of the private poultry sectors as a true partner. For example, results of FAO value chain studies, HPAI impact studies or poultry sector data and reviews, with some exceptions, have yet to be effectively used, integrated and ultimately influence programme development and implementation at country level. Shortcomings in the multidisciplinary approach, in particular the building of strong and effective working relationships between staff and consultants from different disciplines, are also evident from and highlighted in this report. It is important for FAO to explore ways to improve the existing processes for building and supporting multidisciplinary teams and to engage with other agencies so as to avoid segregation of efforts across disciplines. This will require engagement of compatible experts from a range of disciplines in policy formation and implementation at an early stage in future disease control and preventive programmes.

The third is the missed opportunity to learn lessons from experiences in countries where FAO is engaged, promoting and learning from successes, even if they had nothing to do with FAO. The RTE2 team noted that new iterations of global and regional strategies and some country strategies clearly indicate that many lessons have been taken on board, including the need for a shift towards longer-term programmes in endemically infected countries (which is evident in documents issued by FAO and UN partners from 2007 onwards), but considered that there has been inadequate uptake and cross-fertilization of these and other lessons at country level. The need for more sharing of lessons and cross-fertilization between field programmes was echoed by FAO staff in the Bangkok workshop. The effective compensation programme in Nigeria, the innovative SMS gateway system in Bangladesh and the Pen Digital Technology in southern Africa are illustrative examples of experiences that could be further mainstreamed and potentially applied in other settings in the future.

The fourth is the lack of a common ground between the implementation of emergency response programmes to deal with immediate dangers of diseases which present a risk to humans, and the now urgent need to capitalise on the substantial investments which have been made to ensure that they also address broader longer-term livestock development and human wellbeing issues. The majority of projects reviewed by the evaluation team were indeed formulated with a narrow focus on emergency preparedness or response to control avian influenza. While several donors have required specificity to HPAI in their support, in a majority of cases there has been inadequate consideration by FAO of how measures can be made more broadly applicable to other priority diseases, and to broader livestock development aspirations of countries concerned. Furthermore, there is clear evidence that some donors are quite amenable to exploiting the short-term nature of project funding to revise the emphasis of activities⁸, and this deserves greater attention by FAO in iterative dialogue processes with donors.

In general terms, the RTE2 team found that:

- the capacity, level of engagement and effectiveness of governments is a common constraint to FAO's programmes on HPAI at the national level. Nevertheless, there has been a progressive reduction in HPAI in all the countries studied and beyond, and FAO's efforts are seen to have contributed to this;
- HPAI and the responses to it by FAO and other stakeholders have raised awareness of the growth and importance of poultry industries, and the importance of their contributions to national economies and pro-poor growth. This has generally raised awareness of the potential contributions of livestock enterprises as a whole;
- FAO has an impressive set of committed staff in the countries visited. As a result, FAO's leadership in animal health is recognized in these countries, FAO teams are generally seen as having been effective partners in HPAI preparedness and control, and this reputation has improved over time;
- there is an understandable diversity of approaches across the countries. It is considered that much would be benefited by greater comparisons of tools, approaches and experiences across countries and regions;
- there has been an inability of FAO as a whole to add substantive strategic value to many of the preparedness and intervention approaches that it has supported in individual countries;
- there has been inadequate exploitation of FAO's comparative advantage as a widely experienced, well recognized international body working on HPAI in so many different

⁸ Based on evidence gathered by its projects and on the recommendations of the RTE2 team in the evaluation of the PDSR programme in Indonesia, the FAO HPAI team successfully negotiated a redistribution of a substantial component of funding from PDSR to other priority activities.

settings with many different sets of expertise at its disposal; FAO was seen to still pursue a rather narrow unidisciplinary approach at country level;

- there has been a slow pace of evolution from emergency to broader responses that capitalise on investments made to tackle other transboundary, emerging and endemic disease threats.

The RTE2 team concluded that FAO has demonstrated the capacity to provide strong leadership and performance in supporting countries in avian influenza preparedness and response, and should continue to work in this area to ensure that the important gains made so far are not lost. Rather than these gains are further exploited in continued efforts to bring HPAI under control, and to extend the benefits of investments made into broader areas of improved animal health and human wellbeing.

General recommendations

Below the RTE2 team supplements the over 70 country-specific recommendations made in the country and (sub-) regional reports with five general cross-cutting recommendations based on the findings and conclusions included in this report. In subsequent sections of the report on each of the 6 pillars, the RTE2 team provides specific recommendations for each area that has been analysed in the report.

- 1. The development of a more integrated multidisciplinary approach to international, regional and country level programmes.** It is recommended that FAO adopt centrally, regionally and nationally a much more cohesive multidisciplinary approach to HPAI responses, and indeed to all activities of ECTAD. This approach should be built upon mutual trust, recognition and engagement of the multiple disciplines of agricultural economics, epidemiology, laboratory sciences, communications, etc. that form part of the contributions appropriate for a leading UN organization and result in measurably stronger interactions (such as joint projects, publications or events) with relevant FAO units (including AGAH, AGAL, AGAP, the Investment Centre, Legal Office, etc.), and measurably more sustainable outcomes.
- 2. The development of a clear and cohesive interface between emergency and development responses to HPAI.** It is recommended that FAO strengthen the interface between emergency responses and development programmes at the country level, to ensure that there is effective harmonization of the emergency responses to HPAI and the longer-term development aspirations of governments in the livestock health sector. Interface modalities will need to be regularly discussed in view of the ongoing FAO reform.
- 3. The exploitation of HPAI capacity built to cater for broader preparedness and response programmes for other priority livestock diseases.** It is recommended that FAO urgently seek to broaden the range of impacts from recently installed HPAI

capacity development to the wider sphere of other livestock diseases of priority to governments in each country. This will require FAO to engage at a wider level with national stakeholders, and at a different level with its member countries and development partners to explore jointly the sustainable benefits that can be achieved by such an approach.

- 4. Regular updating of strategies, approaches, protocols on the basis of outcomes and impacts.** It is recommended that FAO place greater emphasis on learning from its engagement over five years in HPAI preparedness and response, and on using this learning to regularly review and update, as appropriate, its strategies, approaches and operating procedures at country level. This should be done by paying greater attention to how well definable outputs and achievements have been met, with a view of feeding back such learning to global and regional strategies.
- 5. Active engagement with the private poultry sectors in affected countries.** It is recommended that FAO take a much more pro-active role in assisting governments to engage more effectively with the private poultry industry sectors at various levels. Such engagement would seek to improve the effectiveness and credibility of the HPAI preparedness and response programmes. This is important both at the higher levels of sectors 1 and 2 of the poultry industry in countries such as Bangladesh, Cambodia, Côte d'Ivoire, Egypt, Indonesia, Nigeria and Vietnam, and at the emerging sector 3 level in many countries. In particular, it is recommended that:
 - a. FAO strengthen the technical base of ECTAD units serving endemic countries, with international experts with strong knowledge and personal experience in commercial poultry enterprises, to advise and mentor on the design and implementation of preparedness and response initiatives; and
 - b. FAO support the initiation or strengthening of small and medium holder poultry producer and marketer representation, with a view to strengthening the voice of small- and medium-scale poultry sector entrepreneurs, and to facilitate stronger linkages between them and government, and the more industrial enterprises⁹. This recommendation is considered essential if FAO wishes to exploit fully its honest broker role, its responsibility to improving the effectiveness of HPAI control, and its need for support to poultry enterprises as implements of sustainable and inclusive growth and food security.

⁹ Farmers' organisations, societies and trusts have been used extensively as tools for empowering and giving a voice to smallholder entrepreneurs in many fields of agriculture, such as tea, coffee, beans and dairying. While many are driven by export incentives, some, such as the dairy example, build on improving services, credit opportunities and standards for domestic markets. The relatively rapid rise of the poultry sector has meant that these development tools have not received the attention they arguably deserve.

Below some general cross-cutting comments are presented on the key elements of an HPAI preparedness and response programme based on the framework detailed in the methodology section. The team then assess the achievements of the FAO country programmes in terms of the milestones included in the Global Programme, and consider the broader implications of the preparedness and response measures on wider disease surveillance capacity, and on pandemic preparedness. Finally, the team considers the implications on broader agriculture, livestock and poverty reduction aspiration of the countries studied.

a) Policy development and programme coordination

There are several components within this pillar of great relevance for HPAI prevention and control. From its interactions at field level, the RTE2 team considers the legal framework, the national policies and strategies, overall contingency planning, the poverty reduction interface, and the interaction with all stakeholders to have been the main areas of focus of FAO's work.

Legal framework

The RTE2 team was informed on several occasions that one of the major constraints to effective HPAI prevention and control was an inadequate, sometimes obsolete, legal framework for early detection, containment and control of the disease. This issue was more acute in countries that have undergone a decentralization of their veterinary services (such as Indonesia) and those with ill-resourced veterinary services (which, according to OIE's Performance of Veterinary Service (PVS) assessments, are many). FAO has reportedly been engaged in Cambodia, Laos, Egypt, Bangladesh, Indonesia and Vietnam in the revision and updating of legal frameworks for animal disease control. This area of work has generally focused not just on HPAI but also on the entire institutional and legal architecture of the country animal health system. The RTE2 team was informed of mixed results in each of the countries visited (for example, a review of the Government of Egypt's veterinary capacity and legislation conducted by FAO in 2007 has not been effectively followed through by FAO and its development partners), whereas Laos has already published its new veterinary law (in early 2008) which was prepared with major inputs from FAO.

As noted by the RTE2 team in Vietnam, legislative change in any field is slow, with an approximate 2-year lead time. Thus, there are and will continue to be opportunities for FAO's engagement in updating legal frameworks, particularly given the Organization's insights and experience of the livestock sector and regulations in developing countries. The deployment of the PVS tool is, in some countries, creating a conducive environment for legal reform and it is in the best interest of FAO to find ways to be involved in the follow-up process.

National policies and strategies

Policy development for disease control sits clearly under the auspices of national governments. FAO engagement in policy formulation, development and updating is necessarily dependent on a sound initial situation analysis, in taking stock of what could and should be moved forward by government, what can be done with strategic assistance, and where substantial FAO engagement would be most appropriate and most acceptable to governments. Key to this with regard to HPAI preparedness and response is the interface with governments' own policies, strategies and aspirations, with other FAO in-country activities, and with long-term national livestock development policies, should they exist. From its observations and discussions with local counterparts, the RTE2 team is not convinced that such a structured situation analysis has always been carried out, nor that such a process is regularly updated to make sure FAO's contributions continue to be pertinent and complementary to those of governments and other national or international organizations. This probably requires a different and more structured assessment than the periodic donor and international agency briefings that take place in most countries. FAO has developed clear strategies at the regional level in Asia; however, at the country level, Bangladesh, Vietnam and more recently Egypt are apparently the only examples in which FAO has undertaken well-structured consultations to develop and update its own strategy.

As far as overall HPAI and broader disease control policies are concerned, clearly there have been differences in emphasis, focus and operations depending on the HPAI status of a country, the strength and confidence of governments, among many other factors. All the countries visited by the RTE2 team had experienced endemic HPAI infection. At the Nairobi workshop, representatives of unaffected countries and regions reported the need to consider a timely diversification from the sole focus on HPAI preparedness to surveillance and response for other priority diseases if they were to sustain credibility and funding; this was particularly emphasized by ECTAD Gaborone regarding countries in southern Africa.

Understanding the evolving country status of HPAI is clearly a critical component of overall disease control policy development. In the FAO/OIE Global Strategy document, there is a classification of countries provided, giving three different groupings:

- i) those countries in which the virus has never been eliminated after the initial incursion(s) into poultry flocks (i.e. countries with endemic/entrenched infection);
- ii) those countries that have been or are recently infected and in the process of trying to eliminate infection; and
- iii) those countries currently free from infection.

The Global Strategy then outlines the requirements and actions for countries in each grouping (presented in Table 1, page 15). The evaluation team found this framework valuable, particularly in terms of highlighting the different requirements and actions

required in the different categories of disease status. However, the RTE2 team believes that consideration should be given to revisiting and potentially expanding the country groupings to better articulate the objectives of the classification, better capture the different disease dynamic characteristics, the different demands of each grouping, and the different cost implications of actions, as a transparent and action-orientated planning and communications tool for greater fine-tuning of the technical and financial support required.

A sound policy is clearly the basis for a sound programme, and FAO has played an important role in some national policy development and updating. This was particularly the case for Indonesia, for example, where strong leadership by FAO helped in the development (and recent updating) of the National Strategic Work Plan, and has been the case in Vietnam, where FAO has contributed substantially to the development and revision of the OPI. In some affected countries, FAO has engaged in developing particular elements of a policy (such as compensation schemes in Nigeria and Egypt), but it has not had the proactive structured approach that would have been necessary to develop and implement these policies in a timely way. This means not just visiting the country or sending one mission, but rather a structured programme of: a) missions that have adequate resources at their disposal to conduct the assessment and to follow up; b) missions that are primarily focused on government requests (and not just what FAO thinks is best). In some countries, this has been rendered of less importance than others, through strong government engagement and technical capacity (Nigeria and Vietnam), but in others (particularly Egypt) the lack of such a structured approach led to delays and lack of sound technical leadership in programme initiation.

A robust strategic framework/operational matrix is an important starting point, a planning and communications tool whose development and updating deserves greater attention than it has currently received in most country programmes. In their report on the PDSR programme, the RTE2 team highlighted the need for this in Indonesia, and considers it equally applicable elsewhere, to develop or evolve the existing operational frameworks into a clear strategic framework accompanied by derived work plans for all its activities, recommending that these be used as management, communications and planning tools. It also noted the importance of building upon and following up on new inter-agency planning documents such as the World Bank supported Integrated National Actions Plans (INAP) recently developed for several countries in Africa.

One important element of programme coordination and policy development is the level of interface with government, including the office location for FAO staff. The RTE2 team is of the opinion that the ideal setting was that seen in Bangladesh (which is apparently also found in Laos), in which the FAO team of international staff and national consultants is housed within the Department of Livestock Services (DLS). This gives the team direct daily access to senior staff in DLS, including the country Chief Veterinary Officer (CVO), as well as shared meeting facilities.

Some other countries had teams housed entirely in FAO offices (Nigeria, Côte d'Ivoire and Cambodia), while others (Egypt and Vietnam) had team leadership in FAO and some other staff within government offices. Clearly there are many mitigating circumstances relating to the availability of space, communications' facilities, basic services, distance between offices, etc., but the RTE2 team noted that the more integrated the FAO HPAI programme is with national structures, the better the partnership prospects are.

Contingency planning

As reported in the First RTE, following the spread of HPAI in south and southeast Asia, FAO set up several regional emergency assistance projects in Africa, the Middle East, Central Asia, Eastern Europe and the Americas. In Africa, and largely thanks to these initial (TCP) projects, a number of follow-up regional and national initiatives have been conducted in support of contingency planning.

The evaluation team was informed that although levels of preparedness still vary greatly among non-infected countries, some are now considered to have made much progress. The simulation exercises conducted by ECTAD Bamako in the past three years indeed show that countries such as Ghana, Senegal and Mali have all strengthened their response capacity and would be able to rapidly contain minor outbreaks, whereas countries such as Côte d'Ivoire, Liberia, Sierra Leone, Guinea and Guinea Bissau, all recently affected by civil wars, and least developed countries such as Togo, do still need major support to re-build the whole or specific parts of their disease response systems.

As part of contingency planning, ECTAD Nairobi has supported the development of compensation strategies in eastern African countries. These have been completed for southern Sudan and Tanzania. In Kenya and Tanzania, they have now been adopted at the veterinary department level, but the funding of such schemes remains a big issue. In Tanzania disaster management funds are being considered, while in Kenya a livestock development fund is under consideration. Uganda is the only country of the region where the compensation plans have been adopted as policy.

Poverty reduction interface

FAO has made a concerted effort to examine the impacts of HPAI and its control on the poorer sectors of society in the countries visited, and there is a plentiful bibliography emerging from these studies¹⁰. These have benefited substantially from the contributions of the United Kingdom-supported PPLPI, which comes to an end in March 2010, and from a few other German-funded initiatives at country level (such as in Cambodia, Egypt and Uganda). It is unclear to the RTE2 team how much the results of these studies feed into policy and strategy decisions. Clearly they play an important role in advocacy for

¹⁰ See in particular <http://www.fao.org/ag/againfo/programmes/en/pplpi/hpai.html> and <http://www.hpai-research.net/index.html>

consideration of the roles of poorer sectors of society in different aspects of poultry value chains, but their greatest use is arguably in ensuring that disease control interventions do not disadvantage the poor, and contribute to developments in national poultry enterprises that are pro-poor.

Identification, engagement and communication with all stakeholders

FAO has a crucial role as the “honest broker” in its member countries, and this responsibility extends down to the HPAI programmes. In all countries visited, without exception, FAO plays this role, and generally plays it well, ensuring that key players are informed through meetings, briefs and other tools. This is critical. Given the turnover in players, the changing dynamics of the disease, the constant need to seek additional funding, and the need to ensure the sustainability and broader applicability of measures put in place, it is important that FAO keeps an open mind with regard to the range of stakeholders it engages.

The evaluation team considers that reaching out to two broad groups of stakeholders deserves greater attention, and this is discussed further under the section on partnerships. These are the private sector poultry producers and service providers, and the academic institutions (both domestic and international) engaged in HPAI, or broader poultry health and development.

Conclusions

- The FAO country programmes have made considerable contributions in assisting governments with preparedness plans for HPAI, which are highly commendable.
- There is scope for extending such support to countries through the use of situation analysis procedures that help put HPAI and other ECTAD contributions in a broader national context.
- There is scope for the review and potential updating of the country classification procedure used in the Global Strategy document with a view to making it more action orientated in terms of its advice to governments, and to include consideration of the economic implications of, and returns to, the actions required.

Recommendations for the “Policy development and programme coordination” pillar

1. **Role in national animal disease policy development and revision.** It is recommended that FAO develop a much clearer, structured and transparent **situation analysis procedure** for its HPAI and other ECTAD activities at the national level, which is updated regularly. This procedure should assist FAO in understanding the role(s) it can play in supporting national disease preparedness and response policy development, and how such policies interface appropriately with other in-country activities of FAO, and with longer-term national livestock development policies, including Poverty Reduction Strategy Papers.

2. **HPAI planning, coordination and communication.** It is recommended that FAO develop a harmonized strategic framework for national preparedness and response mechanisms for HPAI, accompanied by derived work plans for all its activities, and that these interlinked and enhanced strategy and work plan frameworks be used as management, communications and planning tools broadly applicable for governments, FAO and other stakeholders.
3. **Classification of countries by risk and opportunity.** It is recommended that FAO consider revisiting the classification of countries presented in the Global Strategy document to ensure that the classification used is up-to-date, is action-orientated, and is designed to provide guidance to countries on the relevance and cost-effectiveness of their preparedness and response strategies.

b) Disease surveillance mechanisms

One of the cornerstones of FAO's work in preparedness and response to HPAI is in disease surveillance. Surveillance mechanisms are central to good intelligence on disease occurrence, to responsible international reporting of disease presence, and to a strong evidence-base to disease control strategies and policies. Traditionally, national surveillance systems for livestock diseases are built on regular reporting by veterinary services, which are clearly contingent on the capacity of veterinary services to gain access to relevant livestock production systems at appropriate intervals, and to have the necessary awareness and diagnostic skills, supported as appropriate by laboratory capacity. In all the countries visited by the RTE2 team, these so-called passive surveillance systems are generally weak, but have improved to varying degrees as a result of the funding support provided to respond to HPAI. This improvement has been in various elements, notably enhanced training of veterinary field staff (all countries), training of ancillary field staff such as paravets and community animal health workers (referred to by OIE as veterinary paraprofessionals) in Cambodia, Laos and Vietnam, for example, the strengthening of communications links between field and central veterinary services (Bangladesh), and between the field and central or regional laboratory capacity (Nigeria). Nevertheless, while improvements have definitely occurred, they are very modest in the light of what is required if these countries wish to have effective and sustainable systems of animal disease surveillance that meet the needs for effective HPAI control and beyond.

Given the waning priority being attached to HPAI in the majority of countries visited, even those in which HPAI remains endemic, there is a strong argument that passive surveillance needs to be broadened to address other national priorities to justify the considerable financial outlay, and even the survival of institutions and capacities newly established. This is important in the poultry sector, so critical to smallholder and emergent farmer livelihoods and national food security, with Newcastle disease, Gumboro disease and duck virus hepatitis (duck plague) still serious acting as constraints to the growing enterprises and

industries. But broadened surveillance is also of importance to other livestock sectors, given that in most of the countries included in this evaluation, multiple livestock enterprises served by a single set of veterinary services is the norm, particularly for the smaller-scale (sector 3) producers, and the backyard (sector 4) producers. The RTE2 team questions whether FAO has made the most of the funding and engagement opportunity presented by high levels of investment in HPAI preparedness and response to ensure that new surveillance mechanisms put in place are consistent with a broader set of national needs. In general this has not been the case; the RTE2 team recognizes that this has been influenced in many cases by donor requests for continued focus on HPAI, and in some cases by government pressures for continued focus on HPAI.

This also raises questions on FAO's capacity, initiative and track record in providing strategic support to passive livestock disease surveillance. Based on the 2008 FAO/OIE vademecum, which put FAO in charge of developing "strategies and best practice guides for developing countries", FAO arguably had the responsibility to develop overall standards and guidelines for surveillance (both in poultry and in other livestock populations) for specific diseases, and make these widely available as advice and support mechanisms to country programmes. The RTE2 team is of the opinion that more can be done in this area. Using a rudimentary example, each of the FAO Chief Technical Advisers (CTA) met was approached during the evaluation to provide the case definition of, and units for, an outbreak in both a temporal and spatial context; all were different, in terms of the denominator, the spatial unit and the temporal considerations. Understandably outbreak definitions do vary from country to country. This topic is not new, and has been considered by FAO during the rinderpest eradication programme, for example (see Mariner et al., 2003¹¹). FAO, perhaps in collaboration with OIE, should take some responsibility for seeking an appropriate degree of harmonization to aid in the interpretation of multiple country outbreak data. The harmonization of outbreak definitions should also be tabled for discussion among the countries engaged in HPAI preparedness and response, so that consensus can be reached and harmonization of indices sought.

The RTE2 team is unaware of FAO's policy on the relative appropriateness of passive versus active surveillance in different settings with different production systems and national capacities. The FAO Guiding Principles for HPAI Surveillance and Diagnostic Networks in Asia (2004) does not make reference to this issue and it does not appear to have been revised to take into account adequately emerging data on the efficacy and effectiveness of the sometimes innovative surveillance tools tested and promoted by FAO at country level. The RTE2 team suspects that six years later there is a need for a revision of the guiding principles and the development of more detailed guidelines to help mentor national strategy development, taking into consideration any major regional differences in approach. Such a

¹¹ Mariner, J.C., Jeggo, M., van Klooster, G., Geiger, R., Roeder, P.L. 2003. Rinderpest surveillance monitoring using quantifiable indicators. *Rev. Sci. Tech. Off. Int Epiz.*, 22, 837 – 847.

revision would also offer opportunities for FAO to strengthen the strategic support to country teams and partners on passive surveillance matters to improve the sensitivity, cost effectiveness and relevance to HPAI responses, particularly in those countries in which the disease remains endemic.

Many of the countries visited have augmented the passive surveillance system with different types of active surveillance, a number supported by FAO, in which new approaches to seeking HPAI cases have been initiated. The RTE2 team recognizes that passive surveillance systems may incorporate broader responsibilities for extension service duties, but a key measurable outcome on which they can be evaluated is case detection. The PDSR system in Indonesia terms its structured scheduled visits of the PDSR teams “active” surveillance, as it is (although nominally) risk-based. The scheduled visit surveillance detected only 5.6 percent of HPAI related events, as compared with the passive (call-out visits) surveillance which detected 94.4 percent of HPAI cases. Another initiative of particular interest was the active surveillance being undertaken in Bangladesh; the active clinical surveillance system has been developed for chickens using community animal health workers (CAHW), additional veterinarians and Upazilla Livestock Veterinarians, supported by an SMS Gateway electronic reporting system. Twenty-two of the 33 outbreaks during the period October 2008 – April 2009 were detected by the active surveillance. The time of teams is also used for raising awareness, and advising on biosecurity on commercial poultry farms. However, with the large number of village households and farms in Upazillas to be covered by three CAHWs per Upazilla, who visit a total of approximately 100 places per day, it would take well over a year to cover all of an Upazilla. Beyond this, the system is considered by some to be relatively expensive. The sensitivity of this approach would be high if all households were nominally or statistically covered within a limited time period, but in reality it is low because of the financial and logistical impracticalities of such an extensive coverage on a real-time basis. Thus, innovative approaches to surveillance are welcome.

The RTE2 team suggests that FAO should be playing a stronger role in discussing the merits of such approaches, their sensitivity, cost, sustainability, etc., to ensure that optimal advantage is taken of past FAO experiences in so many settings. A focus on the effectiveness of the different approaches will also be helpful for reviews of and feedback on disease persistence and spread.

Wild bird surveillance

FAO has a centrally managed wildlife programme based at ECTAD HQ in Rome. Investigations into the role of wildlife, notably migratory birds, have been conducted under the EMPRES programme and have brought a coordinated scientific base to regional assessments. This has included ecological, epidemiological, spatial and temporal analyses on the role of wildlife in H5N1 HPAI, which has entailed collaboration with departments of

agriculture, environment and health in several countries around the world. Coordination of wildlife surveillance has been conducted with three partners, CIRAD, Wetlands International (WI), and the Wildlife Conservation Society. Core activities have included capacity building in wildlife surveillance and spatial and temporal analysis (with provision of supporting manuals and documents), fostering the development of networks such as the Global Avian Influenza Network Strategy (GAINS), and participation in the Scientific Task Force in Avian Influenza. This collaboration has led to among other things the production of Guidelines for Wild Bird HPAI surveillance (2006) with the Wildlife Conservation Society (WCS) and the conduct of an epidemiologic survey of avian influenza in Africa by CIRAD (2008) to gather evidence on the role of wildlife in disease spread.

Surveillance at the start of the emergence of H5N1 in wild birds was broadly based, global and less focused. However, based on results during 2006-2008, from both FAO-led surveillance and that of other organizational programmes, (GAINS, United States Geological Survey, etc.), the Wildlife Unit focused its wild bird efforts on either endemic countries, or those with re-occurring outbreaks (such as China, Mongolia, India, Egypt and Nigeria).

The RTE2 recognizes many qualities of the wildlife unit at a global level, including the linkages it has with CIRAD, WI and WCS, the valuable insights it has gained with partners into wild bird migration and virus movement between outbreak areas, the moves into surveillance of an expanded range of pathogens such as West Nile virus, Japanese encephalitis and Crimean-Congo haemorrhagic fever, and the capacity building in the field in wild bird capture and surveillance procedures.

But it also recognizes the inherent difficulties of working with migrant wild bird populations, and the weaknesses in obtaining meaningful and representative data at a country level from the small numbers of live wild birds often from the opportunistic samplings that can be obtained. This means that interpretation of the role of wild birds in some of the countries visited has not been straightforward. At the country level, this is complicated by the wild bird work often being led by a different organization (such as WCS in Cambodia), whose objectives and chains of reporting to governments may be quite separate from those of FAO.

Conclusions

1. The FAO programmes have helped to strengthen national capacities for HPAI surveillance.
2. There is still scope for the substantial improvement of passive and active surveillance tools, and for a greater understanding of their relative merits under different circumstances of disease dynamics, technical capacity, infrastructural facilities and affordability.

3. There is a need for greater harmonization of disease occurrence indices to ensure optimal comparison of outbreak figures across countries and regions.
4. The capacities built with support from FAO have had undoubted spill overs on the potential for surveillance and response to other diseases, but this potential is being inadequately exploited in all countries visited.

Recommendations for the “Disease surveillance mechanisms” pillar

1. **Further development of strategic support tools.** It is recommended that FAO develop new standardized guidelines for surveillance of HPAI in different poultry populations and sectors, which could then provide greater strategic support to country programmes to improve the sensitivity, relevance and cost-efficacy of surveillance for HPAI.
2. **Harmonized units for detection, reporting and intervention.** Understanding the diversity of definitions used in countries in which FAO’s programmes operate, it is recommended that FAO use its international status to seek greater harmonization in the units of reporting HPAI and other diseases of poultry, ensuring optimal comparisons of disease outbreaks and interventions on sector, spatial and temporal grounds.
3. **Exploiting innovations and experiences in surveillance.** It is recommended that FAO give greater consideration to analysing and learning from new approaches and experiences in surveillance techniques, with the goal of improving the sensitivity, cost efficiency and sustainability of both passive and active surveillance tools, and their relevance to different settings.
4. **Broadening the relevance of surveillance tools established.** It is recommended that FAO actively and urgently seek ways of broadening the relevance of current and new surveillance tools and approaches to other transboundary, emerging and priority endemic diseases of importance in the countries in which HPAI programmes are operating. This should include active lobbying by FAO at country, regional and HQ levels with current and future donors to ensure optimal relevance and sustainability of capacity developed to date.

c) Diagnosis, differential diagnosis and pathogen characterization

The strengthening and, in some cases, the initial establishment, of diagnostic facilities capable of supporting HPAI preparedness and response have been a very prominent and effective part of FAO’s contributions in all of the countries visited. This has involved supporting the purchase and installation of equipment, provision of reagents, training of laboratory staff, facilitation of proficiency testing networks for PCR and HI testing, interactions between laboratory staff in regions and beyond through both formal and informal networks, training in (and funding for) sample collection and shipment, international sharing of virus isolates and the raising of scientific and risk awareness on

influenza viruses. In some countries (such as Vietnam), this has included supporting the development of a string of regional laboratories serving different parts of the country, and the evaluation of regional laboratory capacity with a view to the accreditation of regional laboratories. This has been one of the major products of the FAO's country-level initiatives. Nevertheless, it appears that most of the activities have had a relatively narrow focus on procuring equipment and building technical skills and competencies in a limited number of laboratories. In addition, in some countries there was some duplication of investment by other donors, and there were criticisms of the inadequacy or lack of budgets for maintenance and for replacing essential reagents. The evaluation team endorses the need for consideration of maintenance costs, but understands that an open-ended supply of reagents is often not feasible. It is understood that FAO is planning to tender for maintenance contracts in various countries/regions, and has offered in-laboratory capacity building for equipment maintenance in some countries.

The evaluation team noted that building diagnostic capacity for HPAI was still a priority area particularly in the World Bank-funded projects that FAO is helping to implement in several countries in Asia (notably Bangladesh, Cambodia, Mongolia, Laos and Myanmar). The RTE2 considers that FAO, in partnership with OIE, has an important role to play in developing and articulating the minimum and optimum diagnostic capacity to put in place in any given country (in terms of both laboratories and testing capacities within them), and placing these in a national context for each country with reference to factors such as the size of country, communications facilities, potential number of cases, level of endemicity, cold chain capacity, among others, in defining HPAI laboratory needs.

The RTE2 team was informed that considerations of broader laboratory diagnostic capacity for other diseases were generally not tabled with government partners at the initiation of laboratory capacity development initiatives, and with the possible exception of Indonesia, most laboratories have been unable to extend their capacities to other TADs, or even differential diagnosis of other poultry diseases. The evaluation team considers that FAO should be more pro-active in advocating for balanced investments and support in this area, while still maintaining the HPAI focus where it is needed. It is of course well understood by the RTE2 team that much of this has been dictated by the terms of the grants given, with a very high degree of specificity to HPAI, but it considers that this is very short-term thinking, and FAO has the responsibility to step up its lobbying for broader relevance of diagnostic capacities established as part of its global mandate.

Conclusions

- The support by FAO to the building of laboratory capacity for HPAI has been one of the stronger and more effective elements of FAO's national programmes.

- It will be important to define more clearly what the appropriate levels and standards of diagnostic capacity for HPAI are for different countries, given the wide range of diagnostic loads presented, depending on degree of endemicity, country size and communication logistics, field capacity, etc.
- The laboratory capacity built is not being adequately exploited for differential diagnosis of other poultry diseases, and for application to other emerging, transboundary or endemic livestock diseases of priority.

Recommendations for the “Diagnosis, differential diagnosis and pathogen characterization” pillar

1. **Standard diagnostic requirements for different countries.** It is recommended that FAO further develop, in collaboration with partners, a set of principles and guidelines on the minimum and optimum requirements for diagnostic facilities and capacities to put in place in any given country, the costs and returns from these, and how factors such as size of country, potential number of cases, level of endemicity, cold chain capacity among other factors can be taken into account in defining HPAI laboratory needs.
2. **Broadening diagnostic capacity.** It is recommended that FAO take active steps, including stepping up its advocacy, to continue to broaden the laboratory diagnostic capacities established for HPAI to include differential diagnosis of other poultry diseases, and to include consideration of overlapping and additional needs to respond to national diagnostic system demands for other transboundary, emerging and priority endemic diseases of importance in the countries in which HPAI programmes are operating.

d) Disease control and eradication measures

In September 2004, FAO published a manual with recommendations on the Prevention, Control and Eradication of HPAI in Asia¹². The disease control and eradication measures suggested were revisited in a technical workshop held in June 2007¹³. The non-mutually exclusive range of interventions and measures for HPAI control seen by the RTE2 at country level are many. They include: depopulation, carcass disposal and decontamination, poultry movement control, vaccination, awareness and communication, compensation, poultry restocking and human protection. FAO has been responsible for supporting intervention strategies in many countries, and in the training of a wide variety of field staff. In general, FAO has played a supportive rather than front line role, and in this section two points emerging from FAO’s engagement in the countries visited are discussed.

¹² <http://www.fao.org/docs/eims/upload//246982/aj126e00.pdf>

¹³ <http://www.fao.org/docs/eims/upload//232786/ah671e.pdf>

Strategy or front line, national or sub-national?

There is a wide variation in the level of engagement of FAO in disease control and eradication measures in different countries, from peripheral engagement in outbreak response strategies, to direct involvement in compensation policy development, to front line engagement in intervention activities. The PDSR district teams in Indonesia probably represent the most intensive level of FAO's field engagement in HPAI control interventions in any country, in which the teams, generally working in partnership with, and under the supervision of, the District Livestock Services (Dinas), use a set of six intervention (response/prevention) tools. These are: information, education and communication; focal culling with/without compensation; poultry confinement and species separation; application of biosecurity measures (cleaning and disinfection); movement control; and vaccination. The teams classify villages as 'Apparently Free', 'Infected', 'Suspect (14)', 'Suspect (60)', or 'Controlled'. This classification allows an internal evaluation of the impacts of interventions. However, it is likely that the response tools are having little overall impact on the control of HPAI, although arguably they may play a role in reducing the risk of virus exposure to humans in some settings. The intensity of the Indonesia team's engagement in the field has its basis in 2006 when the PDS approach was fielded to find poultry disease at a time when a large number of human cases had occurred. The need for that intensity of front-line engagement has probably passed, but the FAO team is making good use of it with sector 4 poultry enterprises to gather data on disease epidemiology and risk, and as an evolution into the provision of veterinary services for smallholders that meet a broader set of needs.

FAO's engagement in Côte d'Ivoire has also included some front line interventions in the form of the support given to the pilot vaccination programme carried out in the country. In the other countries visited, FAO's engagement in disease control operational activities have been at a more strategic level, which is probably very appropriate. However, there are arguably circumstances in which FAO might consider a more direct front line engagement along the lines of the Indonesia model. In some countries, the weakness of implementation of HPAI interventions is in the provinces/states/governorates (key examples are Nigeria, Egypt, Indonesia and Vietnam). This is particularly important in countries with decentralized veterinary systems, which all these countries mentioned have. The effective implementation of an integrated set of measures such as movement control, safe carcass disposal and live bird market decontamination, for example, remain a major challenge, particularly in the endemic countries visited (Bangladesh, Egypt, Vietnam and Indonesia).

FAO's attention has been on central policy and strategy development, and empowering national systems, but when it comes to the specifics of HPAI control and eradication in endemic/entrenched countries with a devolved system of government, there is often inadequate attention paid to transferring the principles advocated centrally to local levels,

and partially as a result of this endemic disease persists. Thus, in such circumstances, the RTE2 team feels that FAO should consider the potential to engage more at the sub-national level, where the need for greater strategic assistance is recognized, perhaps through piloting an intensive engagement in purposively selected states/provinces/governorates. In the Egypt country report, the RTE2 team recommends consideration and discussion with Egyptian authorities pursuing a governorate-level programme to explore in more detail and eventually tackle field-related bottlenecks to effective control.

Compensation

One of the areas which have been most controversial has been the issue of compensation as an effective control tool. Compensation schemes are seen by many to have several important roles to play in HPAI control. Key among these is to encourage reporting of disease when levels of compensation are fair and linked to market value, and to ensure that vulnerable smallholders or incipient commercial producers are not disadvantaged unfairly through extensive culling programmes. However, questions remain as to whether compensation schemes are effective in increasing transparency of disease occurrence.

FAO has undertaken several studies on this¹⁴, and with several partners (such as the World Bank, USDA, UNDP and IFPRI) has been responsible for producing a set of guidelines on good practice in the area of compensation for HPAI control¹⁵, which is very commendable. The RTE2 team was, however, concerned that not enough follow-up of this strategic engagement with individual countries had been carried out to try and match idealism with reality. The RTE2 team sees advantages of having an iterative “strategic-to-country, and back to strategic” approach to a cross-country analysis of what works and what does not, and considers that such a learning-from-experience approach could lead to the development of a harmonized set of principles and approaches on compensation based on sound experience and results in countries in which it is engaged.

Conclusions

- FAO has generally played a more strategic role in backstopping disease control interventions, with the exception of active and extensive field engagement of the PDSR programme in Indonesia.
- FAO’s programmes have generally been supporting strategic interventions at the national level. In certain endemic countries, there is arguably merit for greater FAO interventions at the sub-national level, to help governments pull together some of the broad principles of the integrated set of measures such as depopulation, movement

¹⁴ See for example:

<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/EXTEAPREGTOPHEANUT/EXT EAPAVIFLU/0,,contentMDK:21205757~pagePK:64168445~piPK:64168309~theSitePK:2706883,00.html>

¹⁵ http://siteresources.worldbank.org/INTARD/Resources/HPAI_Compensation_Final.pdf

control, compensation and restocking, etc., particularly in areas with entrenched infection.

Recommendation for the “Disease control and eradication measures” pillar

- 1. Sub-national support to HPAI responses in key endemic settings.** It is recommended that FAO discuss with government partners the potential to develop fully-staffed programmes at a sub-national level in endemic settings such as Egypt, Indonesia and Vietnam that aim to bring into play the range of surveillance, response and private enterprise partnership strategies advocated at national level. It is proposed that this take the form of pilot activities in high-risk areas in which inadequate progress is being made. Lessons from previous attempts to devolve the programme in these countries should be taken into account.
- 2. Culling, compensation and restocking.** It is recommended that FAO seek to build on its broad compensation policy expertise and take it down to a country level, developing an iterative “strategic-to-country, and back to strategic” approach to a cross-country analysis of what works and what does not. This has the goal of developing a standard set of principles and approaches to the complex interface of culling, compensation and re-stocking based on sound experience and results in countries in which it is engaged.

e) Epidemiological data synthesis, analysis, presentation and use

Leadership and quantitative skills in epidemiology

All countries have identified the need for greater epidemiological capacity in discussions. This was also highlighted in a survey of FAO CTAs in Asia conducted by ECTAD-RAP (2008), and it emerged as the single greatest need at the Bangkok regional stakeholder workshop. Even in Bangladesh’s excellent operational matrix, epidemiology was not given the pillar status it arguably deserved.

The RTE2 team is of the opinion that there is inadequate attention given to quantitative epidemiology in all the country programmes by FAO, and this stretches from the field programmes, to the (sub-) regional ECTADs to FAO headquarters. This inadequacy is perhaps best illustrated by the absence of strong epidemiology leadership and mentorship in AGAH at FAO headquarters.

Effective epidemiology leadership was present in the government veterinary system in Nigeria, a regional veterinary epidemiologist has also been appointed to ECTAD-RAP to facilitate and drive a field epidemiology training programme for veterinarians in the region, a strong epidemiology capacity has emerged in FAO’s programme in Indonesia, and epidemiological expertise has been established in the FAO programme in Bangladesh, but beyond these examples much of the analytical epidemiological expertise has often been contributed by other organizations (such as the Massey University and Royal Veterinary

College groups in Vietnam, for example). That the expertise was there, but in other institutions, is not a problem. But in the Vietnam example an effective working partnership between FAO and the other centres of epidemiology expertise did not appear to have been established. An epidemiology unit has been established with FAO support in Egypt and Bangladesh, and in both cases there are enthusiastic teams of people staffing them. But these groups would almost certainly benefit substantially from senior expertise and mentorship to make their labours more useful, to make the products they produce more meaningful, and to engage them more in understanding the importance of, and the requirements for, data relevance and quality.

The RTE2 team is very supportive of the FETPV initiative being taken by ECTAD-RAP, initially in partnership with the Department of Livestock Development in Thailand. This is a very positive move, responding to the provision of funding support for capacity building, and encouraging the interface between common human and veterinary epidemiology approaches, particularly relevant to zoonotic diseases. However, the RTE2 team encourages this unit, and also the other sub-regional ECTADs in Nairobi, Bamako and indeed elsewhere, to seek various additional alternatives to epidemiology capacity building, particularly through building long-term partnerships with regional universities, and with key developed country institutions which have specialized in developing approaches to understanding livestock disease dynamics and control in developing countries, where multiple and diverse production systems complicate design and analysis procedures.

At a broader level, the deployment of TAD Info in several regions and countries has certainly provided veterinary services with an important tool for disease reporting and the analysis of epidemiological data. The benefits of TAD Info, however, are yet to be seen as very few countries (including Vietnam and Cambodia) that have received the product and the associated training over the past three years are yet able to make regular and effective use of it.

Beyond the general need for stronger engagement by FAO in boosting epidemiology capacity in the different countries visited, there is also a need for further consideration of the drivers of strong and effective national epidemiology systems. Key to this is an understanding of the incentives that drive and maintain quality data gathering and use, both at field and CVO levels.

The RTE2 team was informed that with the exception of Nigeria, in none of the countries visited was the data emanating from national epidemiology units being used effectively in strategy development and revision. Also, discussions with staff working at sub-national levels indicated that there was inadequate feedback of the synthesis emanating from data that they have submitted, which is likely to affect data submission incentives. This had been identified as a particularly important issue affecting the sustainability of the data gathering component in the PDSR system in Indonesia.

Underlying poultry population demography

Fundamental to sound epidemiological analysis is a good understanding of denominator data, which in the case of HPAI means an understanding of the structure, size and characteristics of the poultry populations. For purposes of understanding HPAI dynamics, this requires stratification into appropriate sub-populations. The onset of HPAI brought a realization around the world of the deficiencies in understanding of poultry population structures and sizes, quite apart from the lack of understanding of the growth and specialization that had occurred in many countries fuelled by the “livestock revolution”. The FAO devised the very valuable classification of the four sectors, 1, 2, 3 and 4, and this is used in some of the countries visited, but not all. Regardless of which classification system is used, quality data based on production system stratification is important because of the distinct sets of management factors associated with each, and the substantial differences in their socio-economic, marketing, biosecurity and other disease risk attributes.

All countries had statistics on their poultry populations, and under the leadership of the animal production service (AGAP), FAO has undertaken national reviews of poultry populations in several countries. At the national level, there is much variation in the quality of data on poultry populations, and in the stratification system adopted, most being inadequate for epidemiological and impact assessment analyses. While this is of course understandable, the RTE2 team questions whether FAO should be providing more strategic support to individual countries on evaluating the merits of the four poultry sector system, and its practical applicability, in terms of quantifying and separating systems which have different development and disease control intervention needs. Most important is to move towards practical, attainable and regularly updated data that meets sound epidemiological denominator needs for the long term.

Underlying value chain studies

FAO has conducted and sponsored a number of value chain studies, both at regional and national levels, in countries affected by HPAI. Most of these studies were initiated during 2007 “as a means to develop a better understanding of the trade flows, disease transmission mechanisms and possible entry points for intervention in various value chains”¹⁶.

The RTE2 team has reviewed some of these studies and discussed their use, particularly during their visits to Indonesia, Egypt and Bangladesh (where they have been undertaken in cross-border areas only). The RTE2 team is of the opinion that a sound analysis of the often diverse poultry enterprise value chains is a critical component in developing a sound understanding of HPAI epidemiology. Value chain studies are valuable in understanding the different players in the chain from production to consumption, the incentives they have for

¹⁶ A. McLeod et al. 2009. The use of poultry value chain mapping in developing HPAI control programmes.

engagement, the geographical scale of their operation, and in applying this knowledge to the development of critical control points for interventions, either in surveillance or control. Such studies also play a key role in understanding the impacts of HPAI, where a surprisingly wide spectrum of players involved and affected, other than just poultry producers. It must be said that development of good quality value chain understanding is a laborious process; and it can be argued that in some value chain studies undertaken the level of detail that is necessary to develop a useful tool in critical control point identification has not always been reached. In Nigeria, a detailed value chain study was undertaken under the auspices of the Pro-Poor Risk Reduction in Africa and Asia project, funded by the United Kingdom (Akinwumi et al., 2009¹⁷). The study concluded that disease transmission pathways are linked to economic incentives faced by chain actors, risks of disease transmission are strongly related to commercial practice, and consumer sovereignty is insufficient to influence governance and commercial practice in Nigeria. Finally, it concluded that chain actors face economic incentives to conceal information that is essential for effective HPAI control. The RTE2 team considers that this study is most valuable, both from the results obtained but also as a methodological model for other countries. It is uncertain if the results are being used effectively by the FAO programme in Nigeria. A number of countries from West Africa have also benefited from comprehensive value chain analysis of poultry sector organized by ECTAD Bamako, but there is still a need to make the link with HPAI dynamics and control.

Socio-economic impact

Socio-economic impact assessments have been undertaken by FAO in many of the countries visited, in general carried out by members of the socio-economics group at FAO headquarters. These have helped understand the range of impacts of HPAI, and quantify the losses experienced. Of particular value have been the livelihoods studies carried out by the multi-institutional team on the UK-sponsored studies in different African and Asian countries¹⁸. Other studies on cost, financing and market and trade dimensions of avian influenza have also been conducted, and several of these (such as those related to the cost of control strategies and compensation in Côte d'Ivoire, and impact of HPAI in Egypt, Indonesia, Vietnam and South East Asia at large) have been reviewed in detail by the RTE2 team. Similar to the value chain studies, it seems that there has been inadequate incorporation of the results of these studies, synthesised with the epidemiological data, into surveillance and intervention strategies.

Furthermore, there is an impression that the socio-economic studies, rather like the poultry production studies, sit in separate boxes and FAO has not yet capitalized adequately on the

¹⁷ Akinwumi, J., Okike, Iheanacho, Bett, B., Randolph, T., Rich, K.M. 2009. Analyses of the poultry value chain and its linkages and interactions with HPAI risk factors in Nigeria. Africa Indonesia Team Working Paper, in press.

¹⁸ www.hpai-research.net

potential for a much stronger interdisciplinary approach to HPAI preparedness and response that builds a broader and sounder base to interventions than the merely technical approaches. This was particularly noticeable at country level, where attention was primarily given to implementation of mostly uni-disciplinary projects, and where recent efforts at headquarters and at (sub-) regional level for stronger multi-disciplinarity (see Follow-up Report to the recommendations of the First RTE, rec. 5, 28 and 29) have not yet been translated effectively into substantive developments in the field programmes.

Outbreak investigation

Thorough and well structured outbreak investigations are an essential component of good field epidemiology. It is felt by the RTE2 team that this area is generally weak in all the countries visited, and it was acknowledged to be weak by the FAO teams and many partners in government systems. In some countries, outbreak investigations are not occurring at all; in some they are occurring but are merely collecting signalment data rather than probing possible infection sources and destinations, particularly if this means crossing district or provincial boundaries. Some courses have been run and standard operating procedures set up and tested, but even with such instruction, without adequate incentives to undertake structured outbreak investigations the sustainability is questionable.

The role of risk assessment

The RTE2 team found that in general there was a lack of use of risk assessment as a tool for targeting surveillance and intervention measures. While some targeting of active surveillance to areas of perceived higher risk was conducted, for example for ducks in Cambodia or for border areas in Bangladesh and Côte d'Ivoire, the evaluation team did not see evidence of structured risk management approaches to designing HPAI surveillance systems in the other countries visited.

Part of this is a result of underlying weak epidemiological surveillance, and as a result weak risk factor analyses. With the finite resources available to the endemic countries visited, the depth and breadth of both passive and active surveillance activities surveillance needed to provide effective early detection and response are not adequate. To improve the success rates a system to target resources to areas of highest risk is needed. Risk analysis techniques using available disease ecology, epidemiological, socio-economic, market value chain and spatial analysis data have the potential to target surveillance to high-risk areas and improve its quality and value, and also be more cost effective.

Conclusions

- Epidemiology capacity has been strengthened by varying degrees in FAO's country programmes, but sound epidemiology expertise with good analytical capacity remains very inadequate.

- The use of FETPV and AVET is a valuable initiative for capacity development; it is important that other initiatives are also explored.

Recommendations for the “Epidemiological data synthesis, analysis, presentation and use” pillar

1. **Enhancing epidemiology capacity.** It is recommended that FAO place greater emphasis on fundamental quantitative and qualitative epidemiology skills in the ECTAD HQ, regional and country programmes. The following areas are of particular importance:
 - a). The need for senior quantitative epidemiology expertise in FAO headquarters to advise and mentor on the development of epidemiology capacity in national, regional and global ECTAD programmes;
 - b). The appointment of senior epidemiologists in each of the (sub-) regional ECTADs to advise and mentor within the regions;
 - c). The fostering of stronger links and partnerships with national, regional and international institutions with epidemiological expertise; and
 - d). The consideration of a wider range of training opportunities for national epidemiologists, supplementing the FETPV and AVET programmes.
2. **Improving the understanding of poultry demography.** It is recommended that FAO build on its development of a 4-sector classification of poultry enterprises, using new data that has emerged from several countries, with a view to updating and harmonizing the classification and characterization of poultry systems in each of the countries.
3. **Putting value chain studies into greater practical use.** It is recommended that FAO place much stronger recognition at country level of the role of value chain analyses in improving the efficacy of surveillance and response mechanisms. It is also recommended that such analyses be conducted at higher levels of resolution by in-country teams, and results are well integrated with epidemiological analyses.
4. **Greater integration of the products of socio-economic analyses into surveillance and intervention strategies.** It is recommended that FAO seek to make much greater use of socio-economic impact assessments in strategy development. This will require much closer and more direct engagement of socio-economists, poultry production specialists and veterinary epidemiologists than is currently the case. Such integration should ultimately be reflected in integrated multidisciplinary programmes in the field.
5. **Putting greater focus on outbreak investigation.** It is recommended that FAO consider how outbreak investigations in affected countries can be made more effective and more sustainable, seeking incentives for field staff to undertake such investigations, and to engage more effectively in investigative tracing forward and backwards.

6. **Greater use of risk-based approaches.** It is recommended that FAO place much greater emphasis on the role of risk-based approaches to surveillance and response mechanisms, building on outputs from sound value chain and epidemiological analyses in the field. Products of risk assessment should play a much stronger role in national strategy development, in line with the FAO Global Strategy

f) Disease prevention

The disease prevention pillar is important in the follow through for endemic countries, as they seek to reduce the risk of new outbreaks, and it is the cornerstone of the non-infected countries, seeking to reduce the likelihood of HPAI introduction, and heighten the chance of rapid elimination. Below the RTE2 team deals with key elements of the disease prevention pillar (such as biosecurity, communication, vaccination and industry restructuring) in which FAO has engaged in the countries visited.

Biosecurity

FAO has been engaged in virtually all countries visited on biosecurity at the farm level, with many activities being designed following the publication of a paper on biosecurity for HPAI (see Follow-up Report to the recommendations of the First RTE, rec. 14). With a belief that sectors 1 and 2 have a level of understanding of, and compliance with, biosecurity, which may require updating or supplementing but not starting from scratch, FAO's programmes have increasingly focused on sector 3, with activities falling under various regional and national projects. The relatively new FAO headquarters biosecurity programme¹⁹ advocates developing an understanding of what smallholder producers perceive is important in biosecurity, what measures they consider are realistic and affordable, and seeks the development of an interface between the emerging shared actions and measures known to be efficacious. The group promotes an understanding of the attributes of the different possible measures and how these will affect the willingness and ability of producers with limited resources to apply them, and how they will compromise current production systems²⁰.

The RTE2 team noted that there is a narrowing gap between the understanding of what needs to be done in the area of biosecurity, and what is communicated to the various stakeholders, and lauds this move to understand feasibility and affordability. There are two concerns, however. The RTE2 team did not see any work to acquire empirical evidence on what any compromise set of biosecurity measures (i.e. the mixture between desirable and realistic/affordable) would be efficacious, either in reducing HPAI spread or that of other diseases constraining productivity. Furthermore, the RTE2 team noted a huge gap between

¹⁹ FAO, 2008. Biosecurity for Highly Pathogenic Avian Influenza: Issue and Options. FAO Animal Production and Health Paper 165, 89 pp.

²⁰ Guerne Bleich, E., Pagani, P., Honhold, N, 2009. Progress towards practical options for improving biosecurity of small scale poultry producers. World's Poultry Science Journal, 65, 211 – 216.

what is communicated to farmers and any behavioural change to respond to biosecurity messages. The team acknowledges that current behaviour is dependent on a multitude of factors, include longstanding cultural and social practices, and promoting change requires a deep understanding of these. The FAO pilot activities initiated in Egypt and Cambodia to develop “cost-effective and feasible biosecurity measures for resource limited circumstances” might provide some answers, but the team feels that their implementation with expected outcomes will probably be a lifetime job.

Communication and awareness raising

The ECTAD Communication Unit was formally established only in June 2007, with its TORs, work plan and budget approved around December 2007. FAO’s work in the communication domain is relatively recent and modest, but planned to tackle strategic issues.

At the field level, communication and awareness-raising activities have been a feature of almost every programme reviewed. Although the core work of the communications unit at ECTAD HQ is on strategic issues, it was reportedly involved in the backstopping of regional and national initiatives (see Follow-up Report to the recommendations of the First RTE, rec. 15), with the field programme largely being implemented by FAO local staff with specific inputs from the (sub-) regional ECTAD units (with the possible exception of the Nigeria project that is managed from Rome). Support from ECTAD Bamako, ECTAD Nairobi and ECTAD-RAP will be reduced in the near future since there are now no full time communication officers in these offices.

At the regional level, besides providing backstopping to national programmes (particularly ECTAD-RAP), networks (such as RESOCOM) and regional workshops have been set up to improve outbreak communication and media skills. The ECTAD Communication Unit has also been involved in the formation of an inter-agency South and South-East Asia risk communication network initiative, and in assessing both human and animal health communication capacities, through the INAP process conducted in nearly 30 countries in Africa. To this end, it has supported the development of Strategic Communication Frameworks for ECTAD-RAP and for the South Asia Cross border project, and to national communication strategic frameworks for Indonesia, Cambodia, Lao, Timor-Leste, Nepal, Bangladesh and Vietnam. Sub-regional ECTAD units in Africa have also developed their own web sites to raise visibility of their activities and to increase dissemination of technical information in their sub-regions. Regarding the latter, a media fellowship project funded by Canada has been implemented in Indonesia and Egypt to improve reporting on avian influenza news.

The RTE2 team considers that good communications skills are an essential component of all the regional ECTADs, meriting internationally recruited positions, and that qualified national staff should be in place in country teams. The RTE2 also considers that well planned

strategic frameworks for communication are essential, but not commonly found. The best example seen was that developed in Indonesia by FAO and the USAID-funded Community Based Avian Influenza Project (CBAIC), in which target audiences, methods to access them and expected impacts are clearly articulated.

At the country level FAO is engaged in various elements of awareness raising, relating to reducing the risk of disease spread between poultry populations, and reducing the risk of human infection. Dealing first with the latter, this component has principally been in the hands of other organizations (such as CHL in Egypt, CBAIC in Indonesia and AED in Asia), and at the international level UNICEF has been the leader in communications on HPAI awareness and human exposure risk reduction. There was some variation from country to country as to the level of engagement of FAO, ranging from strong involvement and good consultation to poor consultation, but overall there was a feeling by FAO staff that this was an area where the Organization needed to be more involved. FAO has often struggled to influence the technical content of messages emerging, with the result that certain emerging messages were deemed to be inappropriate. In addition, in some countries the NGO activities have also been funded by USAID, resulting in what might be seen by some as competitive initiatives.

Regarding the former, FAO staff were also inclined to focus more on these aspects, particularly in awareness raising activities in rural settings using the infrastructure and other partnerships developed through other FAO-led activities (for example, using government and private sector staff involved in active surveillance) as primary mechanisms to reach poultry producers and support behavioural change. The RTE2 team was impressed with the quality and innovative nature of the activities and the materials developed in Cambodia, Laos and Indonesia. In the Cambodia report, the second RTE2 team recognizes the great efforts by FAO in its communications programmes, citing that these have undoubtedly resulted in an increased awareness of HPAI, of how to reduce human risk of infection, and of how to reduce the risk of exposure to poultry through biosecurity; nevertheless, as reported in Knowledge, Attitudes and Practices (KAP) surveys, and from the RTE2 team observations, there appears to be an astonishingly wide gap between knowledge-belief of people and practice at all levels (vendors, middlemen, farmers, etc).

FAO has tried to remedy this situation with greater emphasis on biosecurity in the farm. At present biosecurity is seen to be paramount for reducing virus load in the growing smallholder commercial sectors in endemic countries such as Egypt, for example. It would be going too far to say that the efforts of FAO and others have so far been a complete failure in inducing behavioural change, but it does look as though more innovative and aggressive strategies will be required. First amongst these must be seeking appropriate incentives, and second must be the more effective engagement of the private poultry sectors and the various private veterinary enterprises more closely in the process. Some

very valuable proposals emerged from the Bangkok workshop, where the participants identified behavioural change along the poultry value chain as a priority for FAO. Participants called for innovative development of demand-led quality along the poultry value chains, supplemented by a “carrot and stick approach” to developing, understanding and exploiting incentives (through money, convenience and reputation) and regulatory requirements at different levels.

Risk of human disease

In some endemic countries (notably Egypt) the main concern expressed by the major donors was that outbreaks in poultry were not being detected (and contained) early enough to prevent human infection. An example often brought to the RTE2 team in Egypt was that human disease has been seen as a sentinel for disease in poultry. This observation raises several issues. It indicates that the surveillance in poultry populations by governments has been grossly inadequate, it suggests that the principle mode of transmission between poultry and humans has not been fully established, and it also suggests that any biosecurity and poultry handling messages are either not getting across, or are not resulting in the necessary behavioural changes. There has been a number of studies of the interface between poultry and human cases of HPAI (Hien et al., 2004; Dinh et al., 2006; Ly et al., 2007; Vong et al., 2006; Dudley, 2009; Minh et al., 2009²¹; Rabinowitz et al., 2009²², and a review by Van Kerkhove, 2009²³). While realizing that there has been an inadequate number of cases, coupled with inadequate data surrounding the circumstances of the different cases, to undertake powerful epidemiological analyses of the risk factors involved, if at all possible more should be gleaned from better case and outbreak investigation, traceback and trace forward, than is being done at present to prevent the relatively few cases of HPAI that are occurring in humans. The only area in which there has been behavioural change appears to be in families and communities in which fatalities have occurred. Surely this is an area that warrants a review of what has been achieved to date, and potentially for greater collaboration between FAO and WHO, and particularly for the regional ECTAD in Bangkok given the prevalence of human cases in Asia.

Vaccination

Vaccination is an important tool in the inventory of measures available to control HPAI in poultry, and to reduce risk of disease in humans. After initial conceptual resistance to use of vaccination to control HPAI in some quarters, the international community accepted that a properly managed vaccination programme could be used as a tool to assist in the control of

²¹ Minh, P., Morris, R.S., Schauer, B., Stevenson, M., Benschop, J., Nam, H., Jackson, R. 2009. Preventive Veterinary Medicine, 89, 16-24.

²² Rabinowitz, P., Perdue, M., Mumford, E. 2009. Contact variables for exposure to avian influenza H5N1 virus at the human animal interface. Zoonoses and Public Health,

²³ http://www.hpai-research.net/docs/Working_papers/WP10%20_2009.pdf

H5N1, and reduce the massive culling of poultry that was affecting the nutrition and livelihoods of small-scale and backyard poultry sectors. Of the countries included in this evaluation, it has been deployed in Côte d'Ivoire, Egypt, Indonesia and Vietnam. It is in Vietnam where it has been most extensively applied as a national strategy, and in general terms this has been considered to have been valuable. However, there have been major difficulties in terms of funding, logistics and understanding in achieving optimum results from vaccination programmes on a country wide scale in most countries using vaccination. The main problems have been:

- countries and producers putting too much emphasis on vaccination, without corresponding improvements in farm management, movement control and biosecurity;
- achieving an adequately high level of immunity throughout the year in poultry species with short generation times, especially with government programmes using mass vaccination 2 or 3 times per year;
- developing adequate vaccination protocols, cold chain issues and logistics relating to delivery of efficacious vaccines to birds; and
- developing a workable auditing system to assess effective vaccine delivery and the level of vaccine coverage of the population.

With the epidemiological data implicating grazing duck flocks in the persistence and transmission of H5N1 viruses, the need for improved vaccination protocols in ducks has also been identified as an area of research needed to reduce the risk of silent infection and shedding from duck flocks. Additional concerns have related to the level of protection provided by existing H5N1 vaccines as the virus undergoes genetic and antigenic change. Certain H5N1 viruses in China and Indonesia have evolved so that existing vaccines were not fully protective. Laboratories in Vietnam have shown that the current vaccines were still protective against all the strains currently isolated in the country, but the matching of vaccines and diagnostic PCR reagents with newly evolved H5N1 viruses will be an ongoing issue for H5N1 HPAI control by vaccination.

In some countries visited (Vietnam, Egypt, Indonesia and Bangladesh), FAO is involved in strategic discussions to modify approaches taken to vaccination. In Vietnam, strategic research has started to evaluate moving away from mass vaccination (a process which has already occurred in some provinces) to more targeted and better managed vaccination strategies appropriate to different poultry sub-sectors and perceived levels of risk. In Bangladesh, where vaccination was strongly opposed initially by government and the poultry industry, following the disease becoming endemic there has been increased interest in the strategic use of vaccination by both industry and government if the level of disease increases during the winter months in 2009-2010. In Indonesia, the OFFLU project has assisted Indonesia to develop vaccines efficacious against currently circulating field strains,

including the development of a master seed for a novel reverse genetic vaccine based on a recent Indonesia field isolate.

FAO is in the best position to provide technical advice to governments on HPAI vaccination in poultry, but it is also essential that FAO communicate and collaborate with other research groups and institutions working on these problems to ensure that they have the best consolidated advice on vaccination to provide. The RTE2 team was concerned that communication and advice from other groups working on HPAI vaccination in the various regions (such as PANVAC in Africa) were not being considered adequately.

Poultry population database/farm or unit registration

In three countries visited there were schemes underway to develop a farm/unit registration system (Bangladesh, Côte d'Ivoire and Egypt). The examples of Egypt and Bangladesh are quite contrasting. In Egypt, the criteria set out for successful registration and licensing were largely beyond the reach of the sector 4 poultry owners, and difficult even for those in sector 3 (including an 8 m long and 80 cm deep dip for cars, for example), with the result that an estimated 80 percent of producers are unlicensed, and the criteria has created a disincentive to the registration process. The FAO programme in Bangladesh is embarking on assembling an ambitious geo-referenced database of all poultry establishments in the country (Geospatial referencing of commercial poultry farms and live bird markets in Bangladesh, supported by SFERA funds), which if successful should prove extremely valuable. This activity has also been applied in Indonesia, and is seen as an innovation worthy of broader application. The key appears to be ensuring effective engagement of the private poultry sector actors through incentives.

Control of live bird markets and slaughter practices at markets

Live bird markets are a documented source of HPAI virus dispersal. They are also an integral part of poultry marketing in many countries of Africa and Asia, often for the overwhelming benefit of smaller producers and poorer consumers, but in some countries for a wider range of both. The countries visited displayed a variety of responses to the risks associated with live bird markets, ranging from virtually nothing (in markets visited in Cambodia and Nigeria), to organizing groups of sellers and modern cages for poultry (markets around Abidjan in Côte d'Ivoire), to early restructuring and construction of separate facilities for slaughter from open market areas (in a market visited in northern Nigeria and in pilot markets in Bangladesh), to a project to develop a model wholesale market (Ha Vi near Hanoi in Vietnam), to completely banning live markets from cities (with Ho Chi Minh City in Vietnam, and progressively in Jakarta, Indonesia), and to national bans on live bird markets by decree (in Egypt). The issue of live bird markets is a complex mix between human and poultry health and food safety, associated with HPAI and a broader group of infectious diseases and public health concerns, as well as livelihoods, customs and traditions, socio-

economic status and the role of poultry as a source of protein. It seems that this is therefore an area where FAO could perhaps play a more meaningful strategic advisory role, pulling these different issues together and setting out models which build on experience gained from the different countries in which FAO has been involved, and setting out guidelines, or minimal and optimal standards.

Industry restructuring

Several countries visited by the RTE2 team (particularly Indonesia, Egypt and Vietnam) have been contemplating the restructuring of their poultry industries in the past five years as an element of their disease control policies, linked to aspirations of improvements in food safety standards. FAO has developed some initial thoughts on this (see for example Thieme and Guerne, 2007²⁴), basically centred on the model proposed in Vietnam.

The evaluation of the PDSR programme in Indonesia found that not enough attention had been given by FAO to engaging with the private sector. Given the widespread mistrust prevalent between public and private actors, discussions on ways to implement this component (i.e. number IX) and other activities of the NSWP were to be brokered ideally by an external neutral partner such as FAO. FAO and Indonesia have learnt from this inadequacy, and the evaluation team understands that FAO is now taking the lead in facilitating the development of a National Poultry Quality Improvement Programme (NPQIP) with the poultry industry to provide a sustainable and effective framework for collaboration amongst the various poultry sectors and public sector agencies, focused on improving the industry as a whole. In Vietnam, there has been much discussion and many interpretations of proposals for the restructuring of the poultry industry, and the concepts among stakeholders have evolved over time. FAO has provided advice to the lead government entity, the Department of Livestock Production (DLP), and should continue to do so with a view of making sure that all types of producers are consulted and their needs and views are taken into account in the final proposal.

The RTE2 team recognizes that FAO launched a public private partnership programme (OSRO/INT/805/USA), but considers it is too early to properly assess this.

Conclusions

- FAO has placed considerable importance on the role of a set of prevention tools including biosecurity, vaccination, communication and awareness, among other tools.
- Messages on biosecurity are plentiful; behavioural changes in target audiences are scarce.

²⁴ O. Thieme, E. Guerne. April 2007. Poultry Sector Restructuring for Disease Control: Initial Thoughts

- While industry restructuring is identified by many as a requirement for future safe poultry products, there is a variety of interpretations of what it implies, and very few practical strategies on its wider adoption emerging.

Recommendations for the “Disease prevention” pillar

- 1. Moving biosecurity from theory to practice.** It is recommended that FAO take stock of the wide gaps between the quantity and in general terms the quality of messages that have emerged from FAO and other partners on biosecurity at the farm, the live bird market and the household levels, analyse the contributions to these gaps, and develop an updated and longer-term plan, ideally incorporating the generation of empirical evidence on options for the future reduction of infection risk in these three key settings.
- 2. Continued need for understanding of human disease risk reduction.** It is recommended that FAO, in collaboration with WHO and other partners, undertake a review of what has been achieved to date in discerning the risks of human infection in endemic countries, and make recommendations on the conclusions reached and the studies required to update current understanding
- 3. Continued need for understanding of the roles of vaccination.** It is recommended that FAO continue to update its strategic recommendations on vaccination against HPAI, taking into consideration how it might be added to the intervention options portfolio of countries currently choosing not to vaccinate, and how its effectiveness can be judged from experiences in countries where it has been used
- 4. Sustaining and enhancing communications capacities.** It is recommended that FAO enhance its partnership with other organizations working on communication activities in the field, particularly taking advantage of its recognized technical expertise, and, when and where appropriate, take a lead role in information, education and communication activities at farm level, particularly in settings where such activities can be complemented with disease surveillance and biosecurity work
- 5. From industry restructuring to safe integrated poultry production and marketing.** It is recommended that FAO take a strategic lead role in evaluating future poultry enterprise development options that build on the high demand for safe poultry products, on the need for greater biosecurity, marketing and processing innovations, on the exclusive roles that poultry play in livelihoods and food security, and on the need to reduce the global risks from influenzas.

5. Interface with Global and Regional Programmes

The RTE2 was tasked with reviewing the contribution of selected programmes managed from headquarters, including the Crisis Management Centre – Animal Health (CMC-AH), the

Global Early Warning and Response System for Major Animal Diseases including Zoonoses (GLEWS) and the Joint OIE/FAO network of expertise on animal influenza (OFFLU) to national programmes in the field. Contributions from other technical units at headquarters (such as the communication group and TAD Info), as well as the effectiveness of research and technical expertise on wildlife at country level, have been commented on earlier in the report.

The RTE2 team was also tasked with reviewing the contribution of regional programmes to national capacity building and information-sharing, and assessing the roles played by the (sub-) regional ECTAD units in the areas of their mandate.

a) Crisis Management Centre – Animal Health

The CMC-AH is the “rapid response platform” of FAO’s ECTAD, established in October 2006 to enhance FAO’s ability to help member countries prevent and cope with disease outbreaks. Since its inception, and up to June 2009, the CMC-AH has fielded 37 missions, out of which about half (19) have been on HPAI. Two countries visited by the RTE2 team benefited from CMC-AH missions: Nigeria and Bangladesh. Côte d’Ivoire received separate support from staff in CMC-AH.

While the CMC-AH was originally set-up for HPAI, its activity base and mandate have expanded, and this now constitutes the minority of rapid response activities. The team was informed that in 2009 the CMC-AH conducted 5 rapid response missions and deployed two follow-up missions to non-HPAI disease situations across nine countries. During the same period it provided just one response for HPAI and logistical support for another.

In Bangladesh, a CMC mission was fielded soon after the first reported outbreak. The mission’s main recommendation was to develop a consistent and comprehensive approach through the design of a Strategic Framework for HPAI Prevention and Control... to allow coordination of all control activities and actions of stakeholders and donors. This was followed up by FAO through the preparation of the avian influenza Operational Plan in June 2007. In Nigeria, the stakeholders met did not provide the team with feedback on the CMC mission conducted in February 2007. Interventions in Côte d’Ivoire were said to have been timely. As highlighted in the respective reports, CMC-AH activities in West Africa (in Ghana, Togo and Benin in 2007 and early 2008) were conducted in close association with the sub-regional ECTAD Bamako office, and a particularly close collaboration of FAO headquarters, regional and country teams and authorities was noted by the RTE2 team during the suspect case in Côte d’Ivoire.

b) Joint OIE/FAO network of expertise on animal influenza (OFFLU)

OFFLU is the joint OIE/FAO network of expertise on animal influenzas, established in 2005 to support international efforts to monitor and control infections of avian influenza in poultry and other bird species, and to share biological material and data to provide input to the

early development of human pandemic vaccines (i.e. interface with WHO). This joint OIE/FAO body supervises the maintenance of the OFFLU website containing detailed analytical information on genetic and antigenic characteristics of H5N1 and other relevant influenza viruses.

The RTE2 team was asked to review whether OFFLU data exchange and technical expertise have improved national capacity for laboratory diagnosis, vaccine efficacy and development. The team noted that in several countries OFFLU has been a major contributor to the provision of technical advice on biosafety guidelines, and to coordination activities for FAO and OIE AI/ND reference laboratories. OFFLU has also supported the building of country and regional AI laboratory and epidemiology networks in Africa and Asia, the coordination of training for these laboratories, the provision of AI laboratory proficiency testing systems in Africa and Asia, and supplying experts for multidisciplinary missions to member countries. The enhanced laboratory and epidemiology systems in place as a result of H5N1 were shown to be particularly useful for new animal influenza surveillance when the H1N1 2009 influenza pandemic commenced. OFFLU has also been active in the development of genetic analysis and antigenic profiling of H5N1 viruses in Nigeria, Indonesia and Egypt. In the latter two countries, this effort has been to enhance H5N1 AI vaccine strain selection. This is the process followed by a well resourced network of WHO influenza laboratories which results in new human vaccine strains every 6 months. There would be some concern, however, if this was being advocated routinely for poultry H5N1 vaccines. This is unlikely to be economically feasible for low-cost veterinary vaccine manufacture, and it may not be necessary for poultry vaccines given with oil-in-water adjuvants, which show greater cross-protectivity than human influenza vaccines.

c) Global Early Warning System for Major Animal Diseases (GLEWS)

GLEWS was originally established as a disease intelligence group within EMPRES. It has now grown and become a joint FAO/OIE/WHO initiative that aims to improve early warning and response capacity to animal disease threats of the three sister organizations. Information from various disease intelligence sources is assessed daily by GLEWS and other ECTAD staff and fed into effector arms of ECTAD and to the CVOs of relevant countries through partners in OIE. Mechanisms of information dissemination are the daily update report, ECTAD HPAI Situation Update and H5N1 HPAI Global Overview Reports produced by EMPRES/GLEWS. It has recently launched a website for easier dissemination of public products and reports.

The in-country FAO staff take an active role in reporting to GLEWS and generally have appreciated the data fed back from EMPRES/GLEWS. FAO might further explore the opportunity of strengthening and then involving the Rome-based GLEWS epidemiology staff in leading the improvement of country-level epidemiological data, analysis and use.

d) Regional programmes

As reported by the First RTE, the FAO regional programme at its initial stages (2004-07) consisted mainly of TCP projects aimed at engaging with countries and regional organizations through networking of relevant government veterinary services and laboratory representatives. These networks have largely continued to function, thanks to the mobilization of additional resources and the establishment of ECTAD units in Tunis, Bamako, Nairobi, Gaborone, Kathmandu and Bangkok.

The regional networks have been used by FAO (chiefly ECTAD Bamako) to conduct capacity building activities and promote exchange of information and regional collaboration. The RESOLAB network in West African is probably the most active seen by the RTE2 team, but as noted in the ECTAD Bamako report there is still an absence of buy-in and ownership from countries as the network still requires further FAO championing and promotion. The case of southern Africa is perhaps exemplary and a possible model for the others, as the ECTAD regional programme is implemented with and through the Southern African Development Community's (SADC) Livestock Unit.

After a relatively late start, ECTAD Nairobi and ECTAD-RAP are both moving firmly in the same direction in support of regional trade blocks, such as the East Africa Community and the Association of South East Asian Nations, respectively. ECTAD Tunis has also made progress in this aspect, being the only one with a Memorandum of Understanding with a regional body, the Maghreb Arab Union (UMA in French), which was signed in February 2008 to coordinate respective activities in the region, while discussions are ongoing to formalize FAO support to UMA's permanent veterinary commission.

As noted in the reports of the RTE2 team visits to ECTAD Bamako, ECTAD Nairobi and ECTAD-RAP, these units have played a very relevant role in the formulation, coordination and sometimes implementation of regional and national projects in countries under their responsibility. These units have also made some initial progress in advocating and mobilizing resources for diseases other than HPAI. This progress, however, is not yet firmly grounded. Activities are still heavily dependent on the availability of HPAI-related funds including those from SFERA. Interest from countries in a regional approach has not yet been translated into greater ownership and championing of the approach by regional bodies or countries themselves. There remain serious financial and institutional issues, particularly in Africa where the lack of funds for diseases other than HPAI and the delays in finalizing the agreements with African partners (such as OIE, AU-IBAR, sub-regional trade blocks and donors), have prevented the full operationalization of joint Regional Animal Health Centres.

The RTE2 team considers that ECTAD Rome and ECTAD at (sub-) regional levels also need to develop some criteria for the prioritization of their support; in doing so, attention should not only be given to the current size of the programmes or the disease situation, but also to

the potential needs for motivation and support especially when there are social, cultural and political environments that are not conducive to effective provision of assistance.

Conclusions

- The (sub-) regional ECTAD units play a valuable role in backstopping country programmes, in coordinating regional networks, and potentially in assisting with preparation of fund raising proposals.
- It will be important for their continued credibility and comparative advantage that the (sub-) regional ECTADs be staffed by the highest possible calibre of expertise.
- It will be important that the (sub-) regional ECTADs have well articulated visions, missions, strategic goals and budgeted programmes which are used to good effect in seeking sustainable funding for their existence.
- It is essential that the (sub-) regional ECTADs take a broad view of their disease mandate, building on the concepts of the Global Framework for the progressive control of transboundary animal diseases (GF-TADS), but also considering priority constraints to the countries within their regions.

Recommendations for the global and regional programmes

1. **FAO should develop a set of criteria for prioritization of global and regional support to countries:** the support should be aligned to country-level strategic programmes and work plans and go beyond individual project responsibilities; given the importance of women in poultry production, “greater impact on gender equity” must be one of the criteria to be included (see discussion below).
2. **Regional roles:** FAO should take note of the increasingly important roles of sub-regional and regional ECTAD units, and potentially multi-institutional RAHC, in supplementing the funding opportunities for these units, through multidisciplinary initiatives such as the OWOH initiative, while strengthening their technical and operational capacity.

6. Operational management

In reviewing the operational management of FAO national programmes, the RTE2 team has focused on the following areas: programming, financial resources, human resources, procurement, partnerships and gender aspects. Under a separate heading, the team also presents a summary assessment of the overall efficiency of programme management.

a) Programming

At the global level, FAO has developed a number of programming documents since the initial appearance of the disease; the most relevant have been the joint FAO/OIE Global

Strategy for the Prevention and Control of H5N1 Highly Pathogenic Avian Influenza, and the associated FAO Global Programme for the Prevention and Control of H5N1 Highly Pathogenic Avian Influenza (last revised in October and February 2008, respectively).

The RTE2 team has studied these documents, and finds them valuable living documents that have provided, and can continue to provide, overall guidance for global operations and fundraising (see section below); their regular revision is important. In view of the particular focus of the evaluation on country-level assistance, the RTE2 team is not in a position to provide a detailed assessment of the overall effectiveness of these global programming tools. It has, however, made use of some of the M&E elements (such as the list of country-level outputs and outcomes found in section four of the Global Strategy, and the outputs listed in the logical framework of the Global Programme) in their assessment.

The RTE2 notes that the programmatic approach developed by FAO for HPAI has in several ways been innovative for the Organization. More recently, and building on the HPAI experience, FAO has developed a Food Chain Crisis (FCC) Management Framework²⁵ which links prevention and early warning with response capacities within FAO for animal health, plant health and food safety issues.

At the regional level, the RTE2 finds that strategic programming has been high on the agenda of FAO. Regional Strategies for Africa and Asia were prepared in 2006 and assessed by the First RTE. The ECTAD unit in Bamako and ECTAD-RAP in Bangkok have both developed regional strategies and associated work plans that have largely guided the work of the Organization at the regional level. The RTE2 was informed that other ECTAD regional units have been asked to prepare regional strategies, and commends this move.

As previously discussed, country level work has tended to be more opportunistic²⁶, particularly in those countries where FAO had no strategy of its own. In some countries, FAO has tried to address this issue supporting the development of FAO National Medium-Term Priority Framework (NMTPF) and through the development of sectoral NMTPFs for Animal Health called National Medium-Term Priority Plan (AH-NMTPP).

ECTAD staff has actively contributed to the preparation of NMTPFs in countries such as Afghanistan, Burundi, Democratic Republic of Congo, Indonesia, Iran, Nigeria and Zambia. AH-NMTPPs have been prepared in countries where animal production is a priority, in line with national and regional strategic documents, co-owned by Government and FAO, defining priorities and proposing costed concept notes, supported by a strategy. AH-NMTPPs (2009-2011) for the Democratic Republic of Congo, for Burundi and for Rwanda were signed in January 2009. AH-NMTPPs for Benin, Côte d'Ivoire and Togo as well as for Bangladesh, Indonesia and Vietnam are reportedly under negotiation.

²⁵ Food Chain Crisis Management Framework (September 2009)

²⁶ The RTE2 noted that the quality of proposals developed at country level have improved over time, moving from a generic template to more detailed project proposals that in some cases included logical frameworks.

The RTE2 team found that the HPAI-NMTPF in Nigeria was instrumental in developing a more focused and jointly agreed approach for FAO support on HPAI. The RTE2 team was not able to establish the relevance and effectiveness of the NMTPFs and NMTPPs developed for other countries, but an ongoing strategic evaluation of FAO country programming including the NMTPF mechanism managed by OED will likely assess these programming tools in more detail.

b) Financial resources

In reviewing the operational management of FAO HPAI programme, it is important to realize that this is probably the largest livestock programme ever implemented by FAO, with over 160 projects and 33 donors and currently operational in practically the whole world. The allocation of HPAI funding by regions during the period 2004-2009 was as follows.

Table 2. FAO HPAI Programme Budget and contributions received as of October 2009

Region	Total Budget (in US\$)	Contribution received
Asia and the Pacific	152,695,069	112,478,354
Africa	48,571,610	41,770,272
Interregional Activities (including SFERA & CMC-AH)	47,905,301	44,641,125
Middle East and North Africa	20,910,502	14,200,614
Central Asia, Europe, Latin America	12,317,179	10,547,932
TOTAL	282,399,661	223,638,297

FAO success in mobilizing funds at the global level masks the constraints faced to fund more substantial responses in countries like Egypt or Bangladesh; it also masks that the nature of the funds available were largely of a short-term nature, and that the peak in annual contributions was reached between 2007 and 2008. External funding for the HPAI global programme is now expected to wind down in 2010, which will primarily affect regional and national programmes in unaffected countries that have not been able to attract longer-term and earmarked funding and expand their donor base.

The rapid expansion of the programme caught some FAO financial units at regional and country offices ill-prepared, with some field offices lacking the experience, manpower and capacity to monitor effectively the delivery of funds. This was the case in Indonesia and most other Asian countries. The intensive training and support provided to financial units at country level, coupled with the strengthening of the operations units in regional (such as Bamako and Bangkok) and country level ECTADs, have largely solved the capacity issues related to financial monitoring and reporting. In some countries, there are however still major financial reporting requirements as a result of the spectrum of donors and funding modalities involved. In the view of the RTE2 team, further streamlining and efficiency

savings could be realized if donors were to make more use of SFERA as a funding mechanism.

c) Human resources

An important element of FAO's field programmes is inevitably good in-country leadership. The RTE2 found that the current leadership in all countries visited was sound, providing the appropriate balance between technical knowledge, management skills and communications skills. The RTE2 team lauds the recent efforts made by FAO to recruit senior staff²⁷ for CTA positions from the broad region itself in a competitive manner. This approach has been actively exercised by the ECTAD-RAP manager in Bangkok, and although less proactively it was also noted in Africa and the Near East²⁸.

An issue that was noted in Bangladesh, Vietnam and Indonesia, and reported in several countries in Africa, was the absence of performance evaluation measures with a feedback loop, which could eventually lead to staff development, continuity or even promotion. Another aspect of human resources management that FAO tended to underestimate was related to the interface between international staff and a sometimes large number of national actors at various levels. The RTE2 team was informed that in a relatively high number of cases staff left their positions due to conflicts with stakeholders and due to the often limited duration of contracts being offered.

d) Procurement

The RTE2 team was informed of serious delays relating to the procurement of vehicles in Indonesia, but apart from this case, there were no other concerns in this area. The RTE2 team noted that FAO has applied lessons from other emergency interventions (such as the use of Letters of Agreements with governments for sub-contracting field work) and developed some innovative mechanisms such as the regional banks of laboratory reagents in southern and West Africa to facilitate restocking.

e) Efficiency of programme management

Efficiency is a function of the efficiency of FAO's central and regional activities (Rome and the regional ECTADs), and the interface between FAO and governments at the national level. In all countries visited there had been delays of some kind, some on relatively minor issues, some on major projects, some as a result of government inefficiencies, some as a result of FAO approval delays, and many a result of delays or inefficiencies on both sides. However, in virtually all cases, the efficiency of activities had progressively improved. A major contributor to the improvement in efficiency at country level has been the

²⁷ The six long-term technical consultants recruited for projects in the Asia region in 2009 have all come from the region itself.

²⁸ FAO national HPAI activities in Côte d'Ivoire, Ethiopia, Kenya and Uganda were all led by nationals of these countries. Programmes in Nigeria and Egypt are led by nationals from the Africa region.

appointment of operations staff in country programmes, in some cases complemented with the fielding of administrative and finance officers, allowing the CTAs to concentrate more fully on technical and strategic issues.

Given the intensive work schedule in all countries, there is arguably inadequate time spent on regular broader strategic thinking and planning to question the effectiveness of activities in place, to discuss efficiency and effectiveness, and to adjust programme activities accordingly. Although FAO headquarters has made some efforts to strengthen the links between veterinary technical, socio-economics, production and communication activities, there is still substantial room for improvement, and particularly at the country level where differences in understanding and uptake still exist.

f) Partnerships

FAO country programmes have developed many partnerships with and beyond the government stakeholders in each of the visited countries. These are important if FAO is to play a leadership role, and generally FAO programmes have done this well. In all countries there has been a progressive improvement in the engagement of partners. Related to issues of pandemic preparedness, however, the entry of H1N1 has altered the balance between FAO and WHO in several countries (such as Cambodia), and with all the other activities and responsibilities of FAO in country staff, there will be an inevitable tendency for FAO to delegate to WHO, or in the case of Vietnam to the overall UN coordination unit, but it must ensure that its engagement continues.

The RTE2 team found that partnerships between FAO and other research and development agencies were sometimes lacking. There were examples of very sound linkages; in the case of the partnership with CIRAD on the role of wildlife in West and central Africa, collaboration was very effective. In some cases, however, these were not as strong as they might be at the country level. Specific examples include the interface with the DFID-sponsored IFPRI led programme, particularly in Nigeria, with the Massey University and ACIAR projects in Vietnam. In other cases, such as with ILRI in Egypt and Indonesia, collaboration was more effective, but not without complications. The RTE2 team also considers that FAO would benefit from engagement with a wider range of research and development partners in pursuing sound evidence-based policies and strategies.

By far the largest single gap in partnerships is with the poultry private sectors. This was more obvious in countries with a progressively important industrial sector (Indonesia, Vietnam, Bangladesh and Egypt). The RTE2 team has recommended that FAO step up its support to government in the engagement of the various components of the poultry private sectors in general recommendation 5.

g) Gender aspects

The RTE2 team sees gender aspects in the response to HPAI at two different levels; one, at the level of targeting women poultry farmers and other players in the poultry value chains through training and other field activities, and second, at the level of staffing in FAO.

The links between household and smallholder commercial poultry production and gender are well known. Throughout the world women in rural areas tend to take care of the household, and with that comes the responsibility authority for small livestock species such as poultry, pigs, ducks, etc. The endemicity of HPAI in countries like Egypt, and the role women play in handling, marketing and slaughtering has disproportionately affected women (over 70 percent of human cases have been women). FAO has developed a concept paper on gender and socio-economic issues in avian influenza control, completed in March 2006, and conducted socio-economics studies that incorporated gender aspects (in India, Indonesia, Cambodia and Laos). FAO, together with the Ministry of Agriculture and Rural Development (MARD), has also conducted gender analysis in poultry production in Vietnam with a view to better targeting control measures. These studies and related research have provided greater insights, but with the exception of Cambodia and Indonesia they have apparently not led to discussions or changes to FAO advice in the field.

Regarding gender equity in staff, the RTE2 team was pleased to see a relatively high number of women working for FAO in the field (as CAHO in Egypt and PDSR officers in Indonesia) but also in positions of greater responsibility (such as CTAs and regional project co-ordinators). Nevertheless, there is still much progress to be made to reach job parity particularly in senior positions. In Bangladesh, the RTE2 team learned of the 20,000-strong all-women team of field workers assembled by BRAC to better reach women poultry producers, and recommended stronger engagement with BRAC.

The RTE2 team was informed of recent efforts at ECTAD-RAP to monitor the effectiveness of capacity building activities on women. This included receiving data on trainings conducted, disaggregated by the gender of beneficiaries. The mission was told that due to problems with the quality of the data, it has not been possible to undertake an analysis of this data. No other FAO initiative with a specific focus on gender aspects was apparently ongoing at the time of the RTE2.

Conclusions

- The programmatic approach developed by FAO for HPAI has been valuable to guide global and regional operations and fundraising, and has in several ways been innovative for the Organization. FAO is currently involved in several initiatives at the global level (such as the OWOH) and has recently developed new programmatic frameworks and tools (such as the FCC, NMTPF and NMTPP) which would merit further review.

- FAO success in mobilizing funds at the global level masks severe limitations to fund activities in some endemic countries. It also masks that funds were mostly of a short-term (emergency) nature and often earmarked for specific activities or countries. Partially as a result of this, there has been a slow pace of evolution from emergency to broader responses that capitalize on investments made to tackle other transboundary, emerging and endemic disease threats.
- The technical expertise, leadership and commitment of FAO country and regional staff are a major asset of the programme; management of human resources, from staff selection, mentorship and performance evaluation have, however, not always been adequate. Some of these issues are now being addressed at the corporate level as part of the ongoing reform of FAO, while others, more specific to emergency settings, are being reviewed following a management study of FAO's operational capacity in emergencies.
- Efficiency of programme management has in some cases been affected by delays and constraints on the part of FAO but also of governments; a major contributor to the improvement in FAO's efficiency has been the appointment of operations staff at the country level which was complemented with other administrative expertise when needed.
- The increased efficiency of programme management has yet to be translated into broader strategic thinking and planning of activities that effectively link the veterinary and non-veterinary components of the FAO HPAI programme; there is still substantial room for improvement, and particularly at the country level where differences in understanding and uptake still exist.
- FAO has built strong relationships with many partners including government, donors and regional and country-level institutions, but there have been some significant gaps, particularly in engaging with the poultry private sectors. FAO would also benefit from engagement with a wider range of research and development partners in pursuing sound evidence-based policies and strategies.
- There has generally been very limited engagement with the private poultry and animal health sectors which has hindered programme implementation and effectiveness.
- FAO has attempted to incorporate gender equity issues in the overall HPAI response, particularly in south East Asian countries. It has also lately tried to hire staff taking into account gender considerations. There is still much progress to be made in targeting field activities to the right recipient (gender-wise) and to reach a satisfactory level of job parity within FAO particularly in senior positions.

Recommendations for operational management

- 1. Flexible funding mechanisms such as SFERA should be made more use of by donors.**
Donors should be encouraged to utilize the SFERA pool funding mechanism rather than setting up individual projects, and to accept greater use of such funds for preparatory and follow-up work at the country level. Building on the important role played by SFERA in the HPAI response, it is recommended that an **“animal health” SFERA programmatic window be opened** and contributions made by the donors. Such a window would also enable the CMC-AH to continue to provide timely responses to requests for assistance made by member countries, and for FAO in general to broaden the scope of the response and ensure the required follow-up activities.
- 2. Improve management of human resources,** including greater use of pooled funding for human resources, procurement, etc. This type of funding should allow for consolidation, continuity, and more efficient and flexible use of resources. FAO should also consider mainstreaming its current policy in Asia of selecting staff, which takes into account not just technical but also geographical, managerial and cultural expertise as well as capacity building and gender considerations.
- 3. Make greater use of FAO HPAI staff collective expertise,** enhancing internal communications and learning and promoting stronger engagement with, and feedback from, units other than AGAH or TCES as appropriate; achievement of this recommendation will also help in mainstreaming the HQ-led drive towards multidisciplinary particularly in regions/countries with lower availability of broader technical expertise.

7. Broader outcomes of FAO’s interventions

The RTE2 team has summarized in the previous sections its findings, conclusions and recommendations of FAO’s work on HPAI. Below the RTE2 team provides a general assessment of FAO’s work on HPAI using the FAO/OIE global strategy outcome targets as well as brief assessments of the broader outcomes of FAO’s interventions at country level in contributing to the four interrelated goals below:

- Prevention and control of HPAI;
- Broader disease surveillance;
- Pandemic preparedness; and
- Longer-term agricultural development, economic growth and poverty reduction.

a) Prevention and control of HPAI

The FAO/OIE Global Strategy lists 11 country-level outputs and outcomes of the global programme that should be achieved within 2 years of the response. Below is a table summarizing the RTE2 team rating (from 1 - not achieved, to 5 - fully achieved) based on the accompanying country and regional reports and the workshop proceedings.

Table 3. Summary table with ratings to FAO/OIE Global Strategy outcomes and outputs

Expected Output/Outcome	Rating
1) All countries with endemic/entrenched infection and recently infected will have developed and started implementation of appropriate longer-term plans for management of H5N1 HPAI, which will include strong communication components and will incorporate milestones and review points.	3
2) Recently infected countries will have eliminated infection, determined reasons for the initial incursion(s) and implemented appropriate corrective measures to prevent further outbreaks in poultry.	2
3) All countries at high risk of HPAI incursion (e.g. those having an infected neighbouring country) will have strong targeted surveillance programmes in place including in wild birds and will have enhanced capacity for early detection and emergency response. They will have revised and tested their emergency preparedness plans and incorporated review points for early assessment of the likelihood of success in eliminating infection using traditional control measures alone and consideration of use of vaccination.	3
4) All countries will be conducting regular risk-based surveillance for HPAI virus circulation and results and virus isolates will be shared with the international community. Systems will be in place at international, regional and country levels to allow updating of vaccine antigens in the event of emergence of significant antigenic variants, in particular in countries using vaccines.	2
5) Detailed, costed plans for strengthening of veterinary services based on OIE-PVS evaluations will be prepared and gap analysis carried out.	2
6) Poultry production and market chains will be analysed and high-risk practices will be identified in all countries. Social, economic and feasibility studies on proposed changes to overcome these problems are completed.	3
7) Epidemiological and socio-economic studies will have been carried out to provide information to support targeted, risk-based vaccination.	2
8) Research on wild birds and on other possible H5N1 hosts as well as on new vaccines will have continued particularly focusing on studies that improve the delivery system.	3

Expected Output/Outcome	Rating
9) Improved public-private partnerships and relationships will be evident between government and the poultry industry.	1
10) Regional and international collaboration on H5N1 HPAI control and prevention will be strengthened with greater transparency in reporting and exchange of information.	4
11) A new “One World-One Health” strategy will be in place to address the main emerging or re-emerging diseases at the human-animal interface. This strategy is implemented through more investment from the governments and international community, with the support for the international organizations in particular FAO, OIE and WHO.	3

Acknowledging some variation between the countries visited, the overall assessment of the RTE2 team is that FAO and its partners have been only partially successful in achieving some of the outcomes delineated in the Global Strategy for HPAI prevention and control. Evidence gathered by the RTE2 team suggests that FAO achievements in areas where global or regional initiatives and collaboration were involved (such as the strengthening of regional and international collaboration and transparency of reporting) can be rated with higher scores (4). Lower scores were assigned to achievements in areas that include integrated multidisciplinary studies (such as socio economy and wildlife research) and the use of such studies for improved (“risk based”) surveillance and control. The lowest score (1) was assigned to the single area that has received less attention from FAO and its partners, which is the limited interaction of FAO with the private sector in endemic countries such as Indonesia, Bangladesh and Egypt.

The RTE2 lauds the inclusion of outputs and outcomes in the September 2008 update of the Global Strategy document, and at the same time suggests that these need to be revisited regularly to ensure that they are being updated with new knowledge, and that they have the appropriate degree of specificity to be useful in monitoring achievements and progress.

b) The impact of HPAI programmes on broader disease surveillance at the country level

There is an argument that HPAI has taken the limelight to such an extreme that it has diverted resources from other priority animal health constraints. On further examination in this evaluation, while it is indeed true that HPAI has stolen the limelight, the issue of diverting resources is more complex. There were very few resources going to animal health initiatives in many parts of the developing world, and the funds for HPAI have changed that situation - and dramatically. This was a unique funding opportunity. However, full advantage of this opportunity to strengthen preparedness and response on a broader scale has not been taken full advantage of.

As documented in the individual country reports, the FAO programmes have built substantial capacity in office, field and laboratory settings for preparedness and response to HPAI. At the institutional level, this has included the preparation and planning of responses, planning and management of programmes, the development of funding proposals, and the implementation of project monitoring and evaluation. At the policy level, it has included issues such as legislation and communications, and support to strategy in areas such as compensation and biosecurity guidelines. At the personnel level, this has included training of veterinarians, technicians, paravets, and community animal health workers of various categories.

All these activities have occurred in an environment of increased funding to, and recognition of, veterinary services. Inevitably, these enhancements, in the form of more people, better trained people, better planning, better communication, better interface between institutions, will have a very positive effect on the generic capacity for broader disease surveillance in each of the countries visited. But importantly, all countries identified other priority disease concerns which have not gone away, or received any renewed attention, since the advent of HPAI.

Other priority livestock diseases identified during the country visits are available in the table below.

Table 4. Priority disease concerns in countries visited by the RTE2 team

Country	Poultry	Pigs	Ruminants
Nigeria	Newcastle disease, Gumboro disease	African swine fever, FMD	FMD, PPR
Côte d'Ivoire	Newcastle disease, Gumboro	African swine fever, FMD	FMD, PPR
Egypt	Newcastle disease, Gumboro disease	N/A	FMD, Ephemeral fever
Bangladesh	Newcastle disease, Gumboro disease	FMD	FMD, haemorrhagic septicaemia
Cambodia	Newcastle disease, Gumboro disease, duck plague	FMD, PRRS	FMD
Vietnam	Newcastle disease, Gumboro disease, duck plague	FMD, PRRS	FMD

Much of the capacity building undertaken in the field services should be relatively easily applicable to other poultry diseases, in particular in terms of surveillance mechanisms and biosecurity principles in the mixed farming systems. However, this will not necessarily be the case for the provision of control measures; Newcastle disease vaccination takes quite

particular mechanisms for delivery and for coordination with the vaccine manufacturers, and while Vietnam with its HPAI vaccination programme may be better placed than most, the lack of consideration of these two diseases together has been a missed opportunity in most countries. The direct applicability of HPAI laboratory capacity to other diseases is not given either. Clearly, general laboratory training, revamping of sample submission protocols and the provision of equipment should be widely applicable, but these capacities are not a panacea for all diseases. For the other diseases of pigs and ruminants, much will need to be done to expand the range of knowledge and understanding to the diagnosis of these, although many of the systems abilities (such as reporting channels etc.) are likely to be broadly applicable.

c) Pandemic preparedness

Investments and capacity development for HPAI have almost certainly had certain impacts on pandemic preparedness, but they are not easy to measure; and surprisingly indicators for them have not been established in most of the countries, despite pandemic preparedness being one of the drivers of support to HPAI. The RTE2 team used the arrival of H1N1 as a surrogate, and probed on how responses had differed to when H5N1 first arrived. In all the countries visited there had been a substantial enhancement of influenza pandemic preparedness planning involving poultry and human health, with multi-institutional committees already in place, and communications channels already established. In addition, there was improved disease surveillance knowledge and capacity that could be applied to other livestock species; enhanced laboratory diagnostic capacity for influenza diagnosis; improved reporting and communication systems; and improved awareness of risks and general availability of personal protective equipment especially for outbreak areas and those investigating the disease. But, as mentioned, much of this is anecdotal as key indicators have not been established.

d) The interface between HPAI programmes and longer-term agricultural development, economic growth and poverty reduction

Preparedness and responses to HPAI were clearly not specifically designed to have broader impacts on agricultural development, economic growth and poverty reduction per se; they were set up with much more specific objectives. Nevertheless, it seems logical to assume that an Organization such as FAO would consider how to ensure maximum relevance to its broader development targets, within the context of the more focused goals of HPAI containment. FAO has strongly and relatively successfully advocated against the extreme mass culling in some countries to protect nutrition and livelihoods of the small-scale and backyard poultry sector. However, it has been slower to advocate for funding partners to support development aspects that could have complemented the emergency response activities and had significant and sustainable capacity building impacts. Examples include enhancing investigation/surveillance, diagnostic and control activities for diseases affecting

livestock enterprises for the small-scale and backyard producers, or involvement of livestock production and socio-economic studies in efforts to improve industry structure and biosecurity. It appears that these issues are now becoming increasingly to the fore.

Conclusions

- The inclusion of short-, medium- and long-term outcomes and impacts in the strategy document is a valuable innovation. It appears that the countries visited are still struggling to achieve many of the short-term outcomes.
- The outcomes listed in the strategy document might benefit from greater specificity in order to monitor progress by countries more effectively.
- HPAI investments have had some impacts on broader disease surveillance and response capacities, and to pandemic preparedness, but clear indicators have not been developed for other priority diseases, and more thought needs to be given to broadening the relevance of HPAI investments.
- The RTE2 team was not tasked to review the role of global partnerships (including the GF-TADs and the OWOH initiatives) nor institutional issues including FAO's management and decentralized structure for HPAI (such as the ECTAD model or the FCC Management Framework); a comprehensive assessment of FAO's contribution to and lessons from these endeavours should be conducted through an independent evaluation that focuses on broader issues beyond HPAI.

Recommendations for broader outcomes of FAO's HPAI interventions

1. Conduct in two to three years' time a **comprehensive evaluation of FAO's contributions to reduced animal disease and associated human health risks** (Organizational Result B2)²⁹ that looks into HPAI and FAO responses to other animal diseases from a multidisciplinary and holistic point of view; this evaluation should ideally be carried out following a stock-taking exercise on the impact of FAO's support to the global response to the HPAI crisis, and take into account progress made in the consolidation of the ECTAD model and the implementation of the FCC management framework.

²⁹ <ftp://ftp.fao.org/docrep/fao/meeting/017/k5831e.pdf>

Final Inception Report: Second Real Time Evaluation of FAO's responses to Highly Pathogenic Avian Influenza (HPAI)

1. Background to the evaluation

- a. **Global investment in responses to HPAI.** As of April 2009, more than US\$ 260 million has been allocated to the FAO HPAI Programme since 2004. Given the size of this investment, a second real time evaluation will help to ensure that appropriate deliverables and outcomes continue to emerge from this programme, and to provide an opportunity to discuss how these might be improved.
- b. **The institutional commitment to organizational improvement through evaluation.** Evaluation in FAO has the dual function of providing accountability for results and facilitating learning from experience. The FAO has an independent Office of Evaluation. The Office brings in carefully selected teams of independent experts to undertake evaluations such as this.
- c. **The changing face of avian influenza and health threats to human and livestock populations.** After a wave of outbreaks of HPAI in many regions of the world, there has been a progressive reduction in the number of countries affected. However, the disease persists in some areas of Asia and Africa, and the disease appears to be endemic in Egypt, Nigeria, Indonesia and Viet Nam. New influenza virus threats (particularly the H1N1 virus) have emerged since the last real time evaluation. It is therefore necessary to assess the relevance and efficacy of response measures in the light of these dynamics.
- d. **FAO's mechanisms of response.** The FAO established the Emergency Centre for Transboundary Animal Diseases (ECTAD) in 2004, which was set up to complement the Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (EMPRES) and strengthen FAO's capacity to respond to highly pathogenic avian influenza (HPAI). A full description of the central and regional units of ECTAD can be found on the FAO website¹. ECTAD is run as a partnership between the technical division of the Animal Production and Health (AGA) and the operation division of Emergency Operations and Rehabilitation (TCE), with overall leadership in the hands of the technical group. The joint venture has identified clear lines of command and the differentiation of roles and responsibilities. This model differs from some other emergency programmes in which the operations branch has overall leadership and coordination responsibility. The ECTAD-managed FAO HPAI programme has currently 159 projects, managing funds from 33 donors, a total budget of US\$ 282 million, employing over 500 staff and covering 97 countries. This presents a major task in terms of administration, finance and logistics. Below the various elements of the central, regional and national level responses managed by FAO ECTAD are summarized.

¹ <http://www.fao.org/Ag/AGAInfo/programmes/en/empres/AH1N1/Ectad.html>

- i. **The Crisis Management Centre - Animal Health (CMC-AH).** This is FAO's rapid response mechanism for transboundary animal disease emergencies. The unit provides technical and operational assistance to help governments develop and implement immediate solutions to prevent or stop disease spread. Key activities include outbreak assessment, control measures, emergency action planning, emergency funding package preparation, communication and compensation policy development, coordination and resource mobilization. The CMC-AH has conducted 20 missions to support 12 countries' early detection and response capacity to HPAI infection in close collaboration with the FAO EMPRES Animal Health programme (out of a total of 39 missions in support of 28 countries responding to TAD occurrence of threats).
- ii. **The EMPRES Animal Health programme and the Global Early Warning and Response System (GLEWS).** The EMPRES Animal Health programme aims to prevent and control diseases at their source. Prevention is at the core of EMPRES since investment in prevention is considered to be essential to secure sustainable and safe animal production. The core EMPRES precepts are: Early Warning (through GLEWS), Early Detection, Early Reaction, Enabling Research, Co-ordination, and Communication. The early reaction component now falls under CMC-AH, but EMPRES staff contribute technically to the CMC-AH in virtually all cases. Plans are in place for the development of a broader focus within EMPRES which includes disease ecology investigations, developing spatial and temporal analysis and other epidemiological tools to enhance its capacity to forecast and influence control of HPAI and other transboundary animal diseases.
- iii. **Activities relating to wildlife and understanding of its role in H5N1 HPAI.** Investigations into the role of wildlife, notably migratory birds, have been conducted under the EMPRES programme and have brought a scientific base to regional assessments. This has included ecological, epidemiological, spatial and temporal analyses on the role of wildlife in H5N1 HPAI, which has entailed collaboration with departments of agriculture, environment/natural resources and health in several countries around the world. Core activities have included capacity building in wildlife sampling, surveillance and spatial and temporal analysis (with provision of telemetry units, supporting manuals and documents), fostering the development of networks (Global Avian Influenza Network Strategy), and co-convenor of the Scientific Task Force in Avian Influenza of the CMS with UNEP. Their analysis has been distributed widely through AIDEnews, EMPRES Watch, EMPRES bulletin and its website, and peer reviewed scientific journals.
- iv. **OFFLU.** OFFLU is the joint OIE/FAO network of expertise on animal influenza, established in 2005 (as *avian*) to support international efforts to monitor and control infections of avian influenza in poultry and other bird species, and to share biological material and data to support early development of

human pandemic vaccines (i.e., interface with WHO). This joint FAO/OIE body supervises the maintenance of the OFFLU website containing detailed analytical information on genetic and antigenic characteristics of H5N1 and other relevant influenza viruses. It has also been a major contributor to provision of technical advice on biosafety guidelines, coordination activities for FAO and OIE AI/ND reference laboratories, the building up of country and regional AI laboratory networks, coordination of training for these laboratories and provision of AI laboratory proficiency testing systems, and experts for multidisciplinary missions to MCs. OFFLU has also been active in the development of genetic analysis and antigenic profiling in Nigeria , Indonesia, and Egypt. In the later two countries, this effort has been to enhance H5N1 AI vaccine strain selection.

- v. **Socio-economics & Poultry Production systems:** The ECTAD Socio-economics & Production unit (at HQ and in the decentralized ECTAD units) addresses issues related to socio-economics, policy and the analysis of farming systems and current trends in value chains at national and regional level for risk based disease management. The unit focuses on the human dimension of the impact of avian influenza on households, livelihoods, food security, markets and biodiversity and the role the private sector can play in controlling the spread of diseases. The unit aims to assist FAO member states by contributing to the understanding of the dynamics of the poultry sector in developing and in transition countries and the strengthening of government capacity to manage HPAI through policy and institutional mechanisms that take account of the socio-economic and institutional environment in which the poultry sector operates; manage the transition between emergency and long term response to HPAI; minimize negative social and economic impacts of disease outbreaks and disease control processes; involve the private sector in decision making processes; reinforce coping mechanisms of poultry producers and others in poultry market chains and promote a more robust and bio-secure poultry sector that sustainably supports livelihoods.
- vi. **Communication:** The ECTAD Communication Unit focuses on: strategic communication thinking and research; influencing communication policy and strategies; strengthening communication planning capacities of Ministries of Agriculture/Livestock, and running a small number of special/innovative initiatives at regional and country level.
- vii. **TADinfo.** This animal disease database system for recording animal disease events on a geographic and temporal basis, developed by EMPRES, has basic mapping functions. The system – developed over 10 years ago - has been provided to many developing countries as a database for animal disease data recording. It has been used in several ECTAD project to promote and enhance data collection and analysis by the country.

- viii. **ECTAD Decentralized structure.** Under the direct responsibility of the ECTAD team at FAO headquarters, FAO has established regional and country units around the world which are responsible for providing technical and operational support to regional and country level HPAI programmes. The regional units are located in: Asia (Bangkok); South Asia (Kathmandu), the Near East (Beirut), North Africa (Tunis), West and Central Africa (Bamako), Southern Africa (Gaborone) and East Africa (Nairobi). Country units have been established in several countries affected by the disease. An innovative approach has been used to facilitate ECTAD HPAI activities in countries or regions with limited FAO presence. Of the 22 countries in Eastern Europe and Central Asia, only 4 have FAO(R) officers in place so the group, based in Rome, interfaces with governments, CVOs and UNDP officers in the other countries through a network employing national veterinarians and administrative officers, on a part- or full time basis. Central/South American and Caribbean activity has included 4 regional TCPs that have concentrated on regional training in HPAI disease recognition, surveillance and communications for Southern, Andean, Central and Caribbean sub-regions.
- ix. **Food Chain Crisis Management Framework (FCC).** This is a new initiative which has been developed to enhance the cooperative efforts within FAO on major crises that may arise within agriculture, fisheries and forestry; this framework builds on the systems that evolved in response to the H5N1 HPAI crisis, including the activities of ECTAD (and its CMC-AH), and EMPRES. An intelligence and coordination unit has recently been established to provide coordination and facilitate inputs from relevant divisions.

Chart of the Food Chain Crisis Management Framework



2. Purpose and scope of the evaluation

This second real time evaluation (RTE2) will be forward looking, emphasizing recommendations to FAO, its members and its partners on how to optimize FAO's future contributions to the control of HPAI. As such, it will provide:

- a) Feedback to stakeholders on programme achievements and constraints, identifying opportunities for greater relevance and impact;
- b) Accountability to stakeholders on the use of resources;
- c) A set of recommendations designed to be of use in the design and planning of future programmes.

The first real time evaluation conducted in 2007 reviewed the entire HPAI programme of FAO, including institutional issues, global partnerships, global and normative work of the Organization as well as country level assistance. In the report of a Peer Review Panel convened to assess the evaluation's work², the Panel recommended certain adjustments in terms of the second RTE. It advocated that FAO place greater emphasis on monitoring progress at outcome and impact levels, rather than input and activity reporting, in order that issues of relevance, efficiency and effectiveness can be accurately assessed in subsequent evaluations. The HPAI Consultative Group (HPAI-CG) at its last meeting in January 2008³ suggested that the second RTE should focus on the assessment of regional and country-level assistance to national HPAI preparedness and control initiatives.

This evaluation will therefore focus primarily on **country level assistance** provided through regional and national interventions. Global and regional support from FAO Headquarters and decentralized offices will be covered in so far as they are linked to and affect field delivery. Standard Evaluation Criteria will be applied to assess the Relevance, Efficiency, Effectiveness, Sustainability and – to the extent possible - Impact of FAO's HPAI work. The evaluation will pay particular attention to the role of the decentralized Emergency Centres for Transboundary Animal Diseases (ECTAD) and Regional Animal Health Centres (RAHCs) as well as partnerships as they relate to country level assistance.

3. Evaluation Team

The evaluation team comprises the following membership:

Brian Perry (Team leader). Professor Brian Perry, a British national, has a specialisation in veterinary epidemiology. His long international research career has focused on the resolution of animal health issues affecting developing countries, in particular through integrating quantitative veterinary epidemiology and agricultural economics to inform policy on disease control and poverty reduction. Prof. Perry has worked and lived in many countries of Africa, Asia and Latin America, and has served as a consultant to a variety of international organizations and national governments. He has published more than 250 scientific articles in refereed journals, books and proceedings. He was elected a Fellow of the Royal College of Veterinary Surgeons in 1995 for "meritorious contributions to learning in the field of veterinary epidemiology". In 2002 he was appointed Officer of the Order of the British Empire (OBE) in the Queen's New Year Honours for "services to veterinary science in

² Peer Review Panel Paper – Issues Arising and Priorities for the Future (September 2007).

³ Record of the Meeting of the Consultative Group for the Real Time Evaluation (RTE) of FAO's Work on the Highly Pathogenic Avian Influenza (HPAI), Wednesday 9 January 2008.

developing countries". In 2004 he won the International Outstanding Scientist Award from the Washington-based Consultative Group for International Agricultural Research. He holds honorary professorships at the Universities of Edinburgh, UK and Pretoria, South Africa, a visiting professorship at the University of Oxford, UK, and he lives in the Rift Valley of Kenya.

Trevor Ellis: Dr. Ellis, an Australian national, is currently Senior Research Fellow at the School of Veterinary and Biomedical Science at Murdoch University and a consultant in Veterinary Pathobiology and Microbiology. Dr Ellis has been contracted as a veterinary pathologist with the Agriculture, Fisheries and Conservation Department of the Government of Hong Kong SAR since the first outbreak of Highly Pathogenic Avian Influenza in 1999. In recent years, his research has focused on H5N1 avian influenza virology and the development of rapid diagnostic tests.

Emmanuel Camus: Dr Camus, a French national, is a leading expert in the field of tropical veterinary medicine and epidemiology. He is currently Regional Director of CIRAD (Centre de Coopération Internationale en Recherche Agronomique pour le Développement) in Montpellier, France. He was previously Director of Animal Health and Husbandry, and Head of the Animal Health Programme of this Organization. Dr Camus is a member of the Haut Conseil de la Santé Publique (France), vice-president of the Association of Institutions for Tropical Veterinary Medicine and past-president of the Society for Tropical Veterinary Medicine. He has written more than 100 scientific articles and has more than twenty years of field experience in Africa, Asia and Latin America and the Caribbean.

Shashi Kapur: Mr Kapur, a national of India, has had a long career (over 40 years in Poultry production, breeding, vaccine development and manufacture) in the private and non-governmental sector in Asia. He has been President of the Poultry Federation of India for several years and was a founder member of Kegg Farms group of companies, which is the oldest poultry breeding organization of India. He has worked with the problems of H9N2 and H5N1 in India since 2003 and has been a member on several committees of the Government of India dealing with bird flu. He served on the Advisory committee of the Planning Commission on Poultry Development and Health. He is currently Principal Policy Advisor to GALVmed International in Edinburgh, United Kingdom. Mr Kapur has also served as a consultant to FAO on a "Pro-Poor" risk reduction study. He was honoured by the Vice President of India for significant contribution in the field of Poultry and Poultry disease control in 2003.

Humphrey Mbugua: Dr Mbugua is a national of Kenya and has more than 25 years of experience in the public and private sectors in Africa. He has held several positions in the Ministry of Livestock Development in Kenya, and is a Member of Kenya's Inter-Ministerial Task Force on Avian and Human Influenza, including the new H1N1 Influenza. He is an Advisor to the Kenyan Poultry Breeders and Hatchery Operators and has been a technical consultant in poultry development for several companies and non-governmental organizations in Africa.

Robert Moore, Evaluation Manager and Director, Office of Evaluation

Carlos Tarazona, Evaluation Officer, Office of Evaluation

4. Approach to be taken

The evaluation team has further elaborated and refined the methodology building on the terms of reference (TORs) for this evaluation. The ToRs are provided in Appendix 1 to this inception report.

The Second RTE is being conducted in three phases. These include an in-depth preparatory phase entailing the assembly and synthesis of background information at country and programmatic levels, the evaluation of the participatory disease surveillance and response programme in Indonesia, and a series of missions to FAO headquarters, member countries and regional ECTAD/RAHC offices.

a. Phase I: In-depth preparatory phase (July 2008 – July 2009)

Given the emphasis on country level assistance and the volume and variety of the programmes in countries, an in-depth preparatory phase has been undertaken.

The first phase involved:

- i. A review of key documentation and materials available on the FAO's Field Programme Management Information System and the FAO Web sites;
- ii. Wide ranging discussions with FAO Staff;
- iii. Project desk reviews;
- iv. Preparatory missions. The objectives of these missions included:
 - Collecting detailed information on the performance of FAO projects;
 - Holding preliminary discussions with representatives of the Government, Partners and Donors at technical level on FAO's field work; and,
 - Preparing, where relevant, a forthcoming visit of the evaluation mission team.

The preparatory missions comprised visits to ten countries (see table below) and to the RAHCs and regional ECTADs in Nairobi, Tunis and Bangkok. The visits to these regional units focused on collecting information about their activities, their roles, partnerships and, identifying their contribution to the national programmes in their regions of responsibility.

The criteria used for selecting countries for the preparatory missions included:

- i) Country programme delivery;
- ii) Length of FAO intervention (s);
- iii) Geographic and thematic representation; and,
- iv) Presence of an active ECTAD team.

Table 1 (below) indicates the countries selected for preparatory missions

Countries	Programme Delivery	Length of intervention	Geographic representation	Thematic representation
1. Indonesia	> US\$ 2 million	More than 24 months	Asia	Prevention, preparedness, control and containment
2. Cambodia				
3. Viet Nam				
4. Laos				
5. Bangladesh				
6. Myanmar				
7. Egypt			Near East	
8. Ethiopia	< US\$ 2 million	More than 12 months	Africa	Prevention & preparedness only
9. Uganda				
10. Kenya				

At the end of the first phase, the following deliverables have been produced, and these will provide contributions to the final evaluation report:

- Programme Overview.
- A selection of countries to be visited as case studies by the Evaluation team.
- Desk Project Reviews on a selected number of projects, using a standard format.
- Reports of the Preparatory Missions to Countries, including:
 - Country Situation.
 - Detailed overview of the FAO Programme.
 - Programme Issues, Strengths and Weaknesses.
- Reports of Preparatory Missions to Regional ECTAD Centres, including:
 - Overview of activities.
 - Role in the Region.
 - Partnerships.
 - Contribution to national programmes.
- Terms of Reference for the Independent Evaluation
 - b. Phase 2: Evaluation of the Participatory Disease Surveillance and Response (PDSR) Programme in Indonesia (May – July 2009).**

An in depth review of the PDSR programme in Indonesia was undertaken, involving extensive discussions with FAO staff and other stakeholders, accompanied by a series of field visits to different sites in the country. A separate report has been prepared and submitted to FAO⁴, and a FAO Management response⁵ has been prepared. The evaluation team presented a series of fourteen recommendations grouped under the following six work areas:

- Programme management;
- Engagement with all sectors of the Indonesian poultry industries;
- Deployment of PDSR teams;
- Surveillance, epidemiology, monitoring and evaluation;
- Capacity building, and
- The transition of PDSR tools into a responsive and sustainable national veterinary service

Ten of the fourteen recommendations presented in the Evaluation Report were accepted and four recommendations were partially accepted. No recommendations were rejected by FAO management.

The FAO management response concluded: *“The evaluation of the PDSR programme, and the means by which it was conducted, are highly appreciated by FAO management. PBEE’s efforts to assemble an appropriately qualified evaluation team, the extensive preliminary preparation, the thorough and participatory in-country review, and the comprehensive and balanced evaluation report, are all indicative of the evaluation team’s commitment to the seemingly daunting task of evaluating the PDSR programme. FAO management and government counterparts have not only benefited from the findings and recommendations within the evaluation report, but also from the process of inquiry and discovery which accompanied the programme’s review”.*

c. Phase 3: Full Independent Evaluation (August 2009 – February 2010)

The third phase is now underway. The approach to the evaluation will include the following:

- *Interviews with Programme Stakeholders*

⁴ <http://www.fao.org/docs/eims/upload/262940/PDSR%20evaluation%20report%2030%20July%20final.pdf>

⁵ http://www.fao.org/docs/eims/upload/264420/Management%20Response%20to%20PDSR%20Evaluation_Final_FAO_cleared_3Sept09.doc

The team travelled to Rome to interview FAO staff and representatives of partner agencies involved in the Programme. A listing of the people interviewed in FAO headquarters, Rome, during the period 15 – 21 September 2009 and during a visit to OIE on 23rd September 2009, is given in Appendix 2.

- *Documentation review*

The team is currently reviewing the extensive documentation available, and assembling a structured inventory of documents covering the different facets of FAO's HPAI programmes at national, regional and global levels.

- *Country and Regional Programme Assessments*

A sample of countries covering a large part of FAO's field activities on HPAI will be visited by the team. These will be Nigeria, Egypt, Cote D'Ivoire, Bangladesh, Cambodia and Viet Nam. For each country visit, there will be a debriefing on the findings of the mission with in-country stakeholders. In addition ECTAD/RAHC offices in Mali, Kenya, and Thailand will be visited, and a standard format will be applied to these visits. Desk reviews will also be undertaken for regions not being visited by the programme (including Europe, Central Asia, Latin America and the Near East).

- *Evaluation criteria and framework for evaluation*

The updated Global Strategy for Prevention and Control of Highly Pathogenic Avian Influenza developed in partnership by the FAO and the World Organisation for Animal Health, lists key outputs and outcomes anticipated from the programme. These are divided into short, medium and long term. The evaluation team will consider the attainment of these outputs and outcomes in each country and region visited, understanding that just one year has elapsed since the publication of the revised version of this strategy document⁶. They are listed below as they appear in the document:

Short term (within 2 years)

- All countries with endemic/entrenched infection and recently infected will have developed and started implementation of appropriate longer-term plans for management of H5N1 HPAI, which will include strong communication components and will incorporate milestones and review points.
- Recently infected countries will have eliminated infection, determined reasons for the initial incursion(s) and implemented appropriate corrective measures to prevent further outbreaks in poultry.
- All countries at high risk of HPAI incursion (e.g. those having an infected neighbouring country) will have strong targeted surveillance programmes in place including in wild birds and will have enhanced capacity for early detection and emergency response. They will have revised and tested their emergency preparedness plans and incorporated review points for early assessment of the likelihood of success in eliminating infection using traditional control measures alone and consideration of use of vaccination.
- All countries will be conducting regular risk-based surveillance for HPAI virus circulation and results and virus isolates will be shared with the international community. Systems will be in place at international, regional and country levels to allow updating of vaccine antigens in the event of emergence of significant antigenic variants, in particular in countries using vaccines.

⁶ The first version produced in November 2005 and the second version revised in March 2007 did not include the specific list of outputs and outcomes of the October 2008 version.

- Detailed, costed plans for strengthening of veterinary services based on OIE-PVS evaluations will be prepared and gap analysis carried out.
- Poultry production and market chains will be analyzed and high risk practices will be identified in all countries. Social, economic and feasibility studies on proposed changes to overcome these problems are completed.
- Epidemiological and socio-economic studies will have been carried out to provide information to support targeted, risk-based vaccination.
- Research on wild birds and on other possible H5N1 hosts as well as on new vaccines will have continued particularly focusing on studies that improve the delivery system.
- Improved public-private partnerships and relationships will be evident between government and the poultry industry.
- Regional and international collaboration on H5N1 HPAI control and prevention will be strengthened with greater transparency in reporting and exchange of information.
- A new “One World-One Health” strategy will be in place to address the main emerging or re-emerging diseases at the human-animal interface. This strategy is implemented through more investment from the governments and international community, with the support for the international organizations in particular FAO, OIE and WHO.

Medium term (within 3 to 5 years)

- There will be clear evidence of strengthened veterinary services demonstrated by better surveillance, disease control, legislation (and enforcement of legislation) and epidemiological reports.
- There will be evidence of significant changes to high-risk production and marketing practices in countries especially in countries with endemic/entrenched infection but also in those at risk of infection. These approaches to address the roots of the risks of H5N1 HPAI occurrence and resurgence are extended to the main transboundary and emerging diseases of zoonotic nature or to the diseases which can impact on human livelihoods and well being (One World One Health strategy).
- Information from applied research and disease surveillance will have been used to ensure better targeted and socially and economically sustainable vaccination programmes in endemically infected countries.
- Economic and policy studies, improved tools for HPAI control (new vaccines in particular) and better understanding of the epidemiology of HPAI will allow more rational and targeted disease control programmes.
- All new infections in countries are rapidly stamped out.
- The role of wild birds in the ecology and persistence of H5N1 HPAI is well understood.

In addition to these anticipated strategic outputs and outcomes, the evaluation team has prepared a draft strategic framework for the evaluation of the country and regional programmes of HPAI responses, and this is shown in Table 2 below. This framework identifies three overarching objectives (HPAI prevention and response, broad surveillance system development and pandemic preparedness), and will use this as a guide for conducting the evaluation process at national and regional levels.

Table 2. Strategic Evaluation Framework

Broad pillar outputs and objectives	Outcomes	Outputs: measures of attainment	Socioeconomic viability	Capacity development targets	Sources of information
<p>HPAI prevention and response</p> <p>Policies and legal framework in place</p> <p>Socio-economic/ farm and market systems analysis</p> <p>Intervention plans in place</p> <p>-Rapid Response</p> <p>-Laboratory expertise</p> <p>-Preventive tools</p>	<p>Strategy in place including provision for, and/or understanding of, culling compensation; vaccination</p> <p>Effective early disease detection system in place</p> <p>Adoption of bio-security measures (movement control, species separation, etc.)</p> <p>Vaccination strategy as appropriate</p> <p>General procedures, processes and policies established</p>	<p>Availability of baseline information on the poultry sector (reviews), poultry value chains and its stakeholders at national and regional level</p> <p>Activities conducted to understand the risk and used to develop action plans</p> <p>Existence of policies and implementation procedures</p> <p>Assessment of biosecurity activities (regulations in place; how monitored; level of crate, hand, vehicle, washing; market cleaning)</p> <p>Level of uptake of vaccination</p> <p>System for monitoring of vaccination</p> <p>Trend for number of disease outbreaks</p>	<p>Understanding of poultry production systems and market value chains</p> <p>Control strategies socially accepted cost-effective and sustainable</p> <p>Involvement of the private sector in decision making processes (including Public Private Partnerships)</p>	<p>Trained staff and resources for surveillance</p> <p>Effective laboratory support in place</p> <p>Proficiency of diagnostic services (field and laboratory)</p>	<p>FAO/OIE regional and country officers, public and private vets, NGOs, grower organizations</p>
<p>Broad surveillance system development</p> <p>-Surveillance plan in place</p>	<p>Existence of cost-effective national surveillance programme</p> <p>Supporting infrastructure for design and analysis of programme</p>	<p>Level of training and extension for surveillance activity</p> <p># of personnel and resources for field work and laboratory work; SOP in place</p> <p>Number and frequency of surveillance</p>	<p>Surveillance strategies socially accepted cost-effective and sustainable</p> <p>Risk analysis conducted</p>	<p>Epidemiology, socio-economic, disease and wildlife ecology skills available</p> <p>Trained staff and</p>	<p>FAO/OIE regional and country officers, public and private vets, NGOs, grower organizations</p>

Broad pillar outputs and objectives	Outcomes	Outputs: measures of attainment	Socioeconomic viability	Capacity development targets	Sources of information
<p>-Epidemiological support</p> <p>- wildlife ecology support</p>	<p>Capacity to conduct the surveillance and monitoring activity, including trained field and laboratory staff and resources</p> <p>General procedures, processes and policies established</p>	<p>visits</p> <p>No of infections/ outbreaks detected</p>	<p>based on knowledge of farming and marketing system used in development of surveillance programme</p>	<p>resources for surveillance</p> <p>Effective laboratory support in place</p> <p>Proficiency of diagnostic services (field and laboratory)</p>	
<p>Pandemic preparedness</p>	<p>National and international HPAI contingency plans in place</p> <p>Supporting infrastructure and human resources for implementation of programme</p> <p>Pandemic preparedness training conducted</p> <p>Level of interaction amongst government departments and international agencies such as WHO/FAO/OIE</p> <p>General procedures, processes and policies established</p>	<p>Plans present and staff training records</p> <p>Desk and field simulation conducted</p> <p>Evidence of active communication (MOUs, joint papers, etc.)</p>	<p>Contingency plans socially accepted cost-effective and sustainable</p> <p>Contingency plans have considered knowledge of farming and marketing systems</p> <p>Communication plans have considered social and cultural issues</p>	<p>Pandemic preparedness training and PPE resources available and logistics for re-supply in place</p>	<p>Departments of Animal and Human Health, Environment; FAO/OIE/WHO international, regional and country officers</p>

- *Reports to be prepared*

Draft outlines of the country and regional ECTAD/RAHC reports are provided in Appendix 3 and 4, respectively. A summary of these reports will be shared with FAO staff following the regional workshops.

- *Workshops*

Towards the end of the regional missions (Africa/Near East and Asia), workshops will be organized to discuss the observations of the team with FAO national and regional staff, and to explore options for improved HPAI control with partners and government representatives.

These workshops will be forward looking, set under the general theme of “helping to shape future FAO responses to better meet national and regional requirements”.

Overall objectives:

1. To present and discuss a preliminary synthesis of the evaluation team’s observations based on the country visits and on earlier background studies in other countries.
2. To discuss this preliminary synthesis in the context of other African countries
3. To draft a framework of needs for the future for improving, at national and regional levels, the capacity in key areas emerging from the evaluation. Draft areas for discussion will be identified prior to, and during the early stages of, the workshops. Potential candidate areas might be as follows:
 - a. The control of HPAI and other infectious diseases of livestock
 - b. Veterinary surveillance and intervention capacity development
 - c. Pandemic preparedness

Format. The two days of the workshops will be divided into three sections.

- A. The first half day will be exclusively with FAO staff, to brief them on the draft observations emerging from our field visits and background discussions, and engage in an open discussion covering clarifications and comments.
- B. The second half of the first day will be a session for all invited participants, which will start with a shortened presentation of the synthesis of draft observations based on the country visits and background studies. Following this, there will be a series of break-out working groups.
 - a. Working groups to discuss the context of the observations to different countries.
 - b. Working groups of FAO staff to identify from their perspective the key issues emerging.
 - c. Plenary session highlighting the different candidate areas that need addressing, which will then form the basis for day 2.
- C. Second day. The first half of the day will concentrate on the key challenges emerging from the evaluation and the day 1 discussions. Three or four of these will be identified (candidate

examples are given above under 3a, b and c), and develop a set of questions and discussion points for groups to work on. This will be achieved through group work during the morning, reporting back to plenary. The second half of the day will examine the role of FAO in responding to these challenges, again through mixed group work, and develop a set of recommendations for consideration.

Major categories of participants at both workshops will be drawn from:

1. FAO staff from ECTAD offices.
2. FAO national staff from a blend of countries visited and not visited.
3. Selected partner organisations:
 - a) Government veterinary staff (both at CVO levels and HPAI task force levels).
 - b) International and regional partners (OIE, AU-IBAR, ASEAN, ILRI, etc.).
 - c) Regional economic and policy groups (SADC, IGAD, EAC, ASEAN, etc.).
 - d) Civil Society (Smallholder and Commercial poultry sector; Veterinary Associations)
 - e) Non Governmental Organizations (VSF, STOP AI, etc.).
 - f) Donors (USAID, AusAID, etc.)

- ***Peer Review process***

As was done for the first RTE, a Peer Review Panel will be formed. The Peer Review will be undertaken by technical experts who have a good knowledge of issues relating to transboundary animal diseases and of the FAO's HPAI programme and can make a critical analysis of evaluation reports. The Panel will be composed of four to six experts covering animal health, production and socio-economic issues. It will meet towards the end of the evaluation to review the draft report and make comments on the preliminary findings, conclusions and recommendations of the Evaluation team. The Panel Report will be distributed together with the final report of the evaluation.

- ***Dialogue with the Consultative Group***

As was done for the first RTE, a Consultative Group composed of representatives nominated by FAO, donor and affected countries and major partners will be convened to provide feedback on the Draft Approach Paper, the Inception Report, and the Draft Evaluation Report. In the initial visit to FAO headquarters, a meeting of the consultative group was convened, at which the team presented its plan for the evaluation, and discussed and responded to issues made by the group membership.

- ***Final evaluation report***

A final report will be prepared by the evaluation team. A draft outline of the final report is provided in Appendix 5.

- ***Timetable***

A timetable of the evaluation is given in Appendix 6.

Appendix 1. Approach Paper for the Second Real Time Evaluation of FAO's Work on Highly Pathogenic Avian Influenza

1. Background

The first outbreak of Highly Pathogenic Avian Influenza (HPAI) was reported in the Republic of Korea in December 2003⁷. The disease rapidly spread to many Asian countries, including China, Hong Kong, Japan, Indonesia, Viet Nam and Cambodia. Russia and Nigeria were the first European and African countries, respectively, to report outbreaks of HPAI in domestic poultry and wild birds. Outbreaks were almost simultaneously recorded in West Africa and the Near East. As of April 2009, sixty-two countries had reported HPAI outbreaks to the World Organization for Animal Health (OIE).

The International Response

In early February 2004 an international conference was held in Rome with key experts and organisations from around the world. The first FAO/OIE Meeting on Avian Influenza Control was held in Bangkok in February 2004. This was followed by a second Workshop in Viet Nam (February 2005) and by the International Conference on Avian and Human Pandemic Influenza in Geneva (April 2005), which was jointly convened by FAO, OIE, WHO and the World Bank. Technical consultations at global and regional level on HPAI-related issues (including poultry production and trade, wildlife and surveillance, vaccines and disease control systems) have been regularly held since then.

In January 2006, the first International Pledging Conference on Avian and Human Influenza Pandemic was convened in Beijing, under the co-sponsorship of the host government, the World Bank, the European Commission, and in close co-ordination with FAO, WHO and OIE. The signatories to the Beijing Declaration committed themselves to “ensuring effective development and implementation of integrated national action plans within the framework of WHO/FAO/OIE global strategies, to mobilizing resources in their countries and to drawing upon government, civil society and the private sector to effect a coordinated response”. Further fund raising conferences have been held in Vienna (June 2006), Bamako (December 2006), New Delhi (December 2007) and Sharm-el-Sheikh (October 2008), where donors and Multilateral Development Banks have pledged in total about USD 3 billion to combat HPAI in poultry and bird populations, in order to reduce the risk of a human influenza pandemic and to safeguard the livelihoods of poultry dependent enterprises of many sectors of society.

The global nature of HPAI, the complexity of the disease epidemiology and surveillance, and the potential threat of a pandemic influenza demand a multi-sectoral approach that addresses the interactions between technical, institutional and socio-economic issues.

Just before the Beijing Conference, the UN Secretary General established the Office of the UN System Influenza Coordination (UNSIIC), with the aim to ensure cooperation within the UN system in support of different initiatives underway to address the H5N1 avian influenza epizootic and the threat of a human pandemic. Together with OIE, FAO is the lead technical agency in providing support for animal disease control, playing a major role as implementing agency in two of the seven key

⁷ A first isolated instance of human infection with H5N1 was actually recorded in Hong Kong in 1997. Yet, from then to 2003 no other cases were officially reported and diagnosed.

objective areas defined in the UN Consolidated Action Plan for Avian and Human Influenza: i) Animal health and biosecurity, and ii) Sustaining livelihoods; while collaborating with other organizations on strategic areas iii) Public information and communication to support behaviour change, and iv) Continuity under pandemic conditions.

The cooperation between FAO and other agencies (UNICEF, OIE, WHO) has been progressively strengthened, building on the complementarities of the agencies' mandate. The joint FAO/OIE Global Strategy for the Progressive Control of Highly Pathogenic Avian Influenza (first published in November 2005⁸) paved the way for the establishment in the future of Regional Animal Health Centres (RAHCs) in Asia and Africa, with regional partners such as the African Union's Interafrican Bureau for Animal Resources (AU-IBAR) being also involved in this process. A more holistic and coordinated approach in the prevention of epidemic/epizootic disease, which would allow managing risks at the animal-human-ecosystems interface, is the rationale behind the "One World One Health concept", discussed at the Conference in Sharm-El-Sheik held in October 2008.

Programme Resources

As of April 2009, more than USD 265 million have been allocated to the FAO HPAI Programme. The USA is by large the main donor having contributed more than US\$ 100 million, followed by Sweden (USD 23.6 m), the European Commission (USD 13.8 m), Australia (USD 14.2 m) and Japan (USD 13.7 m). FAO itself contributed over USD 9 million from TCP funds and in-kind resources from the Regular Programme since 2004. Indonesia has by far being the biggest recipient of funds (about USD 40 million), followed by Viet Nam (USD 17.6 m), Egypt (USD 8.4 m) and Cambodia (USD 7.6 m) as of April 2009.

First Real Time Evaluation (RTE) of FAO's work on HPAI

The first RTE was conducted in early 2007⁹. It concluded with "a generally positive view of the work which FAO has undertaken" while acknowledging that "there have been many issues, delays, weaknesses, mistakes and obstacles during this effort" and that "there clearly remains much more to be done and much room for improvement." The evaluation recommended FAO to "adjust its overall approach to begin to gradually move from the early mainly 'fire-fighting' emergency mode to include a longer-term perspective which seeks the solution to the continuing HPAI crisis in terms of the larger development and economic context." Management accepted with some caveats almost all of the recommendations. In particular, while it agreed with the need to gradually move from the early emergency phase to a longer term perspective, it emphasized that "the situation still remains an emergency from the public health and poultry sector perspectives as well as the need to keep an appropriate balance between the various dimensions of the disease and its impacts which are all important to be considered when addressing the prevention and control of diseases." A follow-up report on actions taken by Management on agreed recommendations was submitted in April 2009. The present evaluation will review the Management Response and the follow-up Report to the first Real-Time Evaluation of FAO's Work on the HPAI with a view to integrating progress made in its assessment.

2. Purpose of the Evaluation

⁸ The document was reviewed in March 2007 and last updated in October 2008, when the name also changed to FAO/OIE Global Strategy for Prevention and Control of H5N1 Highly Pathogenic Avian Influenza.

⁹ Report of the First Real Time Evaluation of FAO's Work on Highly Pathogenic Avian Influenza (2007)

This evaluation will be forward looking, emphasizing recommendations to FAO, its members and partners on how to optimize FAO's contributions. As such, it will provide:

- d) Feedback to stakeholders on Programme achievements and constraints;
- e) Accountability to stakeholders on the use of resources; and,
- f) Lessons learnt for use in future work planning.

3. Coverage and Scope

The first evaluation reviewed the entire HPAI programme, including institutional issues, global partnerships, global and normative work of the Organization as well as country level assistance. The wide-ranging evaluation proved to be overly ambitious in scope and gaps were identified in the information gathered and analysis provided. Some of these gaps were highlighted in the report of a Peer Review Panel convened to assess the evaluation's work¹⁰. The Panel recommended that the next evaluation should focus on specific issues that emerged. The HPAI Consultative Group (HPAI-CG) at its last meeting in January 2008¹¹ endorsed this view and suggested that the Second RTE should focus on the assessment of country-level assistance.

Therefore, the present evaluation will primarily focus on **country level assistance** provided through regional and national interventions. Global and regional support from FAO Headquarters and decentralized offices will be covered in so far as they are linked to and affect field delivery. Standard Evaluation Criteria will be applied to assess the Relevance, Efficiency, Effectiveness, Sustainability and – to the extent possible - Impact of FAO's HPAI work. The evaluation will pay particular attention to the role of the Regional Emergency Centres for Transboundary Animal Diseases (ECTAD) and RAHCs as well as partnerships as they relate to country level assistance.

Relevance and Appropriateness of FAO's Strategy and Programme at country level:

- Appropriateness of distribution of programme resources among the countries (adequate and clear criteria), and the extent to which this reflects prioritisation of responses;
- Adequacy of FAO's support vis-à-vis the national agenda and priorities, national development needs and challenges and decision-making processes;
- Extent to which FAO's field work is in line with the Organization's priorities (as described in programming documents such as the National Medium Term Priority Frameworks, the FAO's Programme of Work and Budget, the FAO/OIE Global Strategy and the FAO Global Programme for the Prevention and Control of HPAI);
- Extent to which the various FAO's activities at country level are underpinned by a strategy and form a coherent programme, with consistent approaches and common goals;
- Extent to which gender issues have been mainstreamed in the objectives, design and implementation of HPAI projects;
- Coherence and integration of regional projects into country programmes/activities; and,
- Appropriateness of FAO interventions in terms of:
 - Approach: comprehensiveness;
 - Duration: short term inputs versus long-term technical assistance; and,
 - Focus: HPAI versus other Transboundary Animal Diseases.

¹⁰ Peer Review Panel Paper – Issues Arising and Priorities for the Future (September 2007).

¹¹ Record of the Meeting of the Consultative Group for the Real Time Evaluation (RTE) of FAO's Work on the Highly Pathogenic Avian Influenza (HPAI), Wednesday 9 January 2008.

Efficiency

- Timeliness of FAO's response to requests for assistance on HPAI prevention and control;
- Adequacy of FAO's response, including human/financial resources, operational, administrative, monitoring and reporting arrangements;
- Timeliness and adequacy of technical and operational support from FAO Headquarters (HQ) and decentralized offices (including ECTAD units and RAHCs) to country level activities, including:
 - quantity and quality of co-ordination and support from HQ, decentralized offices and Regional ECTAD/RAHCs (in terms of backstopping/supervision missions);
 - quantity and quality of country level work undertaken by the ECTAD national units and, where relevant, the FAO Representations.
- To the extent possible, determine whether the approach, duration and focus of FAO interventions at regional and country level have been cost-effective.

Effectiveness of individual country programmes

- Achievements in terms of outputs and outcomes, including:
 - development of effective national policies, preparedness measures, communication and public awareness campaigns, surveillance systems, laboratory capacities and contingency plans to deal with the disease;
 - new or strengthened institutional frameworks, organizational structures and processes, as well as knowledge, skills and competences acquired resulting in improvements in the performance of public and private veterinary services; and,
 - enhanced preparedness and response capacities of the poultry sector to deal with the risk of HPAI outbreaks, and of other animal diseases.
- Extent to which improvements in these areas have contributed to increasing national capacities to prevent and control future outbreaks of HPAI and of other transboundary and zoonotic animal diseases.

Effectiveness of global/regional programmes at country level, in particular the extent to which the:

- Crisis Management Centre – Animal Health has improved early response and the design of follow-up interventions.
- GLEWS information, analysis and technical expertise have improved disease response and understanding of HPAI epidemiology.
- OFFLU scientific data exchange and technical expertise have improved national capacity for laboratory diagnostic, vaccine efficacy and development.
- Regional networks have contributed to national capacity building and information-sharing.
- Research and technical expertise on wildlife has improved countries' understanding of the role of migratory birds in the spread of HPAI.

Sustainability and Impacts

The evaluation will assess:

- The *likely* effect of FAO's work on the institutional, organizational and human capacity of affected and at-risk countries beyond HPAI;
- Sustainability of the strengthening taking place in public and private veterinary services;

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- Extent to which disease surveillance and control interventions have likely contributed to reducing HPAI prevalence; and,
- Likely macro-economic, livelihoods and food security impact of FAO's strategy and response to HPAI;

Role of the regional ECTADs and RAHCs

The evaluation will assess:

- The extent to which these units have fulfilled their mandates in particular in the following areas:
 - Co-ordination of regional and country activities;
 - Formulation and implementation of regional programmes/projects;
 - Provision of technical and operational support to countries;
 - Promotion and coordination of regional networks; and,
 - Advocacy and fund-raising for HPAI and Transboundary Animal Diseases interventions.
- The institutional and financial sustainability of the regional ECTADs and RAHCs.
- Efficiency and adequacy of working arrangements within FAO (with HQ, regional and country offices).

Partnerships

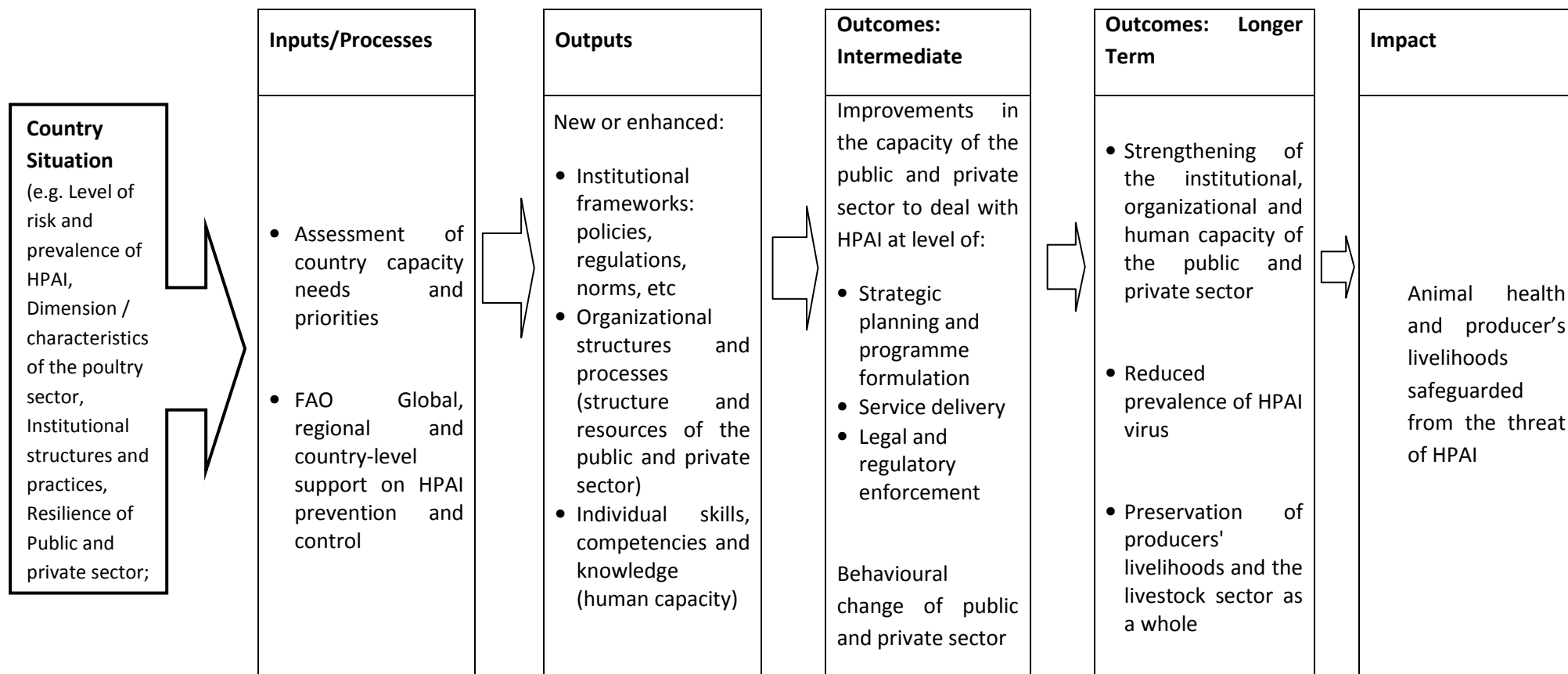
The evaluation will assess:

- The clarity of FAO's role, based on its comparative advantages and capacities, as well as the degree of complementarity, co-ordination and collaboration with regional and national partners, particularly:
 - Multilaterals: OIE, World Bank, Asian Development Bank, African Union's Inter African Bureau for Animal Resources, ASEAN, WHO and UNICEF.
 - Major Bilateral/donor agencies.
- FAO's contribution to the preparation of partners' HPAI regional and national strategies.
- Constraints to and strengths of partnerships at country level.

4. Approach to the Evaluation

A model linking the organization's inputs and outputs to immediate and long-term development results (outcomes) has been prepared to show the results chain of the FAO HPAI Programme (see figure 1). The results chain will form the basis to assess the relevance, efficiency, effectiveness, sustainability and – to the extent possible - impact of FAO support at country level. The Evaluation Team will develop indicators, identify sources of information and determine suitable data collection methods to assess the outcomes and impact of the Programme.

Figure 1: Results Chain of FAO HPAI Programme



5. Methodology

The Second RTE will be conducted in two phases: an in-depth preparatory phase and the evaluation mission.

Phase I: In-depth preparatory phase (July 2008 – July 2009)

Given the emphasis on country level assistance and the volume and variety of the programmes in countries, an in-depth preparatory phase has been planned.

The first phase involves:

- A review of key documentation and materials available on the FAO's Field Programme Management Information System and the AGA and TCE Web sites;
- Discussion with FAO Staff;
- Project desk reviews;
- An Evaluation of the Participatory Disease Surveillance and Response (PDSR) Programme in Indonesia¹²; and,
- Preparatory missions. The objectives of these missions include:
 - Collecting detailed information on the performance of FAO projects;
 - Holding preliminary discussion with representatives of the Government, Partners and Donors at technical level on FAO's field work; and,
 - Preparing, where relevant, the visit of the evaluation mission.

The preparatory missions comprise visits to ten countries (see table below) and the RAHCs and regional ECTADs in Nairobi, Tunisia and Bangkok. The visits to these regional units will focus on collecting information about their activities, their roles, partnerships and, identifying their contribution to the national programmes in their regions of responsibility.

Criteria for selecting the countries for the preparatory missions included:

- v) Country program delivery;
- vi) Length of FAO intervention (s);
- vii) Geographic and thematic representation; and,
- viii) Presence of an active ECTAD team.

On this basis, the following countries have been selected:

Countries	Programme Delivery	Length of intervention	Geographic representation	Thematic representation
11. Indonesia	> US\$ 2 million	More than 24 months	Asia	Prevention, preparedness, control
12. Cambodia				
13. Viet Nam				

¹² Separate terms of reference are prepared for this Evaluation.

14. Laos				and containment
15. Bangladesh				
16. Myanmar			Near East	
17. Egypt				
18. Ethiopia	< US\$ 2 million	More than 12 months	Africa	Prevention & preparedness only
19. Uganda				
20. Kenya				

At the end of the first phase, the following deliverables will be produced:

A. Programme Overview.

B. A selection of countries to be visited by the Evaluation team.

C. Desk Project Reviews on a selected number of projects, using a standard format.

D. Reports of Preparatory Missions to Countries, including:

- Country Situation.
- Detailed overview of the FAO Programme.
- Programme Issues, Strengths and Weaknesses.
- Annexes (e.g. matrix of FAO interventions)
- A workplan proposal for the evaluation mission.

E. Reports of Preparatory Missions to Regional ECTAD Centres, including:

- Overview of activities.
- Role in the Region.
- Partnerships.
- Contribution to national programmes.

F. Terms of Reference for the Second Phase (Independent Evaluation)

Phase II: Independent Evaluation (August 2009-February 2010)

The Second phase will be conducted by an Evaluation Team led by an Independent Expert (see section 6 on team composition). The methodology will in principle consist of:

- *Interviews with Programme Stakeholders*

The team will interview FAO staff and representatives of Partner Agencies involved in the Programme.

- *Documentation review*

The Team will review documentation available, particularly those resulting from the preparatory phase. An inception report will be prepared to define the evaluation plan for the Team. This report will include a standard format for country assessments and a proposed outline for the evaluation report.

- *Country Assessments*

A sample of countries covering a large part of FAO's field activities on HPAI will be visited by the team. Each country visit will follow a standard format. For each country visit, there will be a debriefing on the findings of the mission with in-country stakeholders.

- *Validation Workshops*

Towards the end of the evaluation missions, workshops would be organized in major affected regions (Asia and Africa) to discuss the preliminary results of the evaluation.

The evaluation will also make use of two external quality assurance mechanisms: a peer review panel, and a consultative group.

Peer Review

As was done for the first RTE, a Peer Review Panel will be formed. The Peer Review will be undertaken by technical experts who have a good knowledge of issues relating to transboundary animal diseases and of the FAO's HPAI programme and can make a critical analysis of evaluation reports. The Panel will be composed of four to six experts covering animal health, production and socio-economic issues. It will meet towards the end of the evaluation to review the draft report and make comments on the preliminary findings, conclusions and recommendations of the Evaluation team. The Panel Report will be distributed together with the final report of the evaluation.

The Consultative Group

As was done for the first RTE, a Consultative Group composed of representatives nominated by FAO, donor and affected countries and major partners will be convened to provide feedback on the Draft Approach Paper, the Inception Report, and the Draft Evaluation Report.

6. Evaluation Team

The Independent Evaluation Team will be composed of:

- **An Independent Team Leader:** S/he will be a senior expert on livestock with a good knowledge of animal health issues and solid background on policy and economic implications of transboundary animal diseases. The Team Leader should also have a global perspective of the sector, and should not have been involved in the design and/or implementation of any of the HPAI programmes being evaluated.
- **Senior consultants** with expertise on animal health, socio-economic analysis and production systems. Each of the experts will have a good knowledge of at least one region (Africa, Asia and/or the Near-East) where HPAI activities are implemented.

Staff from the FAO Evaluation Service will assemble information, conduct preliminary analysis, assist in the organization of evaluation missions, and participate in country visits as required. They will carry out tasks assigned to them by the Team Leader.

7. Evaluation Management

The Second RTE is managed by a Senior Evaluation Officer from the FAO Evaluation Service.

8. Reporting and Dissemination

All reports are the full responsibility of the evaluation team which is free to accept or reject suggestions made to it for changes.

- The Approach Paper will be discussed with FAO Staff and the Consultative Group;
- The Inception Paper will be widely circulated for comments.
- The Draft of the Final Evaluation Report will be considered by FAO staff, the Peer Review Panel and the Consultative Group which will provide their comments;
- The Final Evaluation Report will be disseminated to stakeholders and posted on the FAO Evaluation Web site. FAO's Management response will be similarly distributed to all stakeholders and posted on the Web.

26/02/2010

Appendix 2. A listing of people interviewed during the period 15 – 23rd September 2009.

Extensive discussions have been held with a wide range of FAO staff in headquarters. These included:

Modibo Traoré, ADG Agriculture and Consumer Protection (AG) Department

Alexander Muller, ADG Natural Resources Management and Environment Department (Officer in Charge of the AG Department in 2006-07)

Mona Chaya, Coordinator, Food Chain Crisis Management Framework, Intelligence and Coordination Unit

Ian Douglas, Manager, Crisis Management Centre-Animal Health (CMC-AH)

Andrew Sobey and Charles Bebay, CMC-AH staff

Laurent Thomas, Director of the Emergency and Rehabilitation Division, TCED

Dominique Burgeon, Senior Operations Officer, Head of FCC – Emergency Management Unit , TCES

Pasquale Rispoli, Senior Executive Officer, ECTAD Procurement and Finance

Daniela Mangione, Liaison and Operations Officer, Supervisor, ECTAD Field programme Unit , TCES

Priya Markanday, Operations Officer, Supervisor, ECTAD Asia desk

Sabrina Mayoufi, Operations Officer, Supervisor, ECTAD Africa desk

Admira Mara, Operations Officer, Supervisor, ECTAD Europe, Central Asia and Latin America desk

Emmanuel Moncada, Operations Officer, Supervisor, ECTAD Near east and North Africa desk

Samuel Jutzi, Director, Animal Health and Production Division, AGAD

Juan Lubroth, Chief, Animal Health Service (Previous Head, EMPRES), AGAH

Jan Slingenbergh, Senior Animal Health Officer, (Current Head, EMPRES), AGAH

Scott Newman, EMPRES Wildlife Unit Leader, Wildlife Veterinarian, Animal Health Service, AGAH

Nick Honhold, Veterinary Consultant, Biosecurity and Public-private partnerships, AGAH

Satya Sarkar, Unit Leader, Communications Group, AGAH

Julio Pinto, Veterinary Epidemiologist, Animal Health Officer, EMPRES-Animal Health

Gwen Dauphin, OFFLU Liaison Officer/Laboratory Expert, Animal Health Officer, AGAH

Akiko Kamata, Veterinary Epidemiologist (TADinfo Specialist), AGAH

Ahmed El-Idrissi, Animal Health Officer, AGAH & Head of the ECTAD Programming Unit

Mariano Gosi and Francesca Ambrosini, ECTAD Programming Unit

26/02/2010

Olaf Thieme and Philippe Ankers, Animal Production Officers, Animal Production Service (AGAP)

Henning Steinfeld, Chief, Livestock Information, Sector Analysis and Policy Branch (AGAL)

Anni McLeod and Joachim Otte, Senior Officers, AGAL & Coordinator, PPLPF

Karin Schwabenbauer, Senior Consultant, AGAH

Nicoline De Haan, Policy/Socio-economics Consultant, AGAH (by audio conference)

The evaluation team also interviewed a number of FAO partners, including:

Jimmy Smith, Senior Agricultural Specialist, World Bank

Jorgen Schlundt (by audio conference), Director, Department of Food Safety and Zoonosis, WHO

Bernard Vallat, Director-General, OIE

Monique Eloit, Deputy Director General, OIE

Alain Dehove, Coordinator, World Fund, OIE

Kazuaki Miyagishima, Head, Scientific and Technical Department, OIE

Kathleen Glynn, Chargée de mission

Keith Hamilton, OFFLU Coordinator

Appendix 3. Draft outline of Country Reports

- a.* Country reports will be developed for Nigeria, Cote D'Ivoire, Egypt, Bangladesh, Cambodia and Viet Nam.
- b.* Reports will have the following draft structure:
 - i.* Introduction
 - ii.* HPAI status and evolution
 - iii.* National HPAI response framework
 - iv.* Donor and technical assistance support
 - v.* Role and activities of FAO
 - vi.* Synthesis and discussion of FAO's contributions and roles. Candidate issues to be considered here, depending of the specifics of each country, will include intervention approaches, key outputs and outcomes, project design, operational issues, influence on national decision making, links with FAO's global mandate, implications of FAO reform process.
 - vii.* Country level conclusions and recommendations

Appendix 4. Draft outline of the Regional ECTAD reports.

- a.* Reports will be prepared on visits to the regional ECTAD offices in Mali, Kenya and Thailand.
- b.* Reports will have the following draft structure:
 - i.* Introduction
 - ii.* Overview of activities
 - iii.* Roles, responsibilities and impacts in the region
 - iv.* Partnerships
 - v.* Contributions to national and regional initiatives
 - vi.* Synthesis and discussion of regional ECTAD's contributions. Candidate issues to be considered here will include the extent to which these units have fulfilled their mandates in particular in co-ordination of regional and country activities; formulation and implementation of regional programmes/projects; provision of technical and operational support to countries; promotion and coordination of regional networks; advocacy and fund-raising for HPAI and Transboundary Animal Diseases interventions; the institutional and financial sustainability of the regional ECTADs and RAHCs; and the efficiency and adequacy of working arrangements within FAO (with HQ, regional and country offices).
 - vii.* Conclusions and recommendations

Appendix 5. Draft outline of the final report to FAO

- a. The final report will be based on the following draft structure:
 - i. Contents
 - ii. Abbreviations and acronyms
 - iii. Executive summary
 - iv. Introduction
 - v. Evaluation process
 - vi. Analysis of national and regional responses
 - vii. Interface with global programmes
 - viii. Synthesis and discussion. This will be structured under the headings of
 - 1. Relevance and appropriateness of FAO's strategy and programme at country level
 - 2. Efficiency of programme activities
 - 3. Effectiveness of individual country programmes
 - 4. Effectiveness of global/regional programmes at country level
 - 5. Sustainability and impacts
 - 6. Broader outcomes of FAO-supported interventions
 - 7. Roles of regional ECTADs and RAHCs
 - 8. Effectiveness of partnerships
 - ix. Conclusions and recommendations

Appendix 6. Timetable of the evaluation process

- Briefing and interviews with FAO staff in headquarters, 15 – 21 September 2009, Rome
- Meeting of the Evaluation's Consultative Group, 22 September 2009, Rome
- Briefing with staff of OIE, 23rd September, Paris
- Nigeria country visit, 12 – 16 October
- Egypt country visit, 19 – 22 October
- Cote D'Ivoire country visit, 12 -14 October
- Mali, regional RAHC visit, 15 – 16 October
- Kenya, regional RAHC visit, 23rd October
- Kenya, regional workshop, 25 – 27th October
- Bangkok, regional ECTAD visit, 4 – 6 November
- Bangladesh country visit, 7 – 12 November
- Cambodia country visit, 13 – 20 November
- Vietnam country visit, 21 – 27 November
- Thailand regional workshop, 30 November – 1st December
- Draft report circulated for comments, 8th January 2010
- FAO staff meeting, 13th January 2010
- Revised draft, 15th January 2010
- Peer Review Panel meeting, 25-27th January 2010
- Revised draft, 29th January 2010
- Consultative Group meeting, 16th February 2010
- Final Report, 28th February 2010

Final Report

Independent Evaluation of FAO's Participatory Disease Surveillance and Response Programme in Indonesia

Prepared by:

**Prof. Brian Perry (Team Leader)
Dr. Kamarudin Md. Isa
Mr. Carlos Tarazona**

for the FAO Evaluation Service

July 2009

ACKNOWLEDGEMENTS

We would like to thank most sincerely the entire team of staff of the FAO HPAI programme in Indonesia for their hospitality, openness and willingness to engage with us, one of many evaluation teams they must encounter. We were impressed with the sense of purpose, teamwork and commitment displayed, and the constructive manner in which our evaluation was handled. Evaluations need to look back in order to learn how to manage what is ahead; we view our evaluation as contributing to the next phases of HPAI control in Indonesia, and the successful contributions of FAO to this.

We would particularly like to thank Jim McGrane, Team Leader of the FAO HPAI Control Programme, and senior team members Robyn Alders and Eric Brum. We also acknowledge the most constructive contributions from Ron Thornton, Mary Young, Emma Watkins, Elly Sawitri, Ken Shimizu, Ester Hutabarat and the many members of staff in the programme offices in Jakarta. We also thank Subhash Morzaria and his team at the regional ECTAD office in Bangkok, Thailand.

We are also very grateful to the Government of Indonesia, particularly to the Director of the DGLS, Dr. Tjeppey Soedjana, the Acting Director of DAH Dr. Turni Rusli Sjamsuddin and the head of the Sub Directorate of Surveillance, Dr Bagoes Poermadjaja, the senior staff of the CMU (Drs. Muhammad Azhar, Ade Sjachrena Lubis and Noeri Widowati) and the heads of provincial and district livestock services. We also thank all the development partners and donors met by the mission, for their support with this exercise and their inputs throughout the evaluation process. We thank the many PDSR officers and LDCC coordinators we met for their constructive comments and suggestions regarding their programme. We are most grateful to the dedicated team of interpreters who applied their substantial talents to assisting the evaluation team during the discussions with officials and communities in different parts of Indonesia.

List of Acronyms

ACIAR	Australian Centre for International Agricultural Research
AGA	Animal Health and Production Division
AGAH	Animal Health Service
ASEAN	Association of Southeast Asian Nations
AUSAID	Australian Agency for International Development
CBAIC	Community-based Avian Influenza Control project
CMU	Campaign Management Unit
CREATE	Centre for Human Resource Development and Applied Technology
CTA	Chief Technical Advisor
DAH	Directorate of Animal Health
DIC	Disease Investigation Centre
DGLS	Directorate General of Livestock Services
DMM	Decision Makers Meeting
DSA	Daily Subsistence Allowance
DSO	District Surveillance Officer
ECTAD	Emergency Centre for Transboundary Animal Diseases Operations
EMPRES	Emergency Prevention System for Transboundary Animal Diseases
ET	Evaluation Team
FAO	Food and Agriculture Organization of the UN
GDP	Gross Domestic Product
GoI	Government of Indonesia
HPAI	Highly Pathogenic Avian Influenza
HQ	FAO Headquarters
IEC	Information, Education and Communication
IDP	Indonesian Dutch Partnership
ILRI	International Livestock Research Institute
KAP	Knowledge, Awareness and Practices survey
KOMNAS FBPI	Indonesia National Committee for Avian Influenza Control and Pandemic Influenza Preparedness
LDCC	Local Disease Control Centres
MoA	Ministry of Agriculture
MoH	Ministry of Health
M&E	Monitoring and Evaluation
ND	Newcastle Disease
NGO	Non Governmental Organization
NSWP	National Strategic Work Plan
OIE	World Organization for Animal Health
OFFLU	OIE-FAO network of expertise on animal influenza
OR	Operational Research
PBEE	FAO Evaluation Service
PDR	Participatory Disease Response
PDS	Participatory Disease Surveillance
PDSR	Participatory Disease Surveillance and Response
PMU	Provincial Management Unit
RAP	FAO Regional Office for Asia and the Pacific
RMU	Regional Management Unit
SIKHNAS	National Animal Health Information System
SOP	Standard Operating Procedures
TCEO	Emergency Operations Service
UN	United Nations
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WB	World Bank
WHO	World Health Organization

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Executive Summary

This report describes an independent external evaluation of the Participatory Disease Surveillance and Response (PDSR) programme of the Food and Agriculture Organisation (FAO) of the United Nations in Indonesia, in the context of the broader response by FAO to the occurrence of Highly Pathogenic Avian Influenza (HPAI) in the country.

The evaluation team has been blessed with the privileges of hindsight. We recognise that some of the comments and judgements we make are aided by experiences gained by many over the last three years.

The evaluation team adopted a consultative approach, seeking opinions and feedback from a wide range of stakeholders at different stages of the evaluation process. A desk study was undertaken prior to the mission to review all relevant background information. Briefings were held with FAO staff in Rome and Bangkok. A visit was made to Indonesia for three weeks in June 2009. During the mission to Indonesia the evaluation team met the FAO project staff, the Indonesian Government officials at national and regional levels tasked with HPAI control, and a wide variety of stakeholders including development partners, donor agencies, NGOs and the private sector. The evaluation team visited several project sites in order to gain insights into the programme activities and the results achieved. These field visits were complemented by two surveys conducted in April-May 2009 by the Indonesian NGO CREATE as an input to this evaluation. Towards the end of the mission, a debriefing was held with key staff from FAO ECTAD offices in Jakarta and Bangkok to discuss the team's initial findings, conclusions and recommendations. This was followed by a stakeholder workshop held at the Ministry of Agriculture with representatives from central and local Government, FAO, donors, development partners, the private sector and academia.

The PDSR programme started as a pilot project of FAO in early 2006, with financial support from Australia, Japan and the United States, and quickly discovered widespread cases of HPAI in backyard poultry. Advice from the FAO had contributed to the establishment of a National Strategic Work Plan (NSWP) in late 2005, coordinated by a Campaign Management Unit (CMU), located in the Ministry of Agriculture (MoA); the CMU was established in March 2006. The NSWP provided a broad blueprint for HPAI control, comprising nine technical elements. There were: (i) campaign management; (ii) enhancement of HPAI control in animals; (including vaccination; stamping out and movement control); (iii) surveillance and epidemiology; (iv) laboratory services; (v) quarantine services; (vi) legislation and enforcement; (vii) communications; (viii) research and development; and (ix) industry restructuring. The initial focus of the FAO's approach under the NSWP was to deploy Participatory Disease Surveillance (PDS) tools used in searching for the last cases of rinderpest in the Horn of Africa. The new PDS programme focussed on the backyard poultry sector, having reached the conclusion that other sectors were not involved in the outbreaks. The pilot project was very successful in identifying HPAI, and the focus on the backyard sector continued into the full annual projects which followed for 2006-2007 and 2007-2008. The predominant focus on this sector apparently failed to take into consideration adequately the substantial growth in the commercial poultry enterprises of Southeast Asia, and of Indonesia in particular, from the mid to late 1990s through to the time of the initial outbreaks, fuelled by the "livestock revolution", and the likely role this dynamic played in the introduction, spread and maintenance of the disease. This led to a disproportionate focus on the backyard poultry sector, and an inadequate consideration of the broader disease dynamics in and across all the Indonesian poultry enterprises, a deficiency the FAO programme team is now addressing. This disparity was further fuelled by the failure to appoint or recruit the services of commercial poultry production, industry and market chain specialists, leaving a

significant gap in the understanding of poultry enterprises in Indonesia, a situation which has still not been completely resolved. Indonesia has a dynamic and diverse set of poultry enterprises, ranging from the highly industrial, through the small scale semi-intensive broiler and layer enterprises, to the scavenging backyard (“hobby”) poultry. These often interconnected enterprises play a huge role in providing protein of animal origin to the diet of Indonesians, and in contributing significantly to inclusive growth and the national economy.

The PDS also included a response element, initially deployed as separate teams, but merged into one in late 2007 (a process completed by May 2008). What started as a pilot programme in 4 Local Disease Control Centres (LDCCs) of Java progressively expanded throughout much of Indonesia, and peaked in numbers in September 2008 with 2,123 PDSR officers in 31 LDCCs situated in Java, Bali, Kalimantan, Sulawesi and Sumatra. PDSR officers are either civil servants or people recruited by local government on fixed term contracts, and the LDCCs operate through the local District and Provincial Government offices, under the authority of Livestock Services. The original epidemiological unit of focus of the PDSR was not defined (although it tended to be the household), but this was specified to be the village in November 2007.

A significant component of the surveillance element of the PDSR programme is data collection, analysis and synthesis. Data is collected in the field through participatory approaches using checklists, which are then transcribed on to a series of long forms. Since a new data collection system was put in place in February 2008 (and were in use in all LDCCs in May 2008), the volume of data collected has risen, but this change is seen by most to have improved the quality and utility of emerging information. At present the analyses of data from the new system is underway, allowing some initial assessments of both the disease dynamics (for example in terms of seasonal trends and spatial risk dynamics of HPAI) and of the efficacy of intervention measures being deployed. Participatory HPAI data collection and analysis, even in its current form is limited in its ability to answer critical questions of epidemiology as it is non-random and focuses on backyard poultry. There is clearly much more yet to do in the way of analyses, and much more use to be made of the synthesised data in informing policies and strategies for HPAI control.

With regard to HPAI surveillance, LDCCs conduct both a structured active (scheduled visit) surveillance (92% of all visits), nominally based on an understanding of risk factors, and a passive (callout visit) surveillance (8% of all visits) when they respond to specific calls to investigate suspect HPAI cases. Considerable effort has been made to train PDSR officers, and the programme has developed an impressive cadre of Master Trainers. Results recently emerging show that the callout surveillance is far more effective in detecting HPAI than scheduled surveillance visits. The evaluation team recognizes that scheduled visits have played an important role in providing a more comprehensive understanding of HPAI in the Districts, but questions whether there is adequate justification to maintain these costly visits in their current form.

Surveillance results indicate strong seasonal and spatial trends of HPAI in backyard poultry. Consistent upward trends in the detection rates of HPAI appear to occur each year during the month of August, and from December to March (during the wet season). Spatial analysis is still underway.

PDSR officers have a set of 6 prevention/response tools at their disposal. These are: Information, Education and Communication (IEC); focal culling with/without compensation; poultry confinement and species separation; application of biosecurity measures (cleaning and disinfection); movement control; and vaccination. The PDSR teams were seen to undertake

these tasks with enthusiasm and commitment. However, it is likely that the response tools are having little overall impact on the control of HPAI, although arguably they may play a role in reducing the risk of virus exposure to humans in some settings. With very limited exceptions, Districts and Provinces do not have funding for compensation, and as a result teams have difficulty carrying out focal culling. Similarly, backyard poultry owners are reluctant to confine their scavenging chickens following outbreaks, and limited practical advice is provided to them in terms of affordable models for confinement and feeding. The efficacy of biosecurity measures in backyard settings is questionable, and it is often carried out inefficiently. Compliance with movement control is extremely difficult to monitor. And vaccine is not available to implement vaccination. In summary, the response mechanisms undertaken by PDSR officers are very weak and thus the PDSR response alone is insufficient and very unlikely able to contain and eliminate the disease.

As a mechanism for following up their responses, PDSR teams now have a system of village classification. Villages are classified as 'Apparently Free', 'Infected', 'Suspect (14)', 'Suspect (60)', or 'Controlled'. HPAI compatible events are confirmed or otherwise using the Anigen[®] rapid antigen detection test. This classification allows an internal evaluation of the impacts of interventions. Direct measures of the effectiveness of outbreak control in infected villages being developed are: (1) the proportion of villages that progressed from 'Infected' to 'Apparently Free' or 'Controlled'; (2) the proportion of 'Controlled' villages with no subsequent breakdown to 'Infected' or 'Suspect (14)'; (3) the time from a village being detected as 'Infected' to becoming 'Controlled' or 'Apparently Free'. These analyses are in their early stages, and should be a valuable resource in providing empirical evidence of the efficacy of activities by PDSR teams.

Data on the growth of poultry enterprises in Indonesia, as well as data emerging from the programme and from other projects, indicates that poultry production sectors other than the backyard sector (sector 4) are likely responsible for the persistence of the disease, in particular sector 3 (comprising smaller scale commercial enterprises), and particularly those on the island of Java. Such high risk producers on tight financial margins are likely to dispose of large numbers of birds at the first sign of disease, bringing infection into collector yards and distributor markets. While the FAO programme as a whole, as well as its principle sponsors USAID and AusAID, are now recognising and responding to this through the development of new initiatives involving other sectors, the PDSR remains focussed primarily on the backyard sector 4, calling into question its long term relevance in the control of HPAI.

Despite this questioned relevance of a focus of PDSR on sector 4, and of the inadequacies of its response tools in tackling endemic HPAI, there is no question that the PDSR approach, introduced into the Provincial and District livestock services (Dinas) throughout much of the archipelago of Indonesia, has strengthened the capacity of local animal health services in Indonesia. It has injected a new lease of life into the understanding of, and responsiveness to, the animal health constraints of many rural and urban communities. This view is strongly held by most of the towns and villages served, by most of the Dinas staff who have seen their institutional reputation enhanced, and by the PDSR officers who are seen as responsive public servants. Despite the focus on HPAI, their mandate has inevitably broadened to respond to diseases of other species, brought to their attention by communities. The big question is how, within the context of HPAI control, this responsiveness can be broadened outside the confines of backyard poultry (in particular to sector 3), and within the broader context of animal health services, outside the focus on poultry alone, and institutionalised in a sustainable way that reduces considerably the reliance on external funding.

Some models for capturing the key features of the PDSR in a transition to sustainable District and Provincially funded veterinary services extending beyond HPAI control in the backyard poultry sector have been proposed. The evaluation team considers that there is an opportunity to use these models to initiate a national process to consider the evolution of sustainable veterinary services to meet the needs of different stakeholders, building on the strengths of the PDSR programme (in particular the participatory village and community engagement tools), seeking a seamless interface with District and Province Dinas offices, retaining Indonesia-wide relevance for disease surveillance purposes, and at the same time recognising the idiosyncrasies and particular demands of different regions and different livestock production systems.

The evaluation team lauds the hard work and commitment of the FAO team of Indonesian and international staff. The programme has gone through a very challenging few years, with a complicated agenda, with high expectations of donors and others in the national and international communities, the complications of short-term funding constraints and of staff turnovers. The team concludes that the PDSR programme has played an important role in responding to the HPAI outbreaks in Indonesia. The disproportionate attention given by this approach to the backyard sector has been recognised, and is currently being redressed by considered adjustments in the strategy and work plans of the programme. Importantly, the very positive impacts that PDSR has had on revitalising veterinary services in Indonesia need to be captured, as well as its effects on empowering communities' access to these public services. There is a need for a transition into more sustainable and responsive animal health services which meet the needs of a wider set of stakeholders in the growing livestock enterprises of Indonesia.

The evaluation team made a series of general and specific recommendations in six areas of work. These are provided below:

1. Programme management.

- a. The evaluation team recommends that much clearer lines of authority and responsibility are developed within the FAO programme to ensure that all staff has a clear understanding of the roles that they and their colleagues play, how they complement each other, and how these differing roles contribute to the overall strategy, work plan and programme deliverables.
 - i. As part of this process, consideration should also be given to long-term staff being subject to regular (annual) performance assessments.
- b. The evaluation team recommends that the programme further develops and publishes a clear Strategic Framework and derived Work Plans for all its activities, building on the informal matrix framework drafted in 2008 (based on different “sectors”), and on the geographically focussed Work Plan (also developed in 2008). These interlinked and enhanced Strategy and Work Plan frameworks should be used as management, communications and planning tools.
- c. The evaluation team would like to see the FAO programme, through its team leader and/or designated representatives, play a stronger and more direct role in the CMU-DAH, particularly as it relates to a greater engagement with the commercial poultry sectors, and the forthcoming transition process to a more sustainable deployment of selected elements of the PDSR surveillance and response tools and infrastructures in an evolving Indonesian veterinary service.
- d. The evaluation team recommends that to assist in monitoring and accountability, future contractual documentation developed by FAO with

donors provides much greater clarity of the goals and objectives, and identifies clear outputs that are achievable within the project lifetime.

2. Engagement with all sectors of the Indonesian poultry industries.

- a. Results emerging from the FAO programme and other sources indicate that sectors other than the backyard poultry sector play critical roles in the dynamics and maintenance of HPAI in Indonesia. The FAO programme has recognised this, and continues to adjust its programme of responses accordingly. The evaluation team considers that the programme would benefit substantially from commercial poultry production and value chain expertise as a core ingredient of its staffing, and endorses the identification of such a position in the staffing proposed for 2009-2010. It would be advantageous if such a post or posts could be filled by qualified Indonesian poultry experts. While it is understood that the next phase of the project proposes to engage a poultry industry veterinarian to meet this demand, the evaluation team considers that new knowledge and understanding of poultry enterprises from a Systems perspective, not exclusively a poultry health perspective, would bring important additional insights to the overall programme, and enhance its chances of success.
- b. Urgent efforts need to be made to evaluate the applicability of the PDSR tools as part of a fuller engagement with sector 3 of the poultry industry, often located in close juxtaposition to poultry in sector 4. Of particular importance will be the need for a focus on prevention of HPAI in sector 3, with an emphasis on vaccination and biosecurity, rather than on response.

3. Deployment of PDSR teams

- a. In the interests of greater efficacy in HPAI surveillance and control, the evaluation team recommends that the programme should adopt a flexible approach to the strategic deployment of PDSR teams, based on a regular analysis of emerging data.
- b. The evaluation team recommends a reassessment of the response mechanisms used by the PDSR teams to evaluate options for increasing efficacy (reducing the risk of human exposure) and cost effectiveness. This should include consideration of redeploying certain disease prevention mechanisms from sector 4 to sector 3.

4. Surveillance, epidemiology, monitoring and evaluation

- a. The evaluation team recommends improving the efficiency of the surveillance process, based on the evidence generated by the programme. In particular this will likely involve a considerable reduction, or possibly elimination, of the scheduled (active) visits, and greater focus on the callout (passive) surveillance. In addition, the need for Desa level data, currently renewed annually, should be re-evaluated based on empirical evidence of its use.
- b. The evaluation team recommends revisiting the length and detail of the PDSR database based on feedback from internal and external users, with the view of ensuring that it is an action-orientated tool for disease monitoring.
- c. The evaluation team recommends that the feedback of synthesised data should be enhanced considerably. This is not just sending out the 14 reports to LDCCs on a regular basis (and without the need for letters of request through the

Provincial Dinas), but more importantly feedback based on an analysis of data needs for decision making at CMU/DAH, RMU/DIC, Province and District levels, to ensure data has every chance of being useful, and at the same time that the motivation for data recording is institutionalised.

5. Capacity building

- a. The evaluation team commends the capacity building initiatives of the Information, Education and Communication team, and the high quality of participatory tool trainers. The evaluation team recommends consideration of new capacity building areas which respond to the evolving focus of the programme. These are:
 - i. Using the emerging database and the analytical tools developed as capacity building tools at two levels: a) at the senior management level on the application of emerging data to refining HPAI control policies and strategies, and b) at the field level on training in basic epidemiological principles (which data is useful, which is not, and why, and what are the most cost effective ways of gathering such data?).
 - ii. Amplifying the training of PDSR officers to include broader structured epidemiological investigative skills applicable to HPAI and to a wider range of animal species and diseases.

6. The transition of PDSR tools into a responsive and sustainable national veterinary service.

- a. The evaluation team recommends that the FAO programme plays a lead facilitating role in building a national process to consider the evolution of Indonesian veterinary services to meet the broad needs of different stakeholders, building on the strengths of the PDSR programme (in particular the community engagement elements), seeking a seamless interface with District and Province Dinas offices, retaining Indonesia-wide relevance for surveillance purposes and at the same time recognising the idiosyncrasies and particular demands of different regions.
- b. The evaluation team recommends that FAO, the Government of Indonesia and donors fund an orderly integration of the strengths of the PDSR programme into the national veterinary system as an exit strategy. The focus in this transition period should continue to be on capacity development of Indonesian systems, frameworks and personnel dealing with HPAI. Based on the experience of other community based health systems, a realistic timeframe is likely to be in the order of 3 to 5 years, with a horizon of 10 to 20 years of limited external support.

CHAPTER I: INTRODUCTION

In early 2006, FAO and the Ministry of Agriculture of the Government of Indonesia (GoI) piloted the Participatory Disease Surveillance and Response (PDSR) programme with the objective of training and providing operational support to government veterinarians and other animal health officers in rapid detection, reporting and response in the face of outbreaks of highly pathogenic avian influenza (HPAI). Through the programme, a cadre of animal health teams has been built up, who have been trained in surveillance, containment, and prevention skills. The programme has provided teams with the resources to conduct field activities and to report findings into the national and local livestock service systems. This report describes an independent evaluation of the PDSR programme in the third year of its implementation, conducted by a team commissioned by the FAO Evaluation Service (PBEE), with the purpose of assessing the relevance, efficiency, effectiveness and sustainability of the programme and making recommendations for future improvements.

The report has six chapters. The first chapter provides the background to the evaluation, including the methods used, team composition and itinerary. The second chapter describes the context of the evaluation, in terms of HPAI status, the government infrastructures put in place to tackle it, and the funded projects that have been developed as a response. The third chapter describes the evolution of the PDSR programme, and its responses to changing knowledge of the disease dynamics. The fourth chapter describes the results achieved by the programme in the different spheres of its activity.

Chapter five provides an assessment of the performance of the PDSR programme in the control of HPAI, and discusses the implications for the future. Chapter six presents the conclusions and recommendations.

The evaluation team has been blessed with the privileges of hindsight. We recognise that some of the comments and judgements we make are aided by experiences gained by many over the last three years.

1. Purpose and scope of the evaluation

This evaluation forms part of the Second Real Time Evaluation of FAO's global work on HPAI control. The scope of this component of the evaluation includes assessment of:

- a) Relevance of the PDSR programme to the country's priorities and needs for animal disease prevention, mitigation, surveillance and control; in particular, the mission should review the longer-term relevance of the programme, including institutional arrangements, for increasing national capacities to prevent and control future outbreaks of HPAI and of other zoonotic and economically significant animal diseases;
- b) Clarity and realism of the programme's development (goal) and immediate objectives, including specification of target areas and identification of beneficiaries;
- c) Quality, clarity and adequacy of programme design, including;
 - realism, clarity and logical consistency between inputs, activities, outputs and progress towards achievement of objectives (quality, quantity and time-frame);
 - provisions for programme adjustments and flexible response to opportunities and changing circumstances;
 - realism and clarity of institutional relationships, in the managerial and institutional

framework of the Government of Indonesia (GoI) for the implementation of the PDSR programme;

- realism and clarity of capacity building and training approaches;
- d) Efficiency and adequacy of programme implementation including:
- availability of funds and human resources;
 - the quality and timeliness of input and output delivery by FAO and the GoI;
 - managerial and work efficiency;
 - adequacy of the Monitoring and Evaluation system, reporting and transparency and accountability mechanisms put in place;
 - extent of national support and commitment, and quality and quantity of administrative and technical support by FAO;
 - PDSR results, including a full and systematic assessment of outputs and outcomes produced to date in the following areas:
 - i. Campaign management.
 - ii. Surveillance and epidemiology.
 - iii. Enhancement of HPAI control in animals.
 - iv. Information, education and communication.
 - v. Research and development.
- e) Strengths, weaknesses and constraints to effectiveness of the PDSR programme approach;
- f) Sustainability prospects of the PDSR programme, taking into account:
- Institutional issues surrounding PDSR implementation.
 - Possible alternatives in the absence of donor support.

The evaluation has also tried to assess the likely effects of the PDSR programme on national policy reform and programme development, national investment in – and attention for – animal health taking into account the major overhaul of the programme in early 2008. The Terms of Reference of the evaluation can be found in Appendix 1.

2. Methodology

The evaluation made use of a wide range of quantitative and qualitative tools and methods to collect, analyze and present its findings, conclusions and recommendations.

In pursuing its work the evaluation team adopted a consultative approach, seeking opinions and feedback from a wide range of stakeholders at different stages of the evaluation process. These included:

- FAO staff in HQ and at Regional and Country Office levels;
- Indonesian Government staff from the Ministry of Agriculture, particularly from the Directorate General of Livestock Services, the Directorate of Animal Health (DAH) and the Campaign Management Unit (CMU);
- Staff from Provincial and District Dinas, including LDCCs and PDSR officers as well as local authorities at Desa¹ and sub-district level;
- Representatives from other Government agencies involved in HPAI control such as the Ministry of Health, the Ministry of Internal Affairs and KOMNAS;
- Representatives of poultry producers particularly from the most HPAI affected areas;

¹ Desa is the Bahasa Indonesian term for village, and is used in this report

- Staff from sister UN agencies (WHO, UNICEF) dealing with HPAI issues; and,
- Development partners and donors implementing/funding HPAI activity in Indonesia.

Prior to the evaluation, PBEE staff carried out a desk study and made a preparatory visit to Indonesia to gather and review all relevant background information (see Appendix 2) and organize the field surveys component of the evaluation.

In a period of three weeks, the evaluation team visited several project sites in order to observe and gain insights into the programme activities, and the results achieved in terms of the capacity, knowledge and skills developed at local levels. These field visits were complemented by two field surveys conducted in April-May 2009 by the Indonesian NGO CREATE as an input to this evaluation. The specific objective of these surveys was to gather information on the effects of the PDSR programme in strengthening the capacity of local animal health services as well as in increasing the knowledge and awareness of poultry producers with regards to HPAI prevention and control. A summary report of the field surveys can be found in Appendix 3.

Towards the end of the mission, a debriefing was held with key staff from FAO ECTAD offices in Jakarta and Bangkok to discuss the team's initial findings, conclusions and recommendations. This was followed by a stakeholder workshop held at the Ministry of Agriculture with representatives from central and local Government; FAO; donors; development partners; private sector and academia. The evaluation team made use of this workshop to share its initial findings, as well as to hold group discussions on issues that were felt to be critical for the future, namely:

1. Enhancing engagement and partnership with the commercial poultry enterprise sectors for more strategic control of avian influenza

- Who are the key players?
- How can we better engage the sectors of the commercial poultry industry in which HPAI is important?
- How will we do this?
- What are the products? What outcomes could you anticipate in a 3 year period?

2. Increasing the response capacity of PDSR and DINAS officers for greater impact on avian influenza control and human disease risk.

- Which of the PDSR response tools show the greatest room for improvement?
- How can they be improved? Can you provide some practical examples?
- What impact would these improvements have on disease control?

3. The transition towards a sustainable and effective surveillance and response capacity in Indonesia: whither the PDSR?

- What are the key elements of the PDSR programme that could form the basis of a sustainable disease surveillance and response capacity in Indonesia?
- How would such an initiative be coordinated between central government, provinces and districts?
- Is cost sharing a realistic option? And if so, how would it be achieved?

A summary of the deliberations of the above workshop is included in the present report (see Appendix 4).

The first draft of the full report of the evaluation team was submitted to the FAO staff in Jakarta on 7th July 2009. A revised draft was sent on 20th July to FAO staff in Jakarta, Bangkok and Rome. The final report was submitted on 30th July to the FAO Representative in Indonesia for preparation of a management response and distribution of the report to local stakeholders.

3. Team composition

The evaluation team was selected by PBEE following a transparent and widely consultative process. This included:

- Wide distribution of calls for expression of interest through the FAO and specialized development agencies Web sites (such as ReliefWeb and AusReady) as well as the FAO regional and country offices network;
- Requests for submission of evaluation team candidates to the members of the Consultative Group for the Second Real Time Evaluation of FAO's Work on HPAI;
- Exchange of communications with the Directorate General of Livestock Services of the GoI, and particularly with the Government-nominated focal point for the evaluation, requesting comments on the Terms of Reference and the nomination of possible team members;
- Discussions with FAO staff responsible for the HPAI programme in Indonesia.

The mission team comprised:

- Team Leader: Professor Brian Perry, Consultant; currently Visiting Professor of Tropical Veterinary Medicine, University of Oxford, Honorary Professor, Faculty of Medicine and Veterinary Medicine, University of Edinburgh, and Honorary Professor, Department of Tropical Veterinary Diseases, University of Pretoria; resident in Kenya.
- Team Member: Dr Kamarudin Mohammed Isa, Director of the Research Division and Veterinary Laboratory, Ministry of Agriculture, and Chairman of the ASEAN Task Force on Avian Influenza, Kuala Lumpur, Malaysia.
- Team member (representing FAO/PBEE): Mr Carlos Tarazona, Evaluation Officer, Rome, Italy.

4. Itinerary and Schedule of work

The team leader travelled to Rome for briefings with FAO HQ staff on 21 April 2009 and met with:

- Samuel Jutzi, Director, Animal Health and Production Division, AGA (courtesy call only),
- Dominique Burgeon, Senior Operations Officer, TCEO,
- Priya Markanday, Operations Officer, TCEO,
- Daniel Beltran, EMPRES staff, AGAH,
- Gwen Dauphin, OFFLU co-ordinator, AGAH,
- Tony Forman, Acting Team Leader, HPAI Programme in Indonesia (by teleconference)

The full evaluation team assembled in Bangkok for briefings at FAO-RAP on 29 May 2009, and met with:

- Subhash Morzaria, Regional ECTAD Manager
- Mostafa Nosseir, Senior Operations Officer
- Wantanee Kalpravidh, Regional Project Coordinator
- Anthony Burnett, Regional Communications Advisor
- Hans Wagner, Senior Animal Production and Health Officer
- Carolyn Benigno, Animal Health Officer

The evaluation team arrived to Jakarta on Sunday 31 May 2009. The team was given an introductory briefing by the HPAI Programme's Team Leader, Jim McGrane, which was followed by two days of detailed briefing sessions with FAO staff on Monday 1 and Tuesday 2 June 2009.

The evaluation team met from 3-5 June with representatives of the Government, donors (USAID, AusAID and Japan), UN sister agencies (UNICEF and WHO) and development partners (ILRI, CBAIC, IDP and USDA) to gather their views and expectations regarding the PDSR Programme.

The team then divided into two sub-teams (A and B) to conduct extensive field visits. Team A (Brian Perry, accompanied at different stages by Elly Suwitri and Noeri Widowati) travelled to Makasar (south Sulawesi), Padang and Lampung (Sumatra). Team B (Kamarudin Isa and Carlos Tarazona, accompanied at different stages by Muhammad Azhar and Ade Sjachrena Lubis) travelled to Bali (Denpasar), Semarang and Yogyakarta (Java).

The mission reassembled in Jakarta on 13 June, and undertook one week of group work and follow-up meetings with staff from FAO, Government, development partners (including ASEAN), the private sector and donors (including the World Bank). During this period the team held a meeting with the FAO Representative in Indonesia. The team also conducted teleconferences with Drs. Laurence Gleeson (formerly Regional ECTAD Manager in Bangkok), Ian Morgan (Consultant Epidemiologist) and the team leader had conference calls with Peter Roeder (former Senior Animal Health Officer, FAO Rome and more recently FAO Consultant on HPAI to the Government of Indonesia). Members of the evaluation team also held individual discussions with former staff of the programme, namely Dr John Weaver (former CTA, Disease Control and currently FAO staff in Viet Nam), Dr Leo Loth (former Epidemiologist and currently FAO staff in Bangladesh) and Dr Jeff Mariner (former CTA, PDSR Programme and currently Senior Epidemiologist at ILRI).

The team presented their preliminary findings to senior FAO staff in Indonesia and the FAO Regional ECTAD Manager on 19 June. A Stakeholders Workshop was then held in Jakarta on 22 June, attended by programme staff, Government representatives (from central and provincial level), LDCCs, PDSR officers, academia, development partners and the private sector. During the workshop, an overview of preliminary findings was presented, and this was followed by group discussions on three topics related to the future of PDSR in the broader context of HPAI control in Indonesia.

In summary, the evaluation team met with almost every stakeholder based in Jakarta. It also made an effort to meet with key actors in HPAI control from all over the country. Through the field visits and the surveys, the evaluation team gathered the views of heads of villages, heads of district and provincial Dinas, LDCC coordinators and many small scale and backyard poultry producers engaged directly or indirectly with the programme. The evaluation team made every effort to listen to the views, constructive criticism and suggestions from the widest range of actors involved in HPAI control in Indonesia.

Further details of the itinerary and people met by the team in Indonesia can be found in Appendix 5.

CHAPTER II: BACKGROUND AND CONTEXT TO THE EVALUATION

This chapter describes the evolution of HPAI in Southeast Asia as well as its impact on the poultry industry in Indonesia. It also describes the role of Government agencies and development partners in controlling the spread of the disease.

These topics set the context for the assessment of the PDSR programme results and effectiveness that is presented in subsequent chapters.

1. Highly Pathogenic Avian Influenza (HPAI) in Southeast Asia and Indonesia

According to the OIE, over 60 countries have reported the occurrence of HPAI outbreaks to date (July, 2009). In Southeast Asia, 7 countries have been affected with HPAI since 2004. In January 2004, Cambodia, Thailand, Lao PDR and Vietnam notified the occurrence of the disease for the first time. They were followed by Indonesia (January 2004), Malaysia (August 2004) and Myanmar (March 2006). Brunei, Philippines and Singapore have remained free from HPAI so far.

Southeast Asian countries have applied different strategies to control and/or eradicate the disease. The choice has largely depended on the capacity of the veterinary services, availability of resources and the extent of outbreaks. Strategies used have included: stamping out with full compensation; stamping-out with partial compensation; limited culling (infected flocks) with or without compensation; limited culling with vaccination; strategic vaccination; and mass vaccination. Some countries have successfully eradicated the disease. Malaysia declared itself free from the disease on 7th September 2007, Myanmar on 20th April 2008, Cambodia on 7th October 2008, Lao PDR on 29th December 2008 and Thailand on 27th February 2009. The only two countries in the region that have so far been unable to control the disease are Indonesia and Vietnam, where HPAI is now considered to be endemic in several areas.

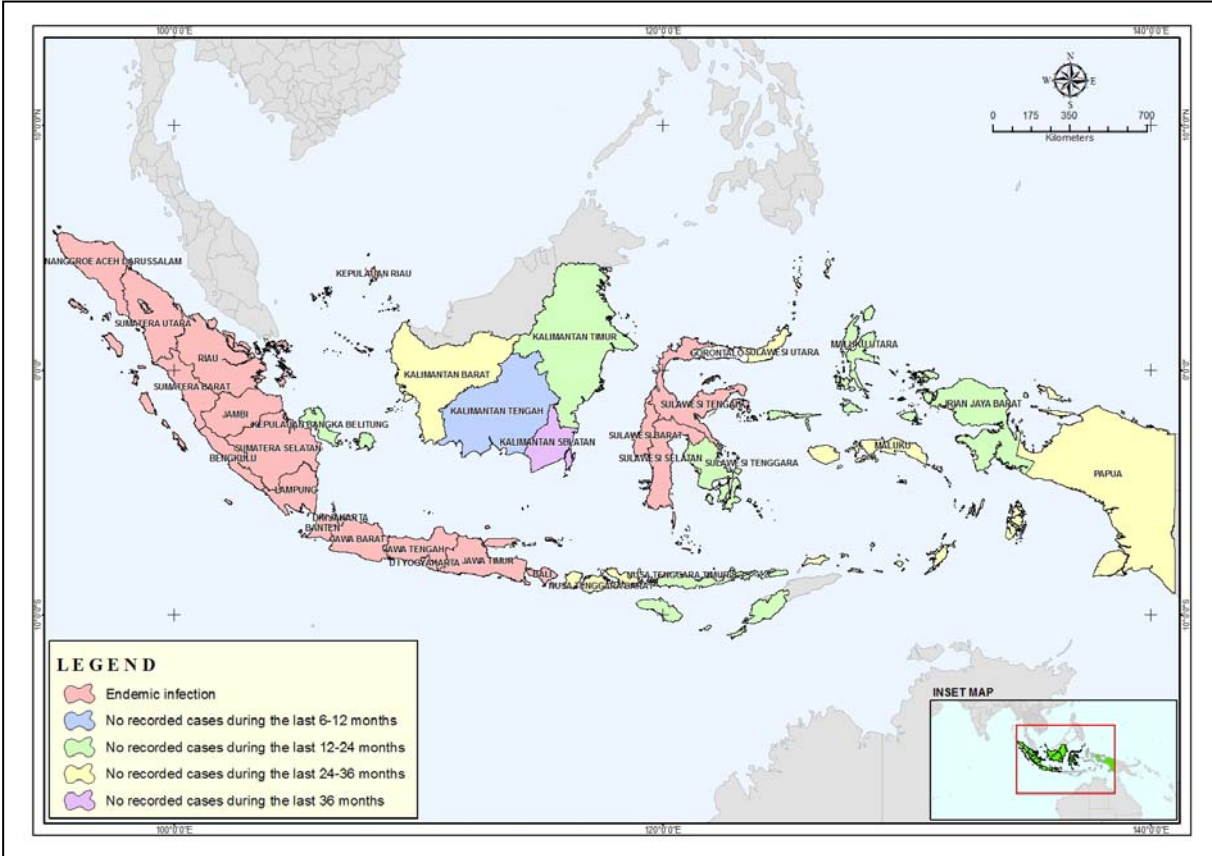
Even though Indonesia submitted its first avian influenza outbreak notification in January 2004, HPAI was suspected in August 2003 in a commercial layer flock. By December 2004 poultry deaths were estimated to be more than 8 million in over 100 districts/cities. By the end of 2005, the disease had spread to 23 provinces covering 151 districts/cities and registered over 10.45 million poultry deaths. By June 2009, 31 of the country's 33 provinces had been affected. The first human influenza case from H5N1 was confirmed in June 2005. This and other cases in the ensuing months precipitated a heightened awareness and concern of the potential impacts of HPAI in Indonesia and beyond. By December 2005, 20 human cases were confirmed with 13 fatalities. As of 1st June 2009, 155 human cases have been confirmed with 129 fatalities.

The absolute risk of humans becoming infected is low, but the relative risk when compared to other countries is high; the disease is still widely prevalent in poultry. The disease is indeed considered endemic in Java, Sumatra, Sulawesi and Bali (i.e. provinces where active cases have been reported in the last 6 months). No cases have been reported in the last 12 months in Kalimantan while Maluku, Papua and Nusa Tenggara have reported no cases in the last 24 months.

The persistent spread and incidence of the disease in both animal and humans has been blamed on the complexity and size of the Indonesian poultry sector, the weak capacity of Government agencies to deal with animal diseases, the relatively late recognition and support

provided by donor partners, and ultimately, in the risky behaviours so entrenched in people’s culture that have limited the success of prevention campaigns. The figure below depicts the current status of HPAI in Indonesia based on data derived from the Epidemiology team of the Campaign Management Unit. From it can be seen that the regions most affected are Java, Bali, Sumatra and parts of Sulawesi. Kalimantan Provinces and the eastern islands of the archipelago appear less affected, based on reports.

Figure 1. Current status of HPAI in Indonesia (as of June 2009). Source: FAO CMU Epidemiology Unit



2. Impact of HPAI on the Indonesian Poultry Sector

Based on the type of business and the level of bio-security, the poultry sector in Indonesia has been divided into 4 categories. Sector 1 is a highly organised industrial poultry system. This sector of the poultry industry group reportedly implements a high level of biosecurity and its products are sold in urban areas and some are exported. Sector 2 comprises poultry business groups that enter the commercial poultry production system and implement mid- to high-levels of biosecurity. Their products are sold in both urban and rural areas. Sector 3 is the group of poultry farm businesses which are very similar to those in sector 2, but have a weaker financial base, and as a consequence a low level of biosecurity which is less regularly applied; producers in this sector often have lower and more variable levels of other inputs. Sector 4 is the backyard keeping of poultry, often done as a subsistence or hobby enterprise, with little if any in the way of inputs, and no biosecurity. This type of poultry keeping is usually found in rural villages and in peri-urban and urban residential areas; it is often a side-business for extra income or for home consumption of poultry.

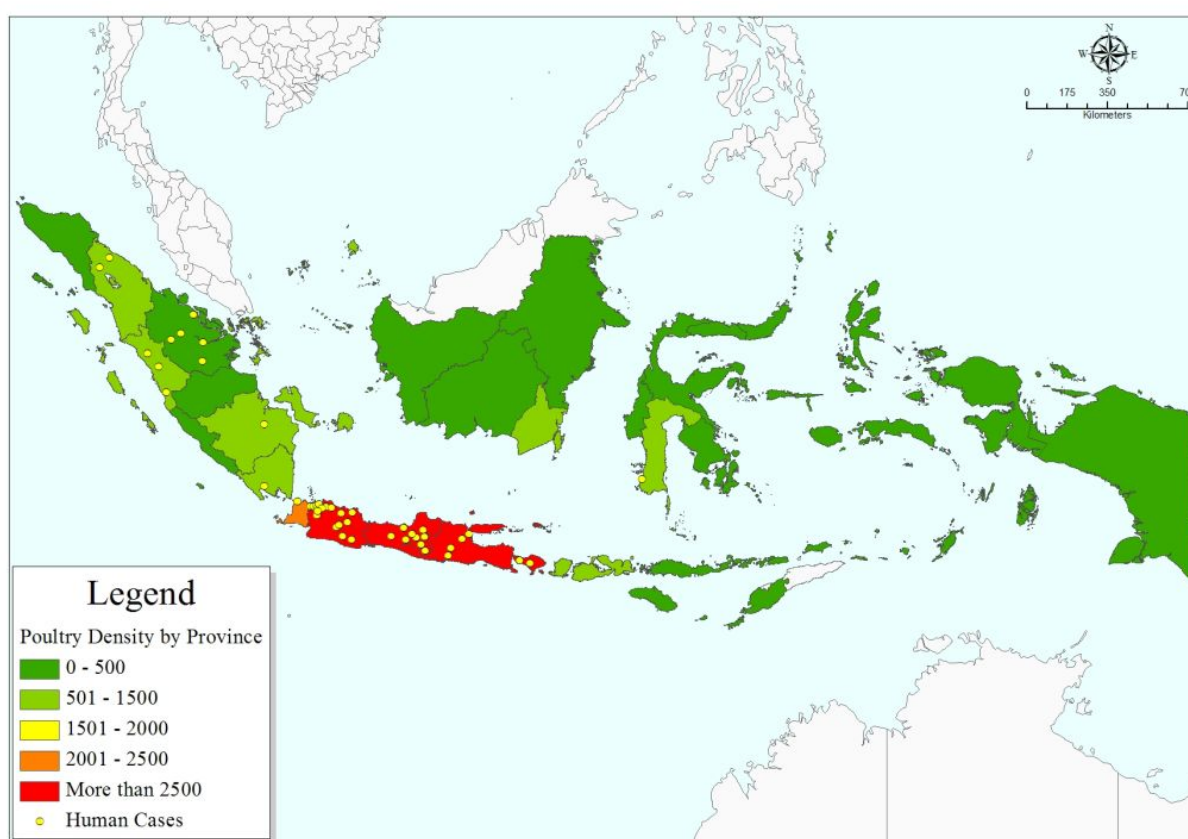
In 2008, total poultry population in Indonesia was estimated at 1.522 billion head, of which 70.7%, 19.1%, 7.7% and 2.4% were broilers, village chickens, layers and ducks. Poultry populations for the years of 2006, 2007 and 2008 are indicated in the following table. It shows that there has been a consistent continuous growth (7-15% annually) in the poultry population.

Table 1: Poultry population (2006-2008). Based on data from Deptan

Poultry species	2006	2007	2008
Village Chicken	291,085,000	272,251,000	290,803,000
Layer	100,202,000	111,489,000	116,474,000
Broiler	797,527,000	891,659,000	1,075,885,000
Duck	32,481,000	35,867,000	36,931,000
Total	1,223,301,000	1,313,273,000	1,522,101,000

About 80,000 poultry farms, holding 60 percent of the total national commercial broiler and layer production are located in Java, followed in number by Sumatra. Since most of the poultry infrastructure (comprising feed mills, abattoirs, cold storage and urban markets) is located on these two islands, the industry has shown little incentive to move to outlying regions, to which it transports eggs and live birds. Consequently, most H5N1 influenza cases in both animals and human have been concentrated in these two islands. The relationship between the density of poultry population and cases of human influenza is illustrated by the figure below.

Figure 2. Poultry density by Province with human HPAI cases of H5N1 virus of avian origin overlaid.
Source: FAO CMU Epidemiology Unit



The poultry sector has been affected by the growing number of human and avian influenza cases. Besides losses in the form of millions of poultry deaths, industry representatives have reported several associated market shocks over the past three years attributed to HPAI outbreaks in sectors 1-3. The poultry industry, represented by the Indonesia Poultry Association², has recently prepared a Road Map for re-structuring the sector and increased its engagement with Government agencies and development partners (FAO, USDA, IDP, ACIAR) to control the disease.

² The Indonesian Poultry Association is an umbrella organization of recent creation. It includes as its members representatives from different producers sectors (GAPPI, GPPU, GOPAN, PINSAR, GPMT, ASOHI), Chicken Collection Yard Association, the Chicken Slaughterhouse Association, etc.

There has been a divide between much of the poultry industry and Government livestock services, characterised by poor communication and mistrust. This has had a deleterious effect on HPAI control. Recently the poultry industry has become progressively more involved in dialogue on HPAI control with Government, and FAO would like to play more of a facilitating role in engaging both partners in partnership. However, it appears difficult to obtain adequate representation from the different sectors of industry, particularly from the epidemiologically important sector 3. The forum behind the Road Map is made up of the eight large companies (integrators) with somewhat limited representation of the more informal sector 3.

3. Government Agencies involved in HPAI control

There are several public agencies involved in HPAI control in Indonesia. They include an *ad hoc* co-ordinating body (the National Committee for Avian Influenza Control and Pandemic Influenza Preparedness; see below), line Ministries (such as the Ministry of Agriculture, Ministry of Health and the Ministry of Internal Affairs) and the provincial and district Governments. While the National Committee is in charge of coordinating the Government response, the Ministry of Agriculture has the responsibility of setting HPAI policies and guidelines for animal influenza, while the provincial and district governments have been tasked with implementing field activities.

3.1 National Committee for Avian Influenza Control and Pandemic Influenza Preparedness (KOMNAS FBPI)

As the avian influenza situation worsened in human and animals, a national committee was set-up in 2006 to coordinate activities of the Ministry of Agriculture and Health and other relevant Government parties (such as the Ministry of Internal Affairs, local and provincial governments). This body, known as KOMNAS FBPI was established on 7th March 2006 by Presidential Decree No 1/2007 and is located within the Coordinating Ministry for Economic Affairs. KOMNAS was tasked with developing a “National Strategic Plan for Avian Influenza Control and Pandemic Influenza Preparedness”. It has also carried out a few activities as implementing agency. These include:

- Production and publication of Standard Operating Procedures (SOP) for human case management and animal outbreak management.
- Strengthening the research capacity of the national reference laboratories at the Ministry of Health and Agriculture.
- Developing capacity in epidemiological surveillance, laboratory diagnosis, rapid responses and cases management and isolation.
- Roll out of a national HPAI public awareness document.
- Developing “bird-flu aware” communities.

The agency also received funding from donor organisations such as the World Bank to implement three out of six components of a US\$ 10 million project. These three components were i) Restructuring of the Poultry Industry, ii) Compensation and iii) Public awareness.

3.2 Ministry of Agriculture

The Ministry of Agriculture (MoA) has overall responsibility for controlling avian influenza “at source”, and has the mandate to develop policies and guidelines. In 2006, the MoA endorsed the “National Strategic Work Plan for the Progressive Control of HPAI, 2006 – 2008” (NSWP), whose animal health component has been developed with FAO assistance³. This plan sets out nine key elements for progressive control of HPAI: (i) campaign management; (ii) enhancement of HPAI control in animals; (including vaccination; stamping

³ As reported by the Indonesia’s HPAI Campaign Management Unit in a Presentation at FAO (June 2007)

out and movement control); (iii) surveillance and epidemiology; (iv) laboratory services; (v) quarantine services; (vi) legislation and enforcement; (vii) communications; (viii) research and development; and (ix) industry restructuring.

Element 1 above established a Campaign Management Unit (CMU) within the Directorate of Animal Health (DAH) of the Directorate General of Livestock Services (DGLS). Elements 2 to 9 of the Work plan are technical domains on which each Unit has responsibility for implementing policy set up by the Central Government with adjustment to local conditions, addressing technical problems and defining operational plans and priorities in their respective areas under the co-ordination of the CMU. There are also a number of draft work plans and strategy frameworks, discussed later on in the report.

The NSWP provides a generic blueprint for HPAI control, and is very comprehensive in nature. However, some of the elements are framed around the conventional wisdom on HPAI in Indonesia at that time, which potentially influenced the subsequent direction of the Programme. It states for example that the disease is well controlled in sectors 1 and 2, and infers that the disease is endemic in sector 4 and only occasional outbreaks occur in sector 3, and it advocates the use of participatory disease surveillance (see for example Annex 3 on surveillance and epidemiology). One of its three campaign components is the implementation of systematic surveillance in sectors 3 and 4, which almost certainly influenced the initiation of PDS.

3.2.1 Directorate General of Livestock Services

The Directorate General of Livestock Services (DGLS) is the lead unit within the MoA responsible for addressing animal health and livestock issues. In addition two other agencies under the same ministry also play a role in animal disease control. These are the Agency for Agricultural Quarantine and the Agency for Agricultural Research and Development.

3.2.2 Directorate of Animal Health (DAH)

The DAH is one of five divisions under DGLS and is responsible for all aspects of animal health. DAH is divided in five sub divisions: Animal Biosecurity, Veterinary Drugs Control, Disease Control and Eradication, Disease Surveillance and Veterinary Medical Services. The sub division for Disease Control and Eradication played an active role in controlling HPAI at the beginning of the outbreaks. As the HPAI situation worsened and with consultation of international experts, an *ad hoc* unit under the DGLS, the CMU, was established to implement HPAI-related activities. The CMU assists the DGLS, through the DAH, to consolidate efforts for controlling HPAI in Indonesia; it is described below.

3.2.3. Campaign Management Unit (CMU)

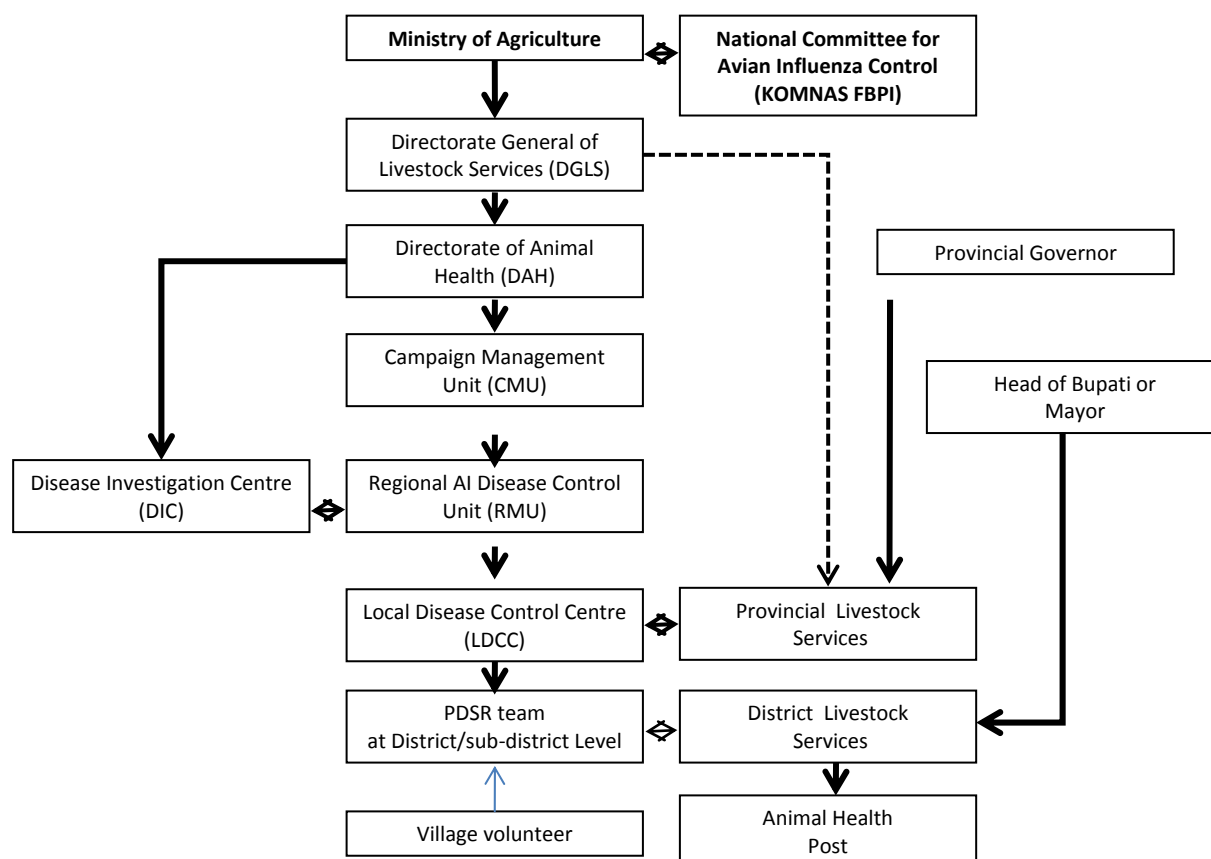
The CMU was established following DGLS order No. 58/2006, and is the first element of the NSWP. The objectives of the CMU are:

- Assist the government to enhance HPAI control.
- Bring all elements mandated to undertake disease control (national, provincial, municipal and district animal services) under a single direction.
- Support national management of the MoA campaign by establishing a dedicated campaign management structure and operational support, thereby providing coordination of national and local government activities with international support and expert scientific advice to ensure the most effective use of resources.
- Provide support for control activities by contracting non-governmental organisation to assist with community mobilization for surveillance control.
- Drive technical capacity building required to strengthen services for HPAI control.
- Focus on dialogue with industry, small scale producers and affected communities.

- Focus international assistance with provision for collaboration with FAO, OIE, WHO and international agencies and donors.
- Provide a framework for monitoring and evaluation of HPAI control activities.

CMU was expected to operate through Regional Management Units (RMU) and Provincial Management Units (PMU). These were established through order No 23/2008. The initially designed elements, except the RMUs, are fully functional; the PMUs are a newer element meant to be co-located with LDCCs in those Provinces with only one LDCC, and to coordinate LDCCs in provinces with more than one LDCC.

Figure 3. Organizational Structure for HPAI Control in Indonesia (prepared by the Evaluation Team with inputs from CMU and FAO staff)



3.3 Ministry of Internal Affairs

The Ministry of Internal Affairs is in charge of relationships and coordination with local authorities, particularly at Provincial and District levels. They are also responsible for mobilizing the public sector in case of a disaster.

3.4 Provincial and local governments

The decentralization process, which started in 1999 (Law No. 22), gave complete authority and transferred responsibility and resources to Provincials and Districts/cities to undertake prevention and control of animal diseases. This devolution of power removed the direct line of command that previously existed between the DGLS/DAH and the provincial and districts/cities livestock veterinary services. Central Government (DGLS/DAH) are now only responsible for the provision of technical guidelines and setting up national policies. The effectiveness of this new system in controlling animal diseases has been questioned particularly when it is compared to the previous years when the country successfully managed to eradicate foot and mouth disease.

The central government has requested local governments to provide more resources for animal health activities, particularly through the Decision Makers Meetings (DMM).

Table 2. Dates and venues of Decision Maker Meetings (DMMs). Source: FAO

No.	Dates	DMM	Venue
2007			
1	January 19, 2007	West Java	Bandung
2	February 22, 2007	East Java	Surabaya
3	February 29, 2007	North Sumatera	Medan
4	11-12 July 2007	Central Java	Semarang
5	18-19 July 2007	Lampung	Lampung
2008			
6	21-22 February 2008	Bali	Denpasar
7	15-16 May 2008	Combined LGWS and DMM for Kalimantan and Sulawesi (except West and South Sulawesi)	Balikpapan
2009			
8	20-21 January 2009	South and West Sulawesi	Makassar
9	20-21 April 2009	West Sumatera	Padang
10	17-18 June 2009	Jambi	Jambi

The meetings held so far resulted in agreement that Provincial and District/city governments will increase their support to avian influenza activities. Such support was expected to be expressed in a greater Provincial/District budget allocation for animal health activities, particularly regarding contingency funds for compensation to farmers (following poultry depopulation/culling), sharing the cost of the PDSR programme, vaccination campaigns and other operational costs (transport and communication).

3.5 Ministry of Health

The Ministry of Health (MoH) is responsible for handling human influenza cases. At central level, the MoH interacts with the MoA through KOMNAS. At local level, District Surveillance Officers (DSOs) of the MoH interact with their PDSR counterparts through the respective provincial and district authorities. The PDSR model was said to have been the basis for developing the DSO model, but unlike the PDSR it does not run in parallel to the Government's national surveillance system.

DSOs currently operate in some 90 Districts, and this will shortly be increased to 97 (particularly in western Java). The DSOs are regularly notified by the respective PDSR team of any confirmed HPAI case in the District. The responses by the DSO include house to house surveillance to detect clinical signs of influenza and public awareness campaign at community level together with PDSR officers.

4. International support for HPAI prevention and control in Indonesia

FAO is by far the most active agency supporting the Government of Indonesia in controlling HPAI (funded by USAID, AusAID, Japan and the Netherlands). It is followed by the World Bank⁴ (funded largely by the EC and Japan). Agencies such as UNICEF (funded by Japan and Canada), ILRI (funded by USAID and the World Bank), CBAIC (funded by USAID), ACIAR

⁴ In 2006, the World Bank approved a \$10 million grant to the Government of Indonesia in order to i) Implement the PDSR programme in low risk areas, ii) undertake vaccine development, iii) carry out operational research on potential intervention options, such as vaccination; iv) restructure the poultry industry, v) provide compensation and vi) undertake public awareness activities. The first 3 components were to be implemented by DGLS while the remaining three were the responsibility of KOMNAS. The WB \$10m grant was co-financed by a parallel Japan PHRD grant of \$5 million.

(funded by the Government of Australia), USDA and the Indonesian Dutch Partnership (funded by the Netherlands) also have programmes supporting HPAI control in Indonesia⁵.

FAO has implemented a sizeable and varied portfolio of activities in the country, ranging from high level advocacy and policy work to conducting active field surveillance for early detection and control of disease outbreaks. It covers among others the following areas:

- Emergency preparedness (e.g. TCP/INS/3001)
- Disease surveillance and early detection (e.g. OSRO/INS/604/USA)
- Control and containment (e.g. OSRO/RAS/602/JPN)
- Vaccine efficacy (e.g. OSRO/INS/703/USA)
- Advocacy and Policy Advice (e.g. OSRO/INS/701/AUL)

Field delivery in Indonesia from 2005 to May 2009 has been over US\$ 31 million (see table below), of which about US\$ 23 million (74%) has been spent on the PDSR programme. The full list of projects implemented in Indonesia since 2004 can be found in Appendix 6.

Table 3. Annual delivery in Indonesia by project (2005-May 2009). Source: FAO

Funded by	2005	2006	2007	2008	May 2009	Grand Total
OSRO/RAS/505/USA	\$31,054	\$803,455				\$834,509
GCP/INS/077/AUL		\$488,372	\$1,167,652	\$5,079		\$1,661,103
OSRO/INS/701/AUL			\$723,867	\$2,349,203	\$1,655,841	\$4,728,911
OSRO/INS/604/USA		\$1,028,067	\$6,784,231	\$9,258,510	\$4,191,282	\$21,262,090
OSRO/RAS/602/JPN		\$616,000	\$1,193,608	\$37,400		\$1,847,008
OSRO/INS/703/USA				\$449,718	\$86,807	\$536,525
OSRO/INS/501/NET		\$17,000	\$105,867	\$30,000		\$152,867
Grand Total	\$31,054	\$2,952,894	\$9,975,225	\$12,129,910	\$5,933,930	\$31,023,013

Several projects funded by AusAID (GCP/INS/077/AUL and OSRO/INS/701/AUL), USAID (OSRO/RAS/505/USA and OSRO/INS/604/USA) and the Government of Japan (OSRO/RAS/602/JPN) have partly or fully supported the implementation of the PDSR programme in the past four years.

Table 4. Delivery of PDSR component (2005-2009). Source: FAO

Funded by	2006	2007	2008	May 2009	Grand Total
OSRO/RAS/505/USA	\$803,455				\$803,455
GCP/INS/077/AUL	\$328,190	\$523,000			\$851,190
OSRO/INS/701/AUL		\$560,000	\$1,174,000	\$967,000	\$2,701,000
OSRO/INS/604/USA	\$764,000	\$5,726,563	\$7,274,974	\$2,909,935	\$16,675,472
OSRO/RAS/602/JPN	\$616,000	\$1,193,608	\$37,400		\$1,847,008
Grand Total	\$2,511,645	\$8,003,171	\$8,486,374	\$3,876,935	\$22,878,125

As indicated earlier, the PDSR component has been the major component of the FAO HPAI programme since 2006. However its importance in terms of budget share is now starting to decline progressively as other activities are given higher priority.

Table 5. Percentage of PDSR as component of total programme expenditures. Source: FAO

Share (%)	2006	2007	2008	May 2009	Grand Total
PDSR component	\$2,511,645	\$8,003,771	\$8,486,374	\$3,876,935	\$22,878,725
HPAI programme	\$2,952,894	\$9,975,225	\$12,129,910	\$5,933,930	\$30,991,959
	85%	80%	70%	65%	74%

⁵ See project log prepared by FAO staff in Indonesia for a detail list of donor and partner activities.

The decreased importance of the PDSR programme becomes more evident after looking at the evolution of USAID funds (channelled through project OSRO/INS/604/USA) made available for village level work (i.e. PDSR programme) during the period 2008-2010.

Table 6. OSRO/INS/604/USA funding by Output. Source: FAO

Expected Outputs	October 2008- May 2009	June 2009-May 2010 ⁶
A: Village (PDSR programme)	50%	39%
B: Commercial	9%	17%
C: Markets	24%	16%
D: Programme management	17%	27%
E: Waterfowl and ducks	0%	2%
Total	100%	100%

The products and implications of the PDSR funding, in terms of goals, activities, results and relevance of the programme is described in detail in the following chapters.

⁶ Additional USAID funding provided for public-private partnerships (primarily Outputs B and C) and market-system cleaning and disinfection via OSRO/INT/805/USA (US\$ 337,000) and OSRO/GLO/802/USA (US\$ 575,000), respectively.

CHAPTER III: EVOLUTION OF THE PDSR PROGRAMME

Within a relatively short period of just over three years, the FAO programme on HPAI control in Indonesia has gone through a highly dynamic growth and diversification process. It has received very large financial support for the PDSR initiative, it has participated in a national disease surveillance and response network of extraordinary scale, it has adopted a set of participatory epidemiology tools not widely used in many countries of the world, and it has recently undergone several adjustments in focus based on new evidence collected. Given these dynamics and the implications on the review process, we provide in this chapter a chronological description of the background to the engagement of FAO in the avian influenza response in Indonesia, and the progressive evolution of the PDSR programme.

1 Inception and early development of the PDSR Programme (2005-2006)

In October 2005 a technical expert was despatched from FAO headquarters for a period of two months to investigate the potential for providing support to the Indonesian Government for the HPAI outbreak. The 20 cases of human H5N1 influenza infection with 13 fatalities between June and December 2005, and the widespread publicity associated with these, contributed to the justification for this engagement. Following extensive discussions with various officials, and with the support of a team of international experts, the draft National Strategic Work Plan (NSWP) referred to above was developed. This plan was approved by the Minister of Agriculture, and taken to the Inter-Ministerial Meeting on Human and Avian Influenza Pandemic Preparedness in Beijing for presentation in January 2006.

This rapid impact of FAO's response owes much to the thoroughness and determination of the FAO technical expert brought in and the advocacy work carried out by FAO to partner with the Government of Indonesia and donors. It was characterised by a rapid and effective engagement with senior staff in the DAH and indeed with the Minister of Agriculture, and required the skill and experience in developing national response strategies. It also benefited from the personal links the FAO technical expert had with some of the practitioners of participatory disease surveillance⁷ at Tufts University, who had worked with the FAO technical expert on the detection of the final cases of rinderpest in the Horn of Africa and south Asia. This partnership gave rise to the FAO-Tufts PDS/PDR pilot project, which was initiated with USAID funding of \$1.5M for 6 months (under OSRO/RAS/505/USA). The pilot programme focused on the Island of Java, and established four Local Disease Control Centres (LDCCs), two participatory disease response (PDR) teams for each LDCC and one participatory disease surveillance (PDS) team in each of 12 pilot districts.

With limited knowledge of the pattern and extent of HPAI in poultry at the time in the country, despite the human cases, and with concerns regarding the capacity of the veterinary diagnostic services, the new pilot project set out to rectify this, and immediately had results. The PDS teams identified widespread outbreaks on Java and in the first quarter of 2006 made 54 HPAI detections in poultry in the 12 pilot districts. This led to USAID extending its

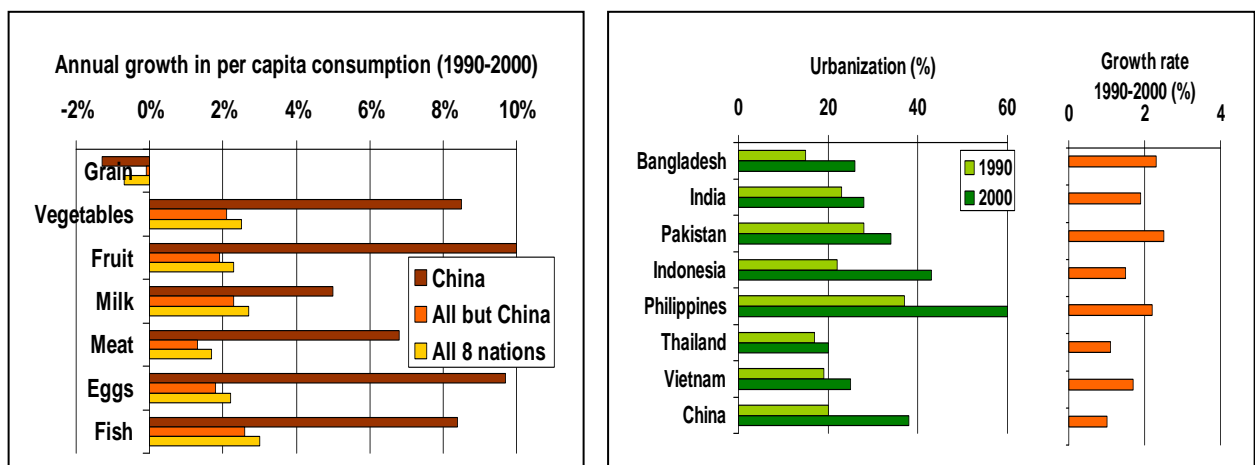
⁷ *Participatory Disease Surveillance*. This is a disease surveillance activity that uses an innovative approach to epidemiological study called participatory epidemiology (PE). Participatory epidemiology is the collection of epidemiologic information using participatory approaches, such as those that are commonly employed in participatory rural appraisal (PRA). Participatory disease searching and disease reporting assure that a surveillance system is sensitive and timely, and usually results in a more representative surveillance system when appropriately applied as part of an overall surveillance program (definition taken from Mariner, J., Second Quarterly Report of the Chief Technical Advisor, January - March 2006).

support with an additional \$4M up to May 2007 (OSRO/INS/604/USA). At the same time, AusAID and the Japan Trust Fund also provided funding for PDSR.

Those engaged in the pilot project apparently drew the conclusion that the commercial sectors of the poultry industry were largely free from HPAI infection, protecting their flocks by a combination of biosecurity and vaccination, and that the main problem was in backyard poultry, belonging to the so-called sector 4⁸. They concluded very rapidly, and without any apparent structured investigation, that the key to HPAI control in Indonesia was the removal of the risk of transmission from sector 4. As time progressed, there became a greater recognition of the role of sector 3, small scale commercial poultry enterprises, but the focus of PDSR has remained – and still remains – on sector 4. The sustained focus on sector 4 was further fuelled by the successes the programme was having in detecting disease in that sector (retrospectively described by one observer as “an iconic success in HPAI detection”), while other sectors were apparently not examined adequately.

This is quite extraordinary, given the existing knowledge at the time of the dramatic growth of commercial poultry enterprises at a variety of levels in Indonesia, and their almost inevitable involvement in HPAI dynamics. The “Livestock Revolution” (Delgado et al., 1999) had been well documented in Asia, particularly in East and Southeast Asia, showing the dramatic increase in demand for meat in these regions, and associating this expanding demand with growing economies, increasing affluence, increasing urbanization and the rise of supermarkets (Gulati et al., 2005).

Figure 4. The growth in per capita consumption of high value foods, urbanisation and gross domestic product in eight Asia countries (derived from Gulati et al., 2005).



The growth in the region was and is still largely in poultry and pork products, but clearly pork was of little importance in Indonesia, with close to 90% of the population Muslim. The growth was predominantly in commercial poultry enterprises, with production *per capita* growing at an astounding rate of 5.9% per annum during the years 1975 – 2001 (FAOSTAT, 2004). In Indonesia, poultry contributes 62.1 % to livestock GDP, and a full 1% to national GDP.

Another factor favouring a continued focus on sector 4 and participatory tools was the enthusiastic support this approach received from the principle donor, USAID. This was reportedly aided by a strong working relationship between the USAID office and the FAO technical experts leading the PDSR programme and by the perceived desirability by many of

⁸ See page 17 for a description of the four poultry sectors in Indonesia. There are estimated to be 300 million backyard poultry (sector 4) in Indonesia.

providing support to the relatively impoverished back yard sector rather than to the commercial poultry sectors. In addition, the growing industrialised poultry sectors had become quite independent, and penetration by government veterinarians was reportedly difficult, a situation not restricted to Indonesia.

2 The reform of the PDSR Programme (2007-08)

During this period several attempts were made to review the effectiveness of the PDSR Programme and the HPAI response in Indonesia, through internal reviews, independent assessments, and the launching of an Operational Research project.

In late 2006 and with funding from USAID and the World Bank (WB), an Operational Research (OR) project was planned, with technical contributions from FAO and ILRI. It was the purpose of the OR programme to evaluate the impact of a series of alternative control scenarios in the backyard poultry of sector 4, in order to make an evidence-based choice regarding an efficacious package of control options that were practical and achievable in the Indonesian context.

In May 2007, an internal FAO review of PDS and PDR was prepared. This included an external review of the PDSR database. The review of data generated by the programme found a negative correlation between reported human H5N1 case rate and native chicken density. This was interpreted to mean that there might be a greater risk of human infection associated with marketing procedures rather than contact with backyard poultry. It was then concluded:

“The role of the commercial sectors (especially sectors 2 and 3) has probably been underestimated and must be systematically addressed within the broader HPAI control programme. It is not known whether sector 4 can maintain H5N1 endemicity, however it seems unlikely that focusing all control activities on sector 4 will result in successful HPAI control in Indonesia. Following 1.5 years of gathering information on HPAI, the project must now adapt to provide the necessary on-going surveillance information and other valuable poultry health data needed to inform policy and disease control decision-making at all levels of government.”

In September 2007 the project OSRO/INS/604/USA was extended through until May 2008 with a total of US \$11M (from June 2007). This included a justification for combining PDS and PDR into a single PDSR team. Up to this point, there had been two separate teams, one focussed on surveillance and one on response.

At the request of the FAO programme in August and September 2007 a senior consultant epidemiologist conducted an in-country review of the PDSR system (under funding from the Japan Trust Fund). He concluded:

- *Participatory Disease Searching/Surveillance is the only logical way to conduct HPAI surveillance in village populations. It offers a simple, effective, and logistically feasible way to conduct active surveillance on village poultry populations.*
- *Information collected about HPAI outbreaks, by DGLS and through PDS/R, is not adequate for determining changes in incidence of the disease in Indonesia.*

These comments still kept the focus on sector 4, but recognised that the type of data emerging from the participatory tools at that time was not adequate to measure disease incidence, nor measure effectively any changes in disease dynamics. The consultant made recommendations for a revised PDSR Information System to address the deficiencies he had identified.

“It is recommended that PDS/R activities should change from a household- or visit-based focus to a Desa (village) focus with any investigation and/or response involving the whole Desa. Participatory disease searching would be conducted to determine all possible locations in the Desa where HPAI might be occurring. These locations should be visited to confirm the presence of HPAI. Control actions, to prevent the spread of disease, would be implemented at all locations where HPAI is diagnosed. Participatory disease searching should also be used to determine whether HPAI is present in a Desa when HPAI is not suspected.”

In October 2007 FAO discussions intensified with donors on OR, recognizing the need to engage commercial industry, and to modify the PDSR strategy (e.g. stop recommending ring vaccination). The OR project was initiated in November 2007. The geographical scope of OR activities was limited and modifications were made to the treatment groups; however, it maintained a PDSR and sector 4 focus.

As part of the emerging recognition of the importance of poultry enterprises other than sector 4, FAO initiated the western Java commercial producer profiling study with USAID support in December 2007. Also, in agreement with the recipient and donor countries, FAO proposed a series of reforms to the PDSR programme based on the assessments undertaken.

3 The new PDSR Programme (2008-present)

In this period the PDSR programme has been subjected to two major changes: first, the consolidation of the PDSR approach (instead of separate PDS and PDR teams), and secondly, the implementation of an entirely new (and still evolving) information system. Both changes involved substantive training and re-training as well as a rethinking of the PDSR programme's goals and contribution to HPAI control in Indonesia.

In February 2008 (a little more than one year prior to this evaluation) the new PDSR Information System was “unveiled” to national stakeholders and donors. The information system included new guidelines for surveillance, control, prevention, and monitoring, new reporting forms, a new relational database, and a new front-end database.

The database was developed with a focus on disease control measures, intending to inform the control programme of critical knowledge gaps regarding HPAI control in poultry. To enable more effective and efficient programme management, monitoring and evaluation systems were also built within the new PDSR Information System.

The transition to the new PDSR Information System was completed in May 2008. OSRO/INS/604/USA was extended to September 2008 with US \$2.7M funding. At that time FAO produced the following strategy recommendations for HPAI control in Indonesia.

“The proposed plan is a government-led control programme supported by a variety of donors and partner agencies which addresses surveillance, outbreak control, and prevention across the vast and complex HPAI virus-poultry-environment system: village poultry populations, commercial poultry populations (both large- and small-scale), the poultry marketing system, and waterfowl. Conceptually, a disease control programme functions by gathering information for action (surveillance, targeted research), taking action to control the incidence of disease, and then preventing disease reoccurrence. As opposed to emphasizing control points within only one component of the viral system (such as PDSR in village poultry), the GOI HPAI Control Programme would expand its work to simultaneously and aggressively

address key control points across the spectrum of poultry-virus interactions in order for activities to act synergistically to rapidly reduce viral load.”

In view of the persistence of HPAI in Indonesia and the need to look at long-term funding of the programme, a national meeting was held in July 2008 with provincial leaders of all endemic areas to discuss the effectiveness and sustainability of the PDSR programme within the context of a broader response to animal disease control. The Directorate of Animal Health petitioned the Minister of Agriculture to allocate a specific budget for HPAI control at district level.

In October 2008 the project OSRO/INS/604/USA was extended to May 2009 with an additional US \$7.5M funding. The breadth of the project was increased substantially to initiate activities along the market chain and in the commercial sector, with PDSR activities comprising about half of the overall budget. Outcome indicators based on the PDSR Information System were formally introduced as part of project quarterly reporting. A Sustainability Expert completed recommendations to MoA and FAO regarding sustainability of the PDSR system, including a recommendation to rebuild the national veterinary service. AusAID indicated its intent to evaluate local government options to improve the sustainability of PDSR.

In November 2008 version 2.0 of the PDSR Information System was introduced, with inclusion of an LDCC output reporting module with “14 standard reports”. With the US\$ 7.5M allocation from October 2008 to May 2009, USAID allowed some funding to be used to directly engage the commercial sector in the field. For the first time, USAID-supported field activities outside sector 4 (biosecurity training for commercial farms) were conducted from December 2008 to March 2009⁹.

In June 2009 USAID offered an extension of OSRO/INS/604/USA with \$11M in additional funding, and the project breadth was further increased (see table 6 above). Version 3.0 of the PDSR Information system went online.

⁹ Since 2006, one of the duties of the CTA Disease Control (AusAID project OSRO/INS/701/AUL) has been: “Establish a close relationship with the commercial industry and develop processes for information exchange and provide technical inputs into their disease control programmes.” A similar point was included in the TOR of the CTA under GCP/INS/077/AUL.

CHAPTER IV: AN OVERVIEW OF THE RESULTS ACHIEVED BY THE PDSR PROGRAMME

This chapter provides an account of the PDSR programme results and achievements, and includes a description of the operational structure established to implement the programme.

1. Operational structure

As indicated earlier, the PDSR programme was developed in early 2006 as a pilot initiative to detect, control and prevent the spread of HPAI. The CMU, located within the DGLS/DAH, was given the task of scaling up the pilot project in 2006 and 2007 with FAO support. This involved an expansion in the network of LDCCs and the PDSR teams in them. The number and coverage of LDCCs and PDSR teams have since steadily increased (see table below).

Table 7. Progressive geographical coverage of PDSR officers and LDCCs from May 2006.

Date	LDCC	PDSR	Geographic coverage	Master trainers	PDSR trainings	Remarks
May 2006	4	48		0	6	pilot project
June 2007	14	1241	Java, Bali, North Sumatra, Lampung, Kalimantan, Sulawesi	3	89	
June 2008	24	2072	Java, Bali, Kalimantan, Sulawesi, Sumatra	26	83	
Sept 2008	31	2123	Java, Bali, Kalimantan, Sulawesi, Sumatra	26	8	size peaked in September 2008
June 2009	23 ¹⁰	1991	Java, Bali, Sulawesi (only south and west Sulawesi provinces), Sumatra	52	88	8 additional LDCCs supported by the WB

As of May 2009, the PDSR programme was operating in 27 out of 33 provinces of Indonesia. About 20,000 villages and two and a half million backyard poultry producers have taken part in surveillance, control and prevention activities so far. This represents approximately 30% of villages in the country.

The programme has progressively expanded, driven by an initial desire to achieve the fullest national coverage possible, but more recently tempered by the perceived need to consolidate activities in regions of the country which have experienced most human cases (approximately 70% have occurred on Java). PDSR activities in the past twelve months have therefore been concentrated in Java, as well as in South Sulawesi provinces (where AusAID has been keen to support PDSR and other HPAI response activities in this region of Indonesia).

The most important strategic element of the programme structure is arguably the capacity and institution building effects of the approximately 2,000 PDSR officers. The initial target was to have 8 PDSR officers per district, subject to funding availability. Determining the final number of PDSR officers per province was reportedly the result of negotiations between central and local Governments. One team has always consisted of two officers. In the pilot phase of the programme (early 2006), the protocol was originally to establish PDS teams in each District and PDR teams at the Provincial level. For the first expansion phase (June 06 - May 07) covering Java, Bali, North Sumatra, the system was changed to train 2 PDS teams and 2 PDR teams in each District. Where personnel was a limiting factor, then only one team of each type was trained. One LDCC in Kalimantan (Banjarmasin) and one LDCC in

¹⁰ There are still 31 LDCCs but some of them now receive WB funding and so no longer receive FAO funding.

Sulawesi (Makassar) were established to manage all the provinces on the two islands. Starting with the expansion in June 2007, two key changes were made - first all PDS and PDR teams were "cross-trained" so that two PDS and two PDR teams would then become four PDSR staff in teams in all the previously covered areas. For expansion through the rest of Sumatra, the number of teams per district was based on the human population in each Province; Provinces with more people had more officers trained per District, with a maximum of four teams per District and a minimum of two teams per District. South Sulawesi and West Sulawesi were trained at four teams per District since they were under a separate funding agreement with AusAID. Also, provincial-level capacity on the remaining Provinces of Sulawesi and all of Kalimantan was increased and LDCCs established in each Province.

PDSR officers have been prepared and equipped by the programme to conduct surveillance, outbreak control and disease prevention activities; they have received a number of training courses, material and equipment and they benefit from operational support (allowances and vehicles) to carry out their work. The majority of them are civil servants (about 70%) and most of them work under the supervision of the local (Provincial and District) animal health services. The FAO programme has built up an impressive cadre of Master Trainers (52 as of June 2009), who have the responsibility of ensuring quality at the front line in the LDCCs by providing intensive training to PDSR officers (88 training sessions as of June 2009).

The size of the programme is also reflected in the number of staff positions involved. In May 2009 there were 15 international and 60 national staff/consultants employed by FAO, with a majority of them supporting the PDSR programme. The around 2,000 PDSR officers, albeit not considered to be staff members, receive Daily Subsistence Allowances (DSAs) when travelling to conduct HPAI surveillance, prevention and control activities. The sheer number of people involved and the different contractual arrangements FAO has with each group has reportedly been a major issue for the management of the programme. For instance, in the early days PDSR officers were not paid for several months (up to six in some cases) due to the lack of a proper financial system in place to act on and monitor the payments. This issue has largely been resolved with the signing of letters of agreement with LDCCs and the strengthening of the finance and operations units of the programme. The appointment of an international operations officer and a senior administrative officer in FAO Jakarta in 2007 made a substantial contribution to improving the situation.

The most pressing issue now is the delay in the registration and distribution of the 1073 motorbikes and 109 vehicles procured by FAO to date (see box below).

Box 1: Procurement of vehicles for the PDSR programme

The major operational constraint the PDSR programme has faced concerns the delay in the registration and distribution of vehicles (cars and motorcycles). Reasons for this include:

- Delays in getting project documents signed, which then serve as the basis for the FAO Representation to obtain tax exemptions (PP19 form).
- Introduction of a new registration tax by the Government of Indonesia, which UN agencies have at present the obligation to pay.
- Reluctance from the Donors to hand over vehicles to the Government prior to completion of the project, as well as initial reluctance on the part of the Government to take them on due to maintenance and insurance costs.

FAO has addressed the above issues by lobbying the responsible agencies for a quicker approval of project documents. The UN system as a whole is also negotiating with the Government of Indonesia to get the new registration tax waived. It seems unlikely however that a decision on this will be reached in the near future. In the meantime, FAO is encouraging temporary registration of cars and motorcycles by LDCCs through local negotiations. FAO is also exploring the option of re-negotiating with the Government of Indonesia and donors the hand-over of vehicles and motorcycles prior to project completion, with FAO and donors covering maintenance and insurance costs till the end of the project.

Another key element of the PDSR operational structure is the information system, which was last revamped in February 2008 (becoming operational in May 2008) and since then has been subject to periodic adjustments and upgrades (such as the development of 14 regular reports in late 2008). A Monitoring and Evaluation System was also built in within the new information system. The current and future utility of the PDSR database is discussed in detail in Chapter V.

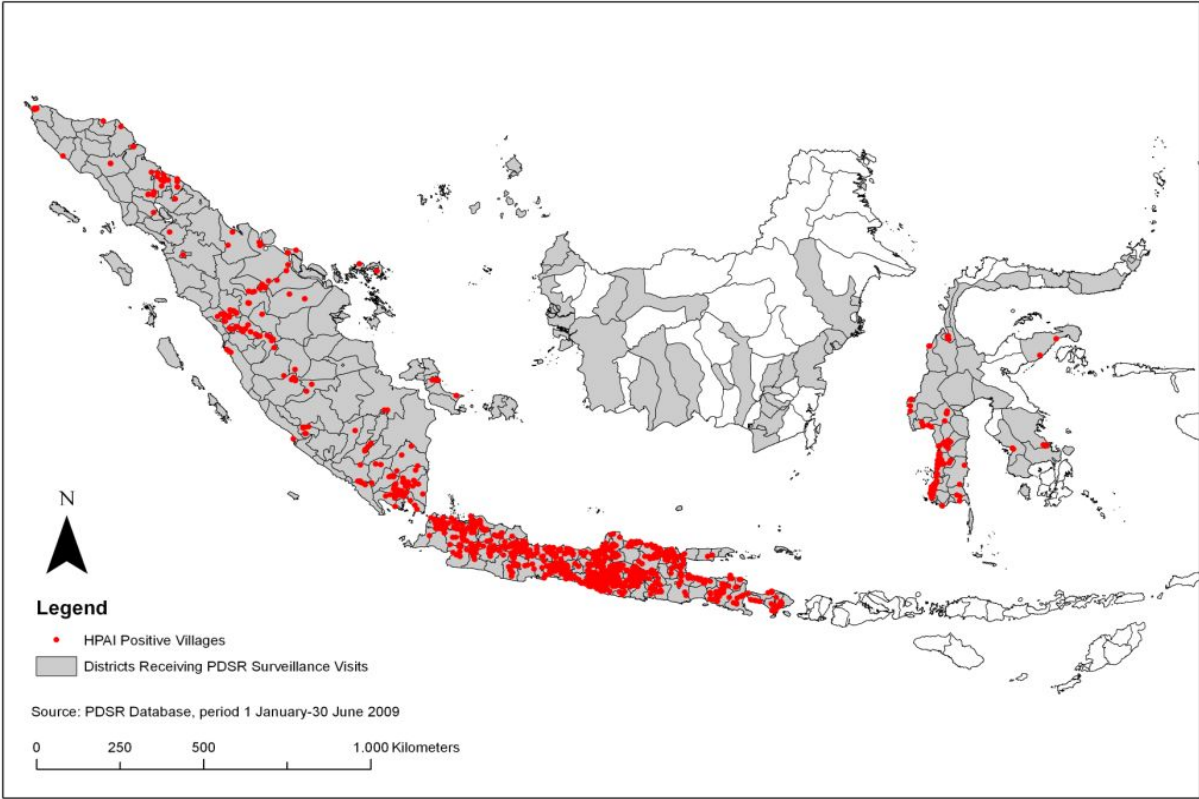
2. Programme Results

The operational structure set up for the PDSR programme supports surveillance, response and prevention activities for HPAI. Below the results to date of these three components are presented.

2.1 Surveillance and Investigation

According to FAO, PDSR officers have visited more than 20,000 villages in the past twelve months. This has resulted in the diagnosis of HPAI in over 6,800 villages. Clearly the identification of cases is related to the distribution and intensity of PDSR activities. The figure below shows the distribution of districts within which surveillance has been carried out, and of HPAI positive cases identified within.

Figure 5: Districts with PDSR surveillance visits and cumulative HPAI positive cases (1st January – 30th June 2009). Data from the FAO/CMU epidemiology team



FAO has attempted to reconcile the results of surveillance and investigation activities documented by the PDSR programme so far. However, the methodological shortcomings of the original PDSR database and the subsequent revisions that took place in early 2008 have made it difficult to compare the old and new datasets. As a result, the results shown below are based only on the new PDSR database (unless otherwise stated), with the evaluation team having to rely heavily on reports from the FAO/CMU epidemiology unit for the interpretation of data.

2.1.1 Surveillance

As part of the surveillance activity the following background information is normally gathered:

- Characteristics of the village (size, whether it was classified as suspect or infected; if there are risk factors such as commercial enterprises, occurrence of festivals, HPAI compatible events or clinical cases)
- Characteristics of the poultry production system (distribution of poultry keeping, number of poultry per household, poultry population, types of poultry kept, distribution of ages of poultry)

A FAO report¹¹ summarizes the function and the different types of PDSR surveillance activities (see box below).

Box 2. HPAI surveillance background

One important function of surveillance is to detect HPAI infection in birds for immediate village-level control. Another is to report geographic incidence and prevalence rates as a rational basis for effective control and prevention. This equates to classifying areas within Indonesia as highly infected ('disease-prone'), disease free, or experiencing significant new outbreaks ('hotspots'). Standardized rates can be useful when comparing between areas or for removing potential confounders. However, the PDSR rate data to date are neither random nor uniformly acquired, so care is needed when extrapolating conclusions.

Monthly period prevalence measures how much infection existed (new and old cases), whilst monthly incidence measures the rate at which infection increased (new cases in a month). Prevalence rates reflect a balance between detection of new disease and control of known outbreaks, whilst incidence provides an indication of the rate at which disease is spreading. Progress in HPAI control can be assessed in terms of monthly incidence rates. There are also specific measures of control within the database.

Fourteen types of surveillance visit are recorded in the PDSR database. In all cases, the village was the epidemiological unit of interest. Passive surveillance data were provided by 'report visits', which were notifications about a HPAI compatible event. Active surveillance was provided by scheduled visits, either random or risk based. The remaining visits were revisits for a variety of reasons in the cycle of surveillance, control and prevention of infection.

An internal analysis of the surveillance activity found that between May 2008 and February 2009, of the subset of 18,780 active or passive surveillance visits, 86.6% (16,268) were scheduled (active surveillance) visits and 13.4% (2512) were report (passive surveillance) visits. Of the scheduled visits, 39.3% were random and 29.2% were risk based¹². Visit numbers by type of and category of visit and are presented in the table below.

¹¹ PDSR system epidemiology report, 13 June 2009

¹² 'Random' visits were not selected randomly. There was merely a lack of a specific reason for the visit. 'Risk based' visits were when PDSR Officers thought a village might be at higher risk of infection based on tracing information or first principles.

Table 8: Surveillance visit according to visit number and type (May 2008-Feb 2009). Data from FAO/CMU epidemiology team

Type of visit	Category	Number	Percentage
1) Report via Dinas	<i>Passive</i>	322	1.4%
2) Report from community		1967	8.3%
3) Report from VAIC		124	0.5%
4) Report from village volunteer		54	0.2%
5) Report because of human case		45	0.2%
6) Revisit to previously infected village	<i>Revisit</i>	1148	4.8%
7) Annual revisit to apparently free village		779	3.3%
8) Revisit to previously Suspect (14) village		1608	6.8%
9) Revisit to previously Suspect(6 0) village		896	3.8%
10) Revisit to Controlled village		523	2.2%
11) Randomly selected for Surveillance	<i>Active</i>	9340	39.3%
12) Selected for Surveillance based on risk level		6928	29.2%
TOTAL		23762	100.00

By February 2009, 32.4% of all villages under PDSR coverage had received a surveillance visit. Thus, the PDSR programme had achieved a reasonable coverage, with both passive and active surveillance visits adequately represented. District coverage did, however, vary widely within Provinces. A comparison of HPAI detection¹³ based on the type of surveillance (active or passive) shows that passive surveillance (report visits) are more effective in detecting the disease than active surveillance (scheduled visits). In fact, active surveillance detected only 5.6 % as compared with passive surveillance which detected 94.4 % of HPAI cases.

Table 9: National HPAI incidence (HPAI Rate) according to visit types and present compatible sign and village disease status - Data from FAO/CMU epidemiology team

Present of signs and villages disease status	Positive Diagnoses	Number of visits	HPAI rate
<i>Report visits (passive surveillance)</i>			
HPAI compatible events per 100 visits*	1803	2512	71.8%
‘Infected’ village status assigned per 100 visits	1157	2512	46.1%
‘Infected’ and ‘Suspect (14) village status assigned per 100 visits	2214	2512	89.7%
<i>Scheduled visits (active surveillance)</i>			
HPAI compatible events per 100 visits	103	16268	0.6%
‘Infected’ village status assigned per 100 visits	31	16268	0.2%
‘Infected’ and ‘Suspect (14) village status assigned per 100 visits ²	787	16268	4.8%

About two thirds of the passive surveillance visits were as a result of community reports. However, HPAI detection rate (as confirmed by the rapid antigen test) was highest when reports came directly from Village Volunteers (83.9%). It is not clear whether reports from the community were made upon request of the village volunteers. However, the role of the former in better identifying the HPAI case definition and thus improving the efficiency of the passive surveillance system was highlighted to the evaluation team during the field visits.

¹³ HPAI compatible events are based on sudden death lack specificity because it include ND and other diseases

Among active surveillance categories, risk-based surveillance appears to detect more (50%) than random surveillance (35.0%) (see table below). However, in many cases the numbers are too small to make useful distinctions between risk-based versus other scheduled visits. It is questionable also whether risk-based has any reliable meaning in the forms.

Table 10: Successful rate of detecting HPAI among passive and active surveillance - Data from FAO/CMU epidemiology team

Visit Reason	Number of visits	Visits where HPAI presence suspected and Birds Available for Testing	%	Visits where Rapid Test POSITIVE Result Obtained	% of Visits where HPAI Confirmed by Rapid Test
<i>Initial Visits</i>					
Dinas Report	329	162	42.9%	114	70.4%
Community Report	1880	1269	67.5%	808	63.7%
VAIC Report	130	102	78.5%	74	72.5%
Village Volunteer Report	52	31	59.6%	26	83.9%
Human Case Report	39	10	25.5%	7	70.0%
All Reported Visits	2430	1574	64.8%	1029	65.4%
<i>Active Surveillance</i>					
Random Surveillance	9235	40	0.4%	14	35.0%
Risk-based Surveillance	6827	34	0.5%	17	50.0%
All Active Surveillance Visits	16062	74	0.5%	31	41.9%

2.1.2 Investigation

When positive cases of HPAI are found, PDSR teams investigate issues such as the extent of the outbreak, and the possibility of tracing back the possible infection source. PDSR data and field observations confirm that HPAI outbreaks tend to be confined to a relatively small number of households in the village (less than 25% of households in the village), while traders and backyard collectors are considered the main likely sources of HPAI virus, followed by unsafe disposal of poultry carcasses and contaminated vehicles. When rapid tests are negative, differential diagnosis in both household and commercial poultry identify Newcastle Disease (ND) as the likely cause, usually on the basis of clinical signs.

2.2 Response (Outbreak Control)

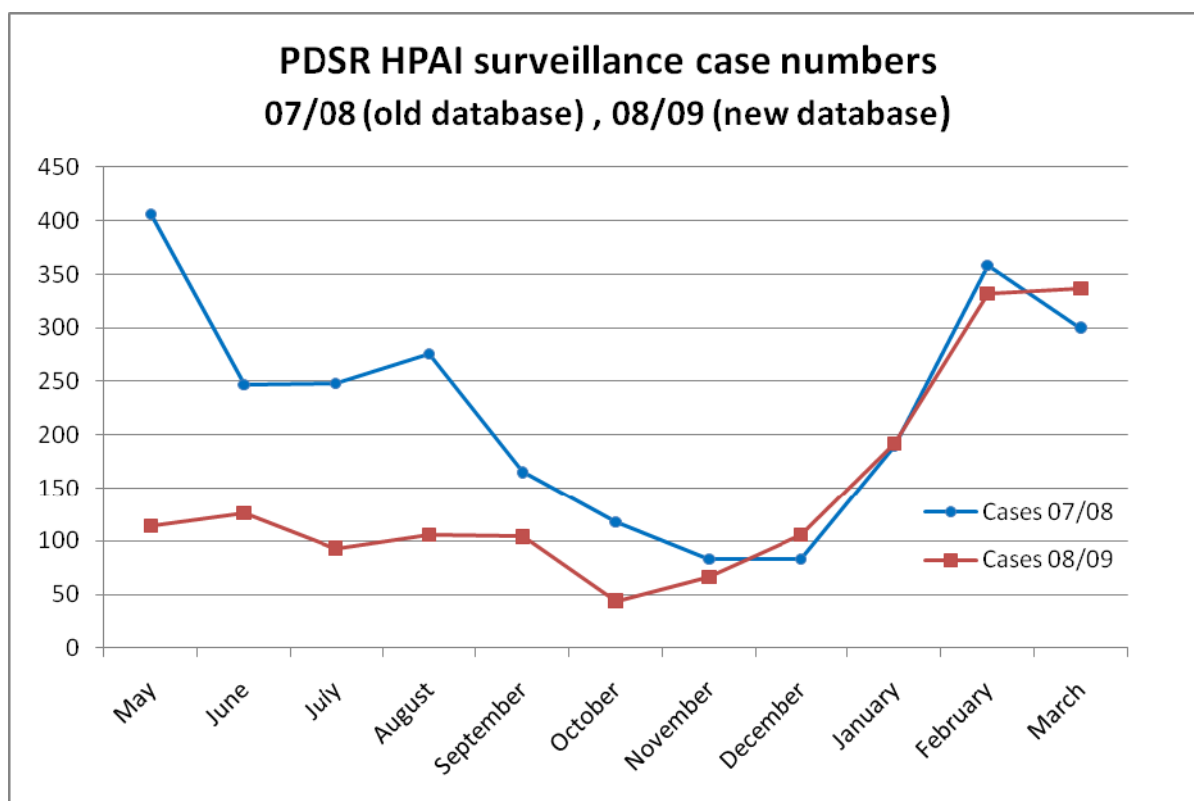
The new PDSR database shows that monthly HPAI detection rates¹⁴ were low (around 3 out of 1000 villages) in late 2008 but increased to almost 10/1000 villages in February 2009. Similarly, a comparison between 2006-07 and 2008-09¹⁵ shows a surge in detection rates during the rainy season (i.e. November – February), which is in line with observations in other countries in the region. The persistence of HPAI in Indonesia has however raised

¹⁴ Given the nature of the PDSR data, the term detection rates is used rather than incidence. These detection rates are measured as monthly cases detected per 1000 villages under surveillance in the area of interest.

¹⁵ “HPAI infection rate was estimated using as numerator the number of infected villages in region during given time period and as denominator the total number of villages under surveillance in region. Assumptions included:
 - Level of passive reporting stable over time
 - Level of PDSR response to passive reporting stable over time
 - Recoding original PDSR database to determine “village infections” is valid

questions about the effectiveness of the PDSR's response element in reducing the incidence of HPAI.

Figure 6. Monthly incidence of HPAI. Data from FAO/CMU epidemiology team (old and new datasets)



The PDSR programme has developed Standard Operating Procedures (SOPs) for outbreak control. These are triggered once an HPAI outbreak is confirmed and villages are classified as “infected”. Possible responses include:

- Focal culling and disposal of infected birds and flocks
- Decontamination (cleaning and disinfection)
- Movement control
- Confinement
- Vaccination (generally not practiced in the backyard settings)

Although it is not a formal control element, the PDSR programme has sought to develop a strong relationship with communities to improve co-ordination with and obtain greater collaboration from local authorities. The number of PDSR officers is often insufficient to undertake outbreak control by themselves, especially in large districts or when multiple outbreaks occur. Cooperation with other relevant agencies is considered important. The high level of such co-operation was noted by the evaluation team during the field visits and is reflected in the PDSR database which shows that coordination was implemented in 96.21% of the total response activities (3,453 records) between May 2008 and February 2009.

2.2.1 Focal Culling and disposal of infected chickens

Culling of infected and in-contact chickens when practiced effectively is designed to reduce virus load in the environment and subsequent disease transmission. However, there is substantive evidence from the programme M&E, from observations of the evaluation team and from the field surveys that a majority of farmers (71% in the PDSR database) do not practice culling. Only a small proportion of farmers (21.8%) voluntarily culled the suspected

chickens without compensation, and 4% with compensation. This low level of culling has likely contributed to the low efficacy of HPAI outbreak control.

Table 11: Responses of farmers to culling practice to control HPAI. Data from FAO/CMU epidemiology consultant report.

Culling Activity	Responses	% of total responses
Culling Implemented	1732	71.6%
Voluntary culling with compensation	97	4.0%
Voluntary culling without compensation	527	21.8%
Mandatory culling with compensation	27	1.1%
Mandatory culling without compensation	35	1.4%
Total Responses	2418	100.00

The community is also advised to practice safe methods for disposing carcasses of dead chickens. This is a measure implemented to reduce risk of HPAI transmission to humans. However, the PDSR data showed that safe disposal of carcasses was undertaken by only 54.91% (1,347 out of 2,453) between May 2008 and February 2009.

2.2.2 Decontamination (cleaning and disinfection)

Decontamination is the response that seems to be more widely and readily accepted by backyard poultry owners to control HPAI. This involves the disposal of carcasses by burning and burying, and the deployment of disinfectants in the environment in which the dead birds were encountered. According to the PDSR database, between May 2008 and February 2009 in 97.84% of the cases decontamination was implemented. However, the evaluation team was concerned at the variable and unstructured manner in which this was undertaken in the field, questioning the validity of this tool.

2.2.3 Movement control

One important strategy in managing animal disease is to limit the spread through animal movement. Poultry movement control is extremely difficult to implement in Indonesia in general, and in the backyard poultry sector in particular. In the PDSR SOPs, movement control is referred to 14 days of confinement of surviving poultry and no new poultry permitted into the village. The PDSR database shows that in all HPAI confirmed cases movement control was implemented in 2,453 cases between May 2008 and February 2009. However, during the discussions held with farmers in the field visits and in line with the field surveys findings, it is clear that selling of surviving chickens is widely practiced. Furthermore, the PDSR officers have little real authority to enforce movement control, even if they are alerted to movements that contravene regulations.

2.2.4 Confinement and restocking

The PDSR database shows that a majority of the affected villages (91.6%) implemented some sort of containment measures between May 2008 and February 2009. The evaluation team learnt that caging of birds in bamboo baskets, especially fighting cocks, is practiced using a range of food, including food scraps from houses. Currently one of the flip charts used by the PDSR teams deals with temporary confinement. However, the low percentage (2.8%) of cases in which confinement was implemented by more than 75% of the village households indicates

that the measure is not being applied well. Complete confinement at village level is critical in order to prevent the disease from spreading. Observations made during the field visits indicated that high levels of confinement are very difficult to achieve, as the costs of cages and feed is seen as prohibitive.

Table 12: Percentage of households that agreed to implement containment. Data from FAO/CMU epidemiology consultant report.

Implementation of containment	Responses	% of total responses
Containment Implemented	209	8.4
Implemented in less than 25% of Households	1549	62.5
Implemented in 26 to 50% of Households	482	19.4
Implemented in 51 to 75% of Households	169	6.8
Implemented in more than 75% of Households	70	2.8
Total responses	2479	100

As far as restocking is concerned, no monitoring was carried out. Observation made during field visits showed that farmers often restocked within hours or days of disposing of their dead chickens.

2.3. Prevention

Disease transmission from infected to susceptible animals in a “clean” population may be prevented by not allowing infected animals to enter that population. This restriction is normally achieved by prohibiting movement from infected areas to “clean” areas. These can only be implemented in the presence of an adequate legal framework, and staff to enforce regulations. In the PDSR programme, disease prevention is undertaken through Information, Education and Communication (IEC) activities.

In the period 1 March 2008 to 26 February 2009, 29,476 education meetings were held with community leaders. During this same period, 10,093, 6,804, 103,832 and 9,971 meetings were held with large group of community members, other organizations, individual households and persons from commercial enterprises, respectively. The education meetings covered 17 areas related to HPAI prevention. The number of villages where the topic has been discussed is indicated in the following table.

Table 13: Topic on Avian Influenza prevention and number of villages covered. Data from FAO/CMU epidemiology consultant report.

No	Topic covered	No of villages
1	Introduction to Avian Influenza	12,608
2	Separation of new birds for 14 days	10,935
3	Separate night housing for each bird species	9,575
4	Safe disposal of culled sick and dead birds	10,631
5	Cleaning and Disinfection of Poultry housing and equipment	11,945
6	Washing hands after handling poultry	12,086
7	Permanent confinement of birds in high risk areas	7,744
8	Safe food preparation of poultry and poultry products	8789
9	Safe slaughtering of poultry	7795
10	No sale or consumption of sick or dead poultry	11593
11	Vaccination of healthy birds against ND	7950
12	Vaccination of healthy birds against HPAI	9775
13	Restriction of poultry trader and collector access	6536

14	Biosecurity for hobby birds	8658
15	Properly managed and healthy live bird markets	3327
16	Safe poultry manure disposal of processing	7895
17	Reporting of unexplained deaths in poultry	11,876

The PDSR team also conducted education meetings involving commercial poultry producers in 14 topic areas. Such areas, and the number of commercial enterprise involved, are indicated in the table below.

Table 14: Topic in Avian Influenza prevention and number of commercial enterprises covered. Data from FAO/CMU epidemiology consultant report.

No.	Topic covered	Number of commercial enterprises
1	"All-in, all-out system	3397
2	Single species production only	3239
3	Biosecurity	321
4	Farm workers poultry-free	2018
5	Hand-washing and change of clothing for workers on entry and exit	3471
6	Prevention of non-essential items and visitor entry	2923
7	No sharing of equipment with other enterprises	2556
8	"Disinfection of cages, egg trays, wheels and footwear on exit and entry	3548
9	Cleaning and decontamination of cages between production cycles	3222
10	Poultry collectors and trader restricted entry	2487
11	Regular Vaccination	3240
12	Chlorination of drinking water	1680
13	Safe storage of poultry feed	2510
14	Safe manure disposal	3208

2.4 Overall Results of the PDSR Programme

The FAO HPAI programme has developed a set of indicators to measure key outputs and outcomes, using as basis information entered into the PDSR database. Progress in achieving indicator targets is reviewed on a quarterly basis by the M&E unit. These indicators are valuable in monitoring progress, although they do not provide a complete picture of the effectiveness of the surveillance, control and prevention activities conducted.

Table 15. Key outcome indicators of the new PDSR Programme. Data from FAO Team.

Key Outcome Indicators	Indicator Target	July-Sept 2008	Oct-Dec 2008	Jan-Mar 2009
Percentage of surveillance activities initiated by notification from community residents.	Increase	7.02%	6.25%	16.13%
Cumulative percentage of all villages in program areas that have been investigated.	80% by end of June'09	7.98%	23.39%	29.13%
Percentage of surveyed villages that are found to be infected.	Reduce	4.86%	3.73%	13.79%
Percentage of all villages that were in control during the previous quarter that become re-	Reduce	2.70%	1.83%	3.50%
Percentage of all surveyed villages that have status of controlled or apparently free	Increase	88.61%	90.99%	89.33%
Percentage of investigations resulting in infected status that are reported to human	Increase	57.29%	69.66%	71.15%

Percentage of apparently free villages in which prevention activities are completed.		Increase	44.86%	41.25%	55.90%
Average time taken by PDSR teams to conduct activities.	Surveillance	To remain between 2 and 3 days	2.56 days	2.2 days	2.2 days
	Control		2.01 days	2.4 days	2.6 days
	Prevention		1.78 days	2.2 days	2.3 days
	Monitoring		1.54 days	2.0 days	2.0 days
Average number of days that a PDSR officer works each month		To remain between 14	12.66 days	13.82 days	12.76 days
Surveillance response time – days from notification to surveillance activity commenced		Less than 3 days.	1.8 days	1.2 days	0.7 days

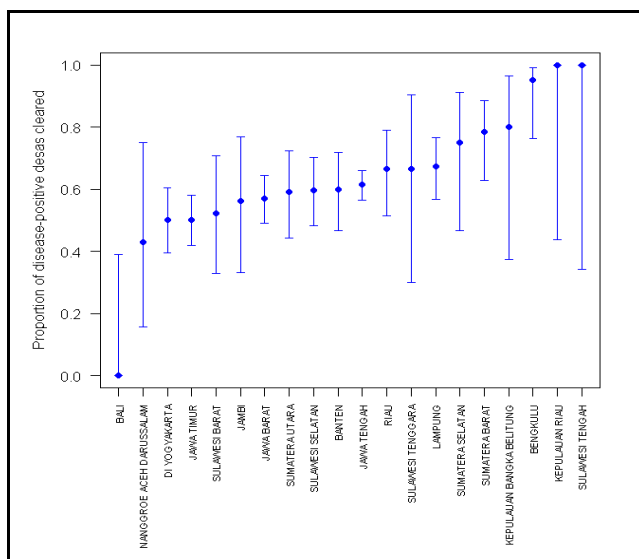
The FAO project team has proposed three possible indicators to measure the effectiveness of the surveillance, control and prevention activities of the programme, based on the progressive improvement of the disease status of a village (from 'Infected' to 'Suspect 14, Suspected 60, Controlled', and then eventually 'Apparently Free'). These are:

- Proportion of villages that progressed from 'Infected' to 'Apparently Free' or 'Controlled'
- Proportion of 'Controlled' villages with no later breakdown to 'Infected' or 'Suspect (14)
- The time from a village being detected as 'Infected' to becoming 'Controlled' or 'Apparently Free'.

2.4.1 Proportion of villages moving from 'Infected' to 'Apparently Free' or 'Controlled'

PDSR Data from April 2008 to 28 February 2009 has been analysed to determine whether there has been any improvement in the HPAI disease status of villages. It appeared, within the limits of interpretation imposed by the wide error bars, that most of villages in a majority of the provinces have a tendency to progress from infected to apparently free/controlled. Villages in two provinces (Kepulauan Riau and Sulawesi) appeared to have had greatest success, but the error bars are still wide (see figures below).

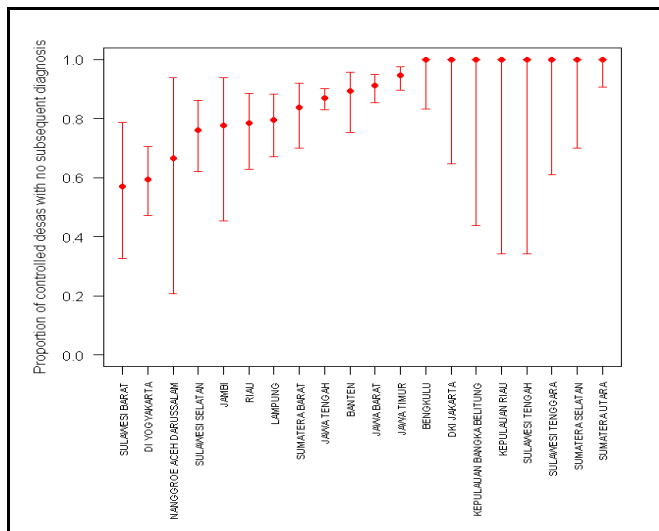
Figure 7: Ranked error bar plot showing Provincial point estimates and 95% confidence intervals of the proportion of infected villages identified between 1 April 2008 to 28 February 2009 that achieved as a status of 'Apparently Free' or 'Controlled'. Data provided by the FAO/CMU epidemiology team.



2.4.2 “Controlled” villages with no subsequent breakdowns to become ‘Infected’ or ‘Suspect(14)

Further analysis of data from 1 April 2008 to 28 February 2009 showed that villages in the majority of provinces were not likely to revert from the “Controlled” status to become ‘Infected’ or ‘Suspect (14) villages (see figure below).

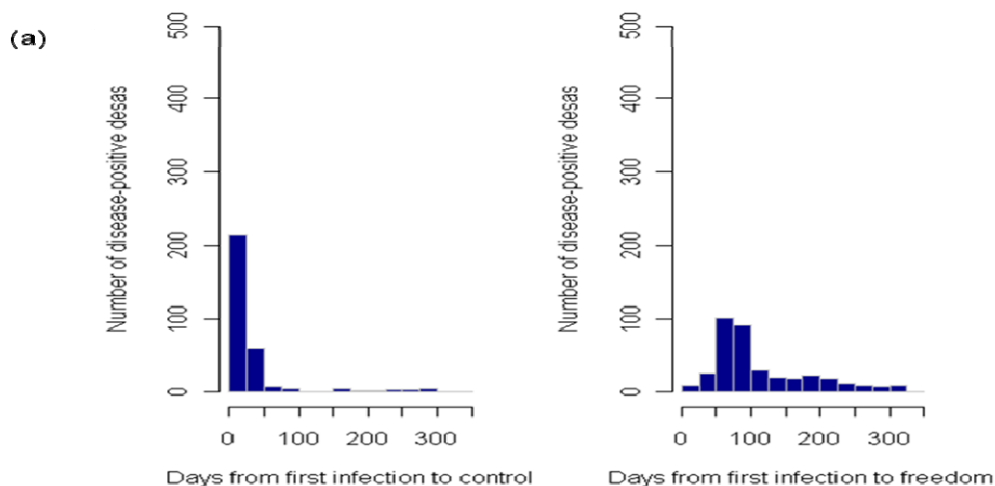
Figure 8: Ranked error bar plot showing Provincial point estimates and 95% confidence intervals of the proportion of ‘Controlled’ villages identified between 1 April 2008 to 28 February 2009 with no subsequent breakdowns to become ‘Infected’ or ‘Suspect(14)’. Data provided by the FAO/CMU epidemiology team.



2.4.3 Time from a village being detected as 'Infected' to becoming ‘Controlled’ or 'Apparently Free

Based on the new PDSR database (1 April 2008 – 28 February 2009), an “infected” village may require up to 300 days and 325 day to reach the “controlled” and “apparently free” status, respectively. However, a majority of villages reached “controlled” status in less than 50 days and “apparently free” status in less than 100 days (see figure below).

Figure 9: Frequency histogram showing the distribution of the number of days from first infection date to last status date (where last status was (a) controlled, (b) free. Data from the FAO/CMU epidemiology team.



In summary, the evaluation team believes that the PDSR programme has developed a good M&E system for reporting on indicator targets at the level of activities and outputs. Clearly it is still early days in the analysis and synthesis of data, and undoubtedly there will be opportunities to further refine this process. As highlighted in the assessment of programme design, there is a need to consider new quantitative and qualitative tools to measure the links between activities, outputs and outcomes, designed to give stronger guidance to the CMU, provincial and district decision makers, donors and other stakeholders on HPAI control.

CHAPTER V: AN ASSESSMENT OF THE ROLES PLAYED BY PDSR IN INDONESIA, AND THE IMPLICATIONS FOR THE FUTURE

The PDSR initiative for the detection and control of HPAI has had a significant impact on veterinary services in Indonesia, and on the broader understanding of the role of participatory epidemiology processes of investigation and response in livestock disease surveillance, control and prevention. This sentence infers that the direct impact on the control of the disease itself has not been as substantial as some people had hoped, and that appears to be the case; this is likely due to the enormous scale of the problem, and to the focus for much of the project life being almost entirely on backyard poultry. But the initiative has given rise to a new wave of understanding of the significance of engaging rural communities in disease surveillance, of participatory tools that help in that process, and of the challenges of controlling diseases of poultry in the growing and ever more complex production systems which characterise the vast archipelago of Indonesia.

We structure this section using the itemised terms of reference of the evaluation team.

1. Relevance of PDSR to Indonesia's programme of HPAI control and to pandemic preparedness

In assessing the *relevance* of the PDSR programme, it is important to consider three different forces: a) the growing concern in some corners of the world of the risk of emerging pandemic influenza, a concern that has been reignited by the appearance of H1N1 influenza; b) the rapidly developing poultry industry in Indonesia, in which small scale entrepreneurs engaged in various elements of the many value chains play a measurably important role in feeding the country, contributing to the economy and reducing poverty; and c) the presence of a range of other competing animal health constraints to livestock enterprises and the inadequacy of services to respond to them. We will consider these in turn.

The relevance to pandemic preparedness. An evaluation of the threat of an influenza pandemic is beyond the scope of this review, but it must be noted that such a threat still exists, and what is more is also seen to exist, particularly among the “worried well” of the western world. Indonesia has recently mounted a surveillance initiative on H1N1 virus. Whether it is of significance or not, concern is expressed over the juxtaposition of the pig population of Bali in mixed smallholder systems that include poultry with endemic HPAI infection, and the huge Australian tourist industry on the island, which will inevitably bring in H1N1 infections resulting from the epidemic currently being experienced in Victoria and other States of Australia. This means that the interest of the world in ensuring preparedness for the pandemic threat will inevitably be sustained, as the high human population density in Indonesia - with all its mobility and accompanying domestic animals - will continue to be viewed by some countries as a threat to them.

The rapidly developing poultry industry. Poultry meat and eggs are critical to both the demand for quality protein in the balanced diets of Indonesians, and to the growth and development of the country's economy, including the key role sector 3 plays in processes of poverty reduction. This is a highly important and rapidly developing sphere which deserves much more attention than it has been given by the FAO project until recently. It must be emphasised that the poultry "industry" is not just the few large companies under very intensive management (such as those in sectors 1 and 2), but it also involves an enormous and diverse set of small entrepreneurs, linked in a plethora of different business and marketing chain relationships with a wide range of players. Effective HPAI control is critical to these important Indonesian enterprises, particularly to the further development of the diverse sector 3. And at the same time, sector 3 needs to be fully engaged in the control programme if any impact is to be made on controlling the disease. At present it is not.

The need for broader and more responsive service provision for a range of animal health constraints. HPAI is but one of a set of constraints to the broader animal health enterprises. Service provision to these has reportedly been weak in the past; the PDSR tool has helped bring a degree of change to that with regard to the vast sector 4 backyard producers, who also keep other livestock species, including goats, buffaloes and cattle. For reasons of sustainability, and to ensure that the valuable elements of PDSR are effectively exploited, there is a need for a greater understanding of the size and nature of other health constraints in other species, and the availability and efficacy of technical and other options for their detection, control and prevention.

Relevance of PDSR to controlling endemic HPAI. While outlining a broad blueprint for HPAI control in Indonesia across the different poultry sectors, the first NSWP highlighted the importance of endemic disease in sector 4 as the primary source of HPAI and the target for control activities, hence, the initial importance attached to the PDSR programme. Based on evidence developed by the FAO programme and other players over the past three years or so, it has become apparent that the focus on the backyard poultry in sector 4 may not be relevant to the control of HPAI, even if the measures that PDSR teams are undertaking were made more effective (see later the discussion of efficacy). It appears from emerging data that sector 4 probably represents the sentinel victim of infection, rather than the "engine room" of HPAI dynamics. Infection maintenance appears to reside in the small scale poultry enterprises of the widely diverse sector 3, and the marketing channels associated with these, but it is acknowledged that there is somewhat of a continuum between sector 3 and certain elements of sectors 1 and 2. The close proximity of everything to everything in many parts of Indonesia means that extension of infection to backyard poultry through close contact in areas of high human density and movement intensity is straightforward and commonplace, acknowledging that potentially some smouldering of infections within more densely populated backyard flocks is also likely.

Having said this, it is recognised that the responses undertaken by PDSR teams in sector 4 which remove and destroy infected birds, carry out disinfection and undertake focal culling of in contact birds, may play a role in reducing the risk of human infection, even though this does not appear to be the main route of human infection according to interpretations of emerging data.

2. Clarity and realism of the programme's goals and objectives

Comments here relate specifically to the goals and objectives laid out in OSRO/INS/604/USA and OSRO/INS/701/AUL which are the two projects that have been funding the PDSR programme in the past three years. These projects are however also funding other components of the FAO HPAI programme in Indonesia. The evaluation team is aware of the overlap and has attempted to restrict its assessment to the PDSR programme, within the broader context of HPAI control in Indonesia.

In both sets of documents and their annual revisions, there are differences in the goals and objectives presented, as well as some inadequacies in definition and clarity, which complicate the assessment of the PDSR component of these projects.

The OSRO/INS/604/USA has the headings: Impact, Purpose, Outputs & Activities. The OSRO/INS/701/AUL has the headings: Impact (in which it states international and national development goals), Outcome (in which it lists two objectives), and Outputs & Activities. These differences of structure are unfortunate, and do not reflect well on the coordination process of FAO in developing and formalising these contractual documents.

But this is less significant than the problems posed by the general nature of the goals and objectives, and the inadequacy of indicators as to how the project has contributed to these. So, in the two sets of documents a series of broad targets appear, including “safeguarding the health and livelihoods of the Indonesian people”, “enhancing the capacity and ability of the GoI and partners to control HPAI”, “contributing to efforts to controlling and eliminating the threat of HPAI *at source*”, and “providing sound technical and policy advice to the GoI on avian influenza”. Following these lofty and largely immeasurable targets are a set of outputs, but little if any indication of how the outputs are connected to the goals, what outcomes will result from the outputs, and how these outcomes will be measured. While the evaluation team understands that there is considerable time pressure on the development of these documents for approval by FAO, donor and GoI, it also considers that after three years a more structured, standardised and accountable documentation might have been developed¹⁶.

The evaluation team noted that the FAO programme staff was aware of the need for greater focus and accountability in the management of this high cost intervention. The drafting of a strategy document (“Issues for control of HPAI in Indonesia – a strategic approach for Government of Indonesia”) in May 2008 with the support of the regional ECTAD office in Bangkok was a positive development towards a more comprehensive framework. While the document itself has still not been approved by FAO Rome, the new format developed in the draft for a more strategic approach to managing the projects (see below) has been further developed and used by the FAO team, both internally and with GoI stakeholders.

¹⁶ Subsequent to the evaluation in Indonesia, the evaluation team has been informed that the ECTAD Programming Unit has recently developed a standard format and related guidelines for all ECTAD project documents. The logical framework approach has been introduced in project documents and a process for quality control has been put in place.

Figure 10. A draft strategy matrix developed for the FAO contributions to HPAI control in Indonesia (derived from internal FAO draft document entitled: Issues for control of HPAI in Indonesia – a strategic approach for Government of Indonesia, 24th May 2008).

<i>Current Situation</i>	Surveillance and Investigation (Information for Action)	Outbreak Control (immediate risk reduction)	Prevention (long-term risk reduction)
Village poultry	<ul style="list-style-type: none"> Output: Gather sensitive and timely information regarding occurrence of HPAI in villages throughout endemic areas of Indonesia. Key Activity: PDSR village surveillance Geographic focus: all endemic areas 	<ul style="list-style-type: none"> Output: Immediately reduce animal and human risk at point of outbreak. Key Activity: PDSR village outbreak control Geographic focus: all endemic areas, especially central and western Java 	<ul style="list-style-type: none"> Output: Healthy poultry, healthy people, healthy village: support the village as a safe and healthy environment. Key Activity: PDSR and partners village prevention Geographic focus: all endemic areas, especially lower incidence areas
Commercial poultry	<ul style="list-style-type: none"> Output: Improve real-time understanding of disease status of commercial producers in western Java Key Activity: Institutionalized analysis if PDSR surveillance, market surveillance, and direct surveillance of small-scale producers participating in engagement programme Geographic Focus: primarily high-risk areas of western Java, also all endemic areas (indirect via PDSR) 	<ul style="list-style-type: none"> Output: Immediately reduce risk of virus amplification within highest risk producers in western Java. Key Activities: <ul style="list-style-type: none"> Large-scale: expert consultancies to improve efficiency and biosecurity Small-scale: direct engagement programme with high-risk producers that ties targeted vaccination campaign to a phased biosecurity improvements Geographic focus: high-risk producers in western Java 	<ul style="list-style-type: none"> Output: Support safer and more efficient commercial production practices Key Activities: <ul style="list-style-type: none"> Large-scale: zoning and compartmentalization and biosecurity improvements Small-scale: phased biosecurity improvements via the direct engagement program Geographic focus: western Java initially
Marketing system	<ul style="list-style-type: none"> Output: Enable market surveillance to enhance the Control Programme's ability to identify high-risk areas and populations. Key Activity: Active market surveillance in key markets by local government Geographic area: selected markets/collector yards in western Java 	<ul style="list-style-type: none"> Output: Reduce level of viral contamination in selected marketing areas (immediate risk reduction in both animal and human populations). Key Activity: Pilot of market interventions in high-risk area by local government Geographic area: Tangerang (where political support for market interventions is strong) 	<ul style="list-style-type: none"> Output: Improve awareness of market consumers and traders; promoting healthy marketing practices Key Activity: MOH/WHO Healthy Markets campaign, IEC campaign by partners, market restructuring Geographic area: all endemic areas, particularly Java
Ducks and other waterfowl	<ul style="list-style-type: none"> Output: Determine most effective means of reducing the role of waterfowl in the maintenance and transmission of HPAI Key Activities: Duck vaccination study, intra-flock transmission study, risk factor analysis Geographic Focus: western and central Java, South Kalimantan 	<ul style="list-style-type: none"> Output: Reducing reservoir of virus in high risk waterfowl populations Key Activity: To be determined, options include vaccination and testing/certification. Geographic Focus: To be determined 	

The framework consists of a matrix which differentiates between surveillance, outbreak control and prevention, and deals with them in four different “sectors” (namely village poultry, commercial poultry, marketing systems, and ducks and other waterfowl), identifying outputs, activities and geographical focus in each. This framework further identifies which organisation was to take the lead in the different activities.

A work plan framework has apparently evolved from this. At first sight it appears to have lost the “sector” differentiation, and is now shaped in terms of geographical targets (namely Java, Bali, rest of Java, south Sulawesi, Sumatra, low incidence and free provinces, and programme management); it includes goals, strategic objectives, indicators, activities and funding. The evaluation team learnt that the work plan is intended to translate the concepts articulated in the draft matrix framework into how activities will be conducted in space and time, with an emphasis on space (regional stratification). The example of Java is illustrated below.

Location	Dec 2009 Goals and Purpose Indicators	Strategic Objectives	Indicators	Activities	Funding
Western Java	Reduction of human cases in JABODETABEK and poultry and human cases in rest of western Java	WJ 1 Intensify surveillance in markets, commercial target areas, and village-based poultry	Surveillance plan drafted, 100% of target locations surveyed and first antigenic/genetic map is produced within Indonesia.	WJ 1.1 Establish longitudinal market and collector yard surveillance system based on available data for marketing systems (e.g. Bbalitvet LBM study, poultry movement profiling) to identify high-risk areas and production systems WJ 1.3 Establish capacity to analyze genetic and genetic variation of virus strains within Indonesia (match with PM 4.2) WJ 1.4 Strengthen surveillance in village-based poultry	1. Dinas 2. MOA 3. Donor
		WJ 2 Increase cooperation and strategic planning between public and private sectors.	Public Private Partnership (P3) established and P3 work plan drafted, First year of biosecurity program activities are implemented.	WJ 2.1 Establish public-private partnership (P3) between public sector and commercial industry WJ 2.2 Finalize strategic plan for restructuring of poultry industry and marketing system WJ 2.3 Establish a surveillance with commercial producers WJ 2.4 Improving information sharing and direct collaboration with commercial industry WJ 2.5 Implement compartmentalization of commercial production WJ 2.6 Implement biosecurity improvement program with both breeders and growers (in target districts) WJ 2.7 Advise on vaccination strategy and support efficient vaccination practices (especially breeders and layer operations)	

These incomplete developments in presentation of goals and objectives for project management and communication are encouraging; there appears to be room for further refinement, in particular by the inclusion of disease risk outcomes to supplement the administrative milestones currently articulated under “indicators”, particularly as the FAO programme continues to diversify its operations beyond PDSR.

3. Quality, clarity and adequacy of programme design

The interpretation of programme design attributes is assessed by revisiting the Outputs and Activities sections of the project proposals, particularly in the light of the NSWP¹⁷. However, and as substantiated in the chapter on the evolution of the PDSR programme, the several adjustments to the design have complicated the evaluation team assessment.

3.1 Realism, clarity and logical consistency between inputs, activities, outputs and progress towards achievement of objectives

Sector and geographical focus: The initial pilot and full projects were emergency responses, and chose to focus on backyard poultry, initially in Java, and rapidly expanding to much of the country. Given the focus on backyard poultry, the use of participatory tools was undoubtedly most appropriate for that sector. However, the design did not adequately recognise that the backyard sector was highly unlikely to be the only possible source of infection in a country with such a large and growing set of poultry enterprises, and that it needed to be complemented by a well structured analysis of the complicated poultry market chains in the country, and the implications of these in the spread and maintenance of the disease. Although now being addressed, this task remains unfulfilled, in that the interconnections between sectors, and the implications these have on disease spread and endemicity, have yet to be mapped. Furthermore, while some participatory tools might be of value in the interface with the more commercial sectors of the poultry enterprises of Indonesia, it would appear likely that a different level of engagement with a higher calibre of

¹⁷ The evaluation team has some additional specific comments on the NSWP itself; see section 5 below.

technical competence through enhanced public and private services would be more appropriate.

Taking this argument one step further, the evaluation team finds it very difficult to understand why no poultry industry sector expertise was written in to the project design at the earliest possible stage. A short-term consultant on commercial poultry health was finally brought into the recent project phase (2008-2009). In the new USAID project for 2009/2010, a full time position with industry savvy and supported by Indonesian expertise will be included. This person will be specialised in poultry health. The evaluation team considers that while this is indeed a belated step in the right direction, a broader knowledge and understanding of poultry enterprises from a systems perspective, beyond the poultry health perspective, would bring important insights to the understanding of poultry production dynamics, and to the success of the overall programme.

Assignment of PDSR officers. Eight PDSR officers were initially assigned to each District up until May 2007. After this date the number of PDSR officers for new LDCCs (e.g. Sumatra) was in proportion to the human population (assumed to be directly correlated to sector 4 poultry population), subject to final negotiation and agreement between central and local governments. As the project evolved, and it was realised that the strengths of the PDSR might be in minimising human infections in the backyard sector rather than having an impact on the prevalence of HPAI, the design has recently shifted to consolidation of efforts on Java where 70% of human cases have occurred. The evaluation team commends the adjustment of numbers of PDSR officers assigned to be brought in line with denominator populations, and recommends that such re-evaluation of resource deployment be a regular feature of the programme in the future.

3.2 Provisions for programme adjustments and flexible response for opportunities and changing circumstances

It is apparent that the project has evolved substantially to meet the demands of new evidence, and it continues to evolve. This has been aided by the short term funding cycles (one year in the case of USAID, two years with AusAID). Change has also been associated with staff departures & new staff arrivals.

Despite these dynamics, as mentioned above there was for some time inadequate recognition of the staffing needs to address HPAI dynamics in the different commercial (sectors 1, 2 and 3) poultry sectors, especially sector 3. Indeed there has been a remarkably slow adjustment to accommodate sector 3 in the whole HPAI programme in Indonesia. It is understood that contributing to this might have been reluctance by a major donor to move away from sector 4 and contribute to HPAI control in the commercial poultry sectors.

What could the PDSR programme contribute to sector 3? The evaluation team considers that the priority action in this sector should be on gaining a greater understanding of the network and dynamics of sector 3 value chains, and their links with other sectors (a task largely out with the roles and responsibilities of the PDSR teams), and on HPAI prevention in this sector, rather than response to outbreaks. The small scale commercial enterprises appear to dispose of

birds rapidly once disease is detected; the opportunity in this sector is in developing and sustaining a culture of vaccination and effective biosecurity.

There has been a recognition that the major gains in the participatory tools interface with sector 4 need to be broadened to accommodate the widest possible range of species and their diseases as part of a blueprint for the strengthening of veterinary services capacity.

3.3 Realism and clarity of institutional relationships, in the managerial and institutional framework of the GoI for the implementation of the PDSR programme

The FAO was heavily involved in advising the GoI on the establishment of the CMU in late 2005, and in its design. The CMU was established as an independent unit in the Ministry of Agriculture under the DAH, and reporting to the DGLS. In the short term, this has had the advantage of setting up direct links between the CMU and the LDCCs as they were progressively established in the country, an advantage to the prospects of HPAI control by allowing a degree of central control in Indonesia's new era of decentralisation of authority to Districts. The decentralisation appears to have had an adverse effect on the capacity of Indonesia to control epidemic livestock diseases. In the long term, however, it has been seen by many as setting up a parallel system to the veterinary services under the DAH, creating animosity in Dinas offices and an imbalance in the allocation of resources to HPAI vis-à-vis other health constraints to Indonesian livestock enterprises.

At the same time, the National Committee for Avian Influenza Control and Influenza Pandemic Preparedness¹⁸ (KOMNAS FBPI) coordinates the GoI response to HPAI, bringing the different ministries, international organisations, NGOs and the private sector together. In the current era of One World One Health, KOMNAS FBPI might have been seen by some as the obvious choice to manage the HPAI control initiative, ensuring optimal cooperation between human and animal health institutions, but the need to have direct operational control under the Ministry of Agriculture was seen to be an important factor. The relationship between KOMNAS FBPI and CMU on technical issues has reportedly been ambiguous. KOMNAS FBPI is due to cease in March 2010.

The FAO project has a close link with the CMU (members of the FAO team sit in the CMU office), and two members of CMU play senior roles as national project leaders of the FAO projects¹⁹. However it appears that the FAO programme is not directly represented on the CMU²⁰. The CMU is a technical and operational body, and not directly responsible for policy on HPAI control; policy decisions are taken at the level of the DGLS/DAH and KOMNAS FBPI.

¹⁸ <http://www.komnasfbpi.go.id/aboutus.html>

¹⁹ Dr. Turni Rusli Sjamsuddin, Acting Director of DAH and FAO project director, and Dr. Ade Sjachrena Lubis, CMU member and FAO national project coordinator

²⁰ FAO used to be named as a member of the CMU from its inception (2006) until the Ministerial revision of the CMU membership in August 2008, when all three FAO members (Team Leader and 2 CTAs) were removed from the CMU. The most recent revision of CMU membership (April 2009) does not re-instate FAO staff as CMU members.

The main institutional linkage for most of the FAO programme activities is clearly with the CMU, but with a need to ensure effective integration of PDSR skills and capacities with Provincial and District Dinas animal health services, the FAO programme arguably needs to provide strategic support to this transition process, seeking a national model for their effective integration, which also exploits the particular needs and strengths of the different Provinces and Districts.

3.4 Realism and clarity of capacity building and training approach

Capacity building functions are central to the role that FAO can play in responses to HPAI, and in supporting Indonesia's ability to exploit the investments made in PDSR to help improve their veterinary services. With regards to the design of capacity building and training for PDSR functions, the overall design appears sound; the focus on strengthening team and individual skills, and deploying these in the broader strengthening of local animal health structures is seen as very appropriate. The project has evolved and learnt from its experiences (for example abandoning an earlier approach to the training of trainers after identifying inadequacies).

Having said that, it is important to recognise that a wider set of participatory and other investigative skills are required when taking a more holistic approach to HPAI control outside the confines of sector 4, and in responding to other disease surveillance and response demands. This aspect needs urgent attention with respect to the interface with the commercial sectors, and sector 3 in particular. But even in sector 4, greater attention needs to be given to the development of investigative skills. A large proportion of the PDSR officers are qualified veterinarians, and so likely have at least a basic understanding of infectious disease dynamics. The challenge is to build on that understanding the principles of investigative epidemiology. The new database and associated analyses provides an excellent training tool which the FAO programme should exploit in the transition to sustainable animal health services.

Another weakness of the design is the lack of adequate indicators of success in the area of IEC, which can then be used for feedback into future IEC design; there is a need to take this aspect beyond counting the numbers of people trained, and consider broader outcomes of capacity building and training (measures of knowledge, understanding, etc.) and how these can be independently measured. It should also address how training can contribute to a joint understanding of, and planning for, HPAI prevention and control activities at the district and provincial levels.

The evaluation team noted an inevitable frustration of many PDSR officers in the gap between what they have been trained in (e.g. in the areas of poultry depopulation, use of disinfectants, influencing movement control, etc), and what they can actually achieve in the field. Considering that this frustration is in the face of a well funded programme, careful consideration should be given to improving the practicality and achievability of functions in order to ensure that high morale of PDSR officers is sustained in the future.

4 Efficiency and adequacy of programme implementation: Managerial administration and operational support

The evaluation team recognises the complexities of management of the PDSR programme, and the broader HPAI response programme within which it sits. There is a multitude of players, short-term financial support with the requirement to develop new projects on an annual basis, fairly high staff turnover, a leadership vacuum within the disease control area (until recently), and the complication of HPAI receiving progressively lower priority by GoI.

The HPAI control programme is largely managed by Government (the CMU at central level, and the Province and District level Dinas) with some external support. The CMU staff is funded entirely by GoI. This has its very positive attributes in terms of ownership and sustainability, but it is understood that decision making can be slow, with insufficient authority delegated to the CMU.

The evaluation team was initially concerned that there was no overall conceptual framework for the FAO contribution to the NSWP. During the course of the evaluation, it was discovered that there has been an evolving strategic plan, initially (May 2008) developed on the basis of the different “sectors” in which the programme as a whole is active, and currently on the basis of geographic regions of the country. It is recommended that this is further developed, and presented in such a way as to cover both geographical and sector aspects of the programmes activities, expected outputs and anticipated outcomes.

Beyond this, it is suggested that the draft revised NSWP (still not approved by the GoI) could well be revisited and updated in the light of such a conceptual framework. Of particular concern to the evaluation team was the continued placement of the understanding of, and interface with, the multiple sectors of Indonesia’s poultry enterprises as the last of nine elements, included almost as an afterthought, under the deceptive title of “Industry Restructuring”²¹. Clearly if HPAI is to be controlled in Indonesia, there will be a need to engage the multiple representatives of different elements of the poultry enterprises in policy development (including consideration of representation by the poultry enterprises on the CMU), to try and avoid the “them & us” syndrome, that has the effect of separating the veterinary professionals from the livestock producers. Both of these groups are endeavouring to do their best in the national interest; the programme would be so much more successful if they did it together.

In 2006 and part of 2007 the rapid expansion of the programme and the demands on operational issues (the ordering and shipment of materials, the quick hiring of sheer numbers of staff, the procurement and distribution of vehicles, etc.) overwhelmed the capacity at the FAO offices in Jakarta. This gave rise to significant tensions at the time. With the appointment of an international operations officer and a senior administrative officer in FAO Jakarta, this difficulty has been largely resolved, but there is a legacy from past operational

²¹ It is suggested that this should read something along the lines of “empowering partnerships with small and medium scale poultry market chain participants”, and be placed as the first element.

and administrative constraints which still affect the programme (in particular with regard to vehicles use and the programme management structure).

5 Efficiency and adequacy of programme implementation: Quality and relevance of PDSR outputs, and implications for key outcome indicators

5.1 Programme management

As mentioned above, the support provided by FAO has been key in the establishment of the CMU in late 2005, early 2006. The FAO team continues to make contributions of technical and policy advice to CMU, and some of the team members are housed in the CMU offices. There is always a fine line between over-engagement of an international organisation at the level of national policy making on the one hand, and taking leadership responsibility on behalf of the international community to use the comparative advantage of a UN agency in advocating evidence-based policies that are in the international good, on the other. In this case, the FAO's direct formal engagement with the CMU (as a member) appears to have changed, with the Team Leader and two CTAs removed in August 2008. On the one hand, this is a positive development in terms of full Indonesian ownership and responsibility for the HPAI response, but on the other hand, given the continued international importance of pandemic preparedness, and the substantial investments being made by many, the evaluation team considers that FAO membership of the CMU benefits all parties. It is felt that the FAO programme has evolved substantially, growing in confidence and capacity, and could play a stronger role in direct support to the CMU and the DGLS than it does at present.

There is a continuing need for technical and operational support by FAO to the GoI HPAI control programme, with an evolving emphasis on a) better understanding of, and engagement with, the small scale commercial poultry enterprises, b) better understanding of how to enhance the efficacy of HPAI intervention prevention and control, and c) facilitating the sustainable adoption of broader community-responsive animal health services utilising certain components of the PDSR programme.

As part of this, and for appropriate focus and greater efficacy in FAO programme activities, there is a strong need for greater clarity in the lines of responsibility within the FAO team. At present there appears to be considerable overlap in the responsibilities of different team members, with the result that some have become overloaded, and unable to produce timely and quality deliverables. It is understood that it has been agreed to bring in an independent management consultant to review the programme structure, functionality and management, now planned for mid September 2009, and this concept is strongly endorsed by the evaluation team.

This review should also incorporate a better understanding of the interface with the large number of Indonesian actors at various levels. The team, and any future management consultant, should bear in mind the responsibility of FAO to foster capacity building at all levels, and the balance of building greater empowerment in technical and managerial abilities through mentoring and partnership without micro-managing programme activities.

5.2 The PDSR database

The future direction and exploitation of the PDSR database is a key question for the PDSR Programme management. A lot of time and money has been spent in the process of developing it and the associated training (and re-training) and data collection. There is now a little over one year of quality data. Still to be resolved is which elements of this are essential for bringing greater efficacy to the surveillance and intervention activities throughout the country, and how can these be best synthesised and deployed for decision making at many levels. At present the outputs are still being synthesised and understood by team members, but there must be a well documented process to develop a set of different products for regular use and feedback by CMU, Provincial and District Dinas offices and LDCCs. Also, the PDSR database does not include data from the commercial sectors (sectors 1, 2 and 3) and runs in parallel to the ailing National Animal Health Information System (SIKHNAS), and these gaps in cohesion need to be addressed.

After a series of adjustments (e.g. the separate PDS and PDR combining, the change in resolution from household to village, and the revisions in the level of data collected), the PDSR database has at last emerged, and it is starting to deliver some valuable products. This is indeed welcome progress, but it does come with some caveats. Firstly, many people (from PDSR officers to epidemiology consultants) believe that there is too much data being collected. This is understandably driven by the unique opportunity to collect data potentially associated with risk factors, so gaining greater insights into enhancing the efficacy of interventions. However, the value of the different data fields must be assessed rapidly. Secondly, to paraphrase Harold Wilson's maxim on a week in politics²², "one year is a short time in epidemiology". Having just established a data collection and analysis system, there will need to be a balance between maintaining credibility in the field by not changing the system too often, and the need to adjust regularly, based on learning, to ensure an action-orientated (HPAI control) focus, and ensuring that the data collection, handling and reporting mechanisms are efficient use of time and resources.

It is important to recognise that detailed analysis of the new PDSR database has only taken place in the past two months; the PDSR programme is still in the early phase of learning what useful information and insights can be obtained from the data, what data are redundant or unreliable and what action should be taken.

Beyond the immediacy of the new data tools, there is a need for a critical assessment of what data will be required in the short, medium and longer term, and how data can be packaged to meet the needs of different end users. Are the reports going out easily interpreted, and how has an assessment of this been carried out? The feedback loop is critical, in order to maintain relevance to the field, as well as motivation for precision in data collection.

The evaluation team questions whether the analyses being generated are truly information for action, since there do not appear to be effective mechanisms in place to ensure that the data is used both centrally and in the provinces and districts. At present there also appear to be

²² http://en.wikiquote.org/wiki/Harold_Wilson

“logistical” obstacles to allowing LDCC use of PDSR analytical reports. LDCC offices must put a request in writing in to the Provincial Dinas office, which in turn requests the CMU. As a result data is not shared regularly with LDCCs or district officers.

5.3 Surveillance

The pattern of surveillance visits made by PDSR teams are presented in the preceding chapters. Of the subset of 18,780 active or passive surveillance visits, 86.6% (16,268) were scheduled visits and 13.4% (2512) were report visits. Of the scheduled visits, 39.3% were recorded as random and 29.2% were recorded as risk based²³.

One of the most important issues to emerge from the data analysis is that the surveillance capacity is much greater in the passive (callout visit) surveillance than in the active (scheduled) surveillance. The diagnostic rate for callout visits during the period April 2008 – February 2009 was 80.4%, compared to 0.2% for scheduled visits. Ideally a risk basis should provide the background justification for the scheduled visits, but the initial analysis is unable to confirm whether this is working; it is questionable whether risk factors can be identified at adequate levels of precision, and currently the numbers are too small to make useful distinctions between risk-based versus other scheduled visits. This brings into question the validity of the risk basis to the scheduled visits, but beyond that suggests that the PDSR surveillance based on scheduled visits is of little direct value for disease control. The evaluation team recognises that scheduled visits have played cost of the PDSR surveillance, the need to make surveillance more relevant to sector an important role in providing a more comprehensive understanding of HPAI in the Districts, but is there adequate justification to maintain them in their current form? Given the high 3, the need to diversify the front line expertise into broader investigative skills, and the need to achieve greater levels of efficacy in responses to HPAI, the evaluation team recommends a review of the value of scheduled active surveillance, and consideration of a considerable reduction or possible elimination of the scheduled surveillance visits.

One criticism that has been levelled at the PDSR programme is that the emerging data do not provide valid incidence and prevalence data, due to the lack of a stratified random sampling approach, and other potential biases. However it is important to recognise that the PDSR is designed to be an action orientated programme, which has progressively attempted to improve the quality of the data it collects. Importantly, the FAO programme has been looking into the validity of the emerging data on HPAI prevalence in Indonesia from the PDSR initiative, and some very preliminary initial results are emerging. PDSR surveillance provides indications of village-level incidence of clinical HPAI in village chickens in the 331/448 Districts of Indonesia where it operates. However, it does not provide statistically valid inferences about incidence, because surveillance visits are not random. Furthermore it cannot provide information about sub-clinical infections with H5N1 virus in chickens and ducks because the surveillance relies mainly on the detection of clinical disease confirmed using a rapid antigen test.

²³ ‘Random’ visits were not selected randomly. There was merely a lack of a specific reason for the visit. ‘Risk based’ visits were when PDSR Officers thought a village might be at higher risk of infection based on tracing information or first principles.

A structured village survey, planned since September 2008, is being undertaken presently on Java. The survey will accomplish four objectives: (1) calibrate and compare PDSR surveillance within three districts in each of eastern and western Java; (2) assess the prevalence of village-level infection with clinical HPAI in village chickens; (3) estimate the prevalence of sub-clinical infection with HPAI virus in village chickens; (4) estimate the prevalence of HPAI virus in village ducks. It is currently being piloted in the District of Tasikmalaya to test the practicability of conducting random village surveys for influenza virus infection in household chickens and ducks, and a comparison between the cost effectiveness of surveillance based on participatory versus random survey techniques. If piloted successfully, it will be extended to two Districts in western Java and three Districts in East Java.

5.4 Prevention

Knowledge, Awareness and Practices (KAP) surveys commissioned by UNICEF have tried to measure the effect of IEC activity in Indonesia. The latest KAP survey (November 2008) found that community leaders, agents, adults and children had already a very good understanding of HPAI clinical signs in poultry (over 77% thought sudden death was the main clinical sign). About half of the people interviewed also had a good understanding of measures to prevent transmission to humans (e.g. burn and bury suddenly death poultry, clean the environment from poultry's excess, etc.).

The evaluation team sought to gather evidence about the effect of the specific IEC activities carried out by PDSR officers, which are targeted at communities and adult poultry producers in order to improve their knowledge and awareness of HPAI risk factors. This was achieved by pre-evaluation surveys, conducted between March and May 2009 and covering six provinces in Indonesia.

The field surveys found that in general most people targeted by the IEC activities of the PDSR programme have a good knowledge of HPAI. The survey respondents generally obtained HPAI information from the television, as well as from community gatherings and discussions with health officials (including PDSR teams). They had an understanding of causation, the dangers HPAI brings to animals and humans, how HPAI infects poultry and humans, clinical signs in poultry and humans, as well as actions that need to be taken when poultry or humans are suspected of having HPAI. However, there still appear to be many who have limited knowledge and understanding of HPAI. Illiteracy was one of the factors reportedly limiting learning.

Another study conducted in Lampung Province on village awareness sponsored by Catholic Relief Services (CRS) in three Districts found that there were no visually discernable differences in HPAI incidence between locations with and without preventive awareness programmes (preliminary data provided by the FAO epidemiology team). This suggested that there is unlikely to be a direct link association between this awareness programme and the sensitivity of passive surveillance.

The evaluation team is of the view that an analysis of the results of IEC activity requires data that goes beyond the number of training sessions conducted and the topics covered. Issues such as the quality and relevance of the training provided need to be periodically monitored and assessed as well as the impact it has in HPAI incidence, particularly if IEC activities are aimed at changing well established understanding and behaviour regarding the management of backyard poultry.

Our field observations also indicated that IEC activities are well planned, supported and executed by an enthusiastic and committed set of people. There is some excellent education work underway, but the task is huge, given the limited coverage achieved by the programme in a national context, and the focus on sector 4, which is not necessarily where the main focus on education and information should be for more effective HPAI control, and in reducing exposure of humans to H1N1 from poultry. There are several actors working on HPAI information and communication in the country, and it is unclear how well they communicate and integrate to ensure a consistent and appropriate message over the widest possible geographical and socioeconomic landscape. The evidence emerging from the KAP and the field surveys show a need for still further and better education to increase the applicability of HPAI messages. We question whether the PDSR officers are the best placed to do this, and whether more of their effort should go into the surveillance and outbreak control interventions.

6 Enhancement of HPAI control in poultry: has PDSR affected HPAI incidence and impact?

This is clearly a critical question, which the evaluation team considered by using a synthesis of field observations, the preliminary surveys conducted, and indicator results emerging from the project. The tools at the disposal of PDSR officers comprise focal culling, poultry confinement and species separation, application of biosecurity, movement control and vaccination. We consider this individually for each of the different intervention tools being deployed by the programme.

6.1 Focal culling with/without compensation

This measure may have some impact of reducing the exposure of people in the affected household and village to HPAI virus, but it is highly unlikely to have any significant effect on the control of HPAI. Focal culling is variously interpreted as killing the other poultry in the household in which a case of HPAI has been identified, to killing poultry within a certain radius of the case, to killing poultry in a wider, less defined area. Compensation is generally not available (an exception is in Lampung, where some District Dinas do make funds available). This means that in most cases culling does not occur, although figures do vary from less than 10% success up to 70%, based on the engagement skills of particular PDSR teams. In effect, this tool, without compensation, is highly ineffective.

6.2 Poultry confinement and species separation

The PDSR officers encourage confinement of poultry on the same or adjacent premises as HPAI cases, and the separation of chickens and ducks. However, very little specific advice is usually given as to how confinement should be achieved (although there are some training materials produced and made available by the FAO team and others). These sector 4 poultry feed virtually entirely by scavenging, so confinement is generally considered to be impractical. Again, this intervention is considered to be highly ineffective.

6.3 Application of biosecurity measures

While this intervention tool has considerable potential in the small scale commercial poultry enterprises of sector 3, it is considered to be highly impractical and ineffective in sector 4. It cannot be used as a preventive as the poultry are roaming and scavenging in the environment surrounding houses and villages. Following the identification of suspect cases, it is extremely difficult to apply effectively. The evaluation team saw disinfectant being splashed indiscriminately in the wider environment, without any strategic application based on considered reduction of the risk of virus remaining in the environment. Again, this intervention is considered to be highly ineffective.

6.4 Movement control

The PDSR officers confronted with a suspect or confirmed case are faced with the challenge of controlling the movement of poultry both in the immediate vicinity of the case (where poultry are wandering around looking for food), and in the broader environment as individuals buy and sell small quantities of poultry. They have to rely on the good will of the community, and in reality have no authority to enforce movement control (and indeed nor in most cases the knowledge of the comings and goings of poultry in these sometimes heavily populated villages).

6.5 Vaccination

Vaccination is generally not performed in sector 4, although a few places have been undertaking small scale vaccination interventions. This is not a significant intervention undertaken by the PDSR programme, nor is vaccination in response to outbreaks advocated by FAO or the CMU. However, should the PDSR programme become more engaged with sector 3, advocating and advising on vaccination is likely to play an important role.

6.6 The inadequacies of the response

It is clear from the above that the response capacity of the PDSR teams is extremely limited, and the efficacy of their interventions is low. It is nevertheless recognised that if they were purely a surveillance unit, they would not have been able to develop the levels of public confidence and interface that they have achieved, which has been a function of the significant funding they receive to ensure their mobility, and the excellent training in participatory methods. However, if this is put in the broader context of HPAI dynamics in Indonesia, and that the poultry of sector 4, the focus of PDSR, is likely to be a sentinel of HPAI infection in other sectors, it raises serious questions about the technical validity of the response arm of the PDSR teams as presently configured.

6.7 Research and development

The operational research undertaken by ILRI and FAO was originally designed to evaluate several candidate interventions, including the role of focal culling with compensation, and the role of vaccination. The final design included an evaluation of vaccination in sector 4, and an evaluation of the efficacy of the cold chain, but was unable to include an assessment of the role of compensation in flock depopulation for logistical reasons. There appear to be some interesting results emerging regarding vaccination, although blanket vaccination in the sector 4 is considered by most to be impractical and unlikely to be effective. The inability to

implement the compensation treatment group in a small scale research project suggests that a wider application of such an intervention would be difficult to achieve.

The interim results²⁴ indicate that a one round vaccination reduced the HPAI incidence from 0.6 to 0.3. When this is put in the context of results from another component of the operational research, in which the basic reproductive rate of the HPAI virus in backyard poultry (R_0) was calculated to be in the order of 1.5, this infers that effective flock protection might be achieved from coverage rates of as low as 33%. The relevance of this information to the highly variable sector 4 poultry population density and dynamics, and to the more strategic use of vaccination in sector 4, needs to be further evaluated.

7 The prospect for sustainability of the PDSR programme

Many will agree that the PDSR programme is not the answer to solving Indonesia's endemic HPAI problem. Evidence produced by the programme suggests that HPAI control will require a much stronger engagement with various components of the many poultry marketing chains outside the backyard sector, and the PDSR tool is likely to play a much more limited role in this. But at the same time many of the valuable approaches utilised within PDSR merit further exploitation in the transition to a broader based surveillance and response capacity of national animal health services that respond to the wider needs of the country's livestock enterprises in all species and sectors, including the backyard sector.

The PDSR programme has already moved from consuming virtually 100% of the FAO's HPAI response budget in Indonesia to less than 50%. In consideration of the future of HPAI control in Indonesia, several questions need to be addressed.

Is HPAI control in Indonesia an international public good, should international funding be sustained, and if so, at what level? The disease appears to have been dropping on the Indonesian national priority listings, but the potential for a global pandemic remains, and Indonesia - with its extraordinary human and poultry populations and their close juxtaposition – is perceived as an important risk. Is HPAI control in Indonesia justified based on control of the disease itself or on the need for pandemic preparedness? Or is HPAI control now a national public good with both public and private sector benefits? These questions deserve urgent consideration.

Much is being discussed in Indonesia on the future of PDSR, and of a progressive ownership by the Provinces and Districts, with them providing the necessary financial support for its continuation. There are many aspects to this. Most important is that there appear to be subtly different interpretations of "PDSR" in the discussions about the future, and what Provinces and Districts will inherit. Some in GoI appear to interpret "PDSR" as the entire package as it is, but broadened to integrate with national animal health services, and accommodating other species and health constraints. Others, particularly some FAO team members, now interpret "PDSR" much more specifically as a tool utilising participatory approaches to interface with certain clients in surveillance and response, and as such do not include the staff, the database,

²⁴ FAO/ILRI Operational Research Interim Report (May 2009)

and all the accessories of the system. Clarity and homogeneity in definition and interpretation will be essential in further discussions on the future.

Participatory approaches to disease surveillance are an increasingly recognised set of tools that can enhance the communication and understanding of diseases in many countries of the world. They provide an effective interface with communities in the developing world, and provide very valuable insights into impacts of disease from the livestock keeper perspective which are otherwise difficult to acquire or calculate. However, they are just one set of tools within a much broader package of tools for animal disease surveillance. Participatory response tools are another set of tools that add value to veterinary services. They make use of a much wider set of players than traditional veterinary services, including paravets, community animal health workers, volunteers and others. But like the participatory approaches, they are just one set of tools or mechanisms for disease control and prevention within a much wider set necessary for effective disease control. These words may sound like statements of the obvious. But they are made to highlight the very unusual situation that the FAO programme and the Indonesian DGLS find themselves. The Indonesian Participatory Disease Surveillance and Response (PDSR) programme, given the huge (and arguably disproportionate) amount of resources it has received, has created almost an institution of its own surrounding the very specific tools it uses (the network of officers, the database, the epidemiology analysis team, the monitoring and evaluation group, etc.), which instead of being one important component of the portfolio of animal disease surveillance and response tools, is identified by many as the new gold standard itself. For this reason, building on the PDSR in the transition to adopting its valuable tools, but at the same time incorporating them in to a much broader set of surveillance and response mechanisms, will require careful planning, and outstanding communications skills.

Much is spoken about broadening the disease mandate of the PDSR as a justification to maintain strong surveillance and response teams in the village livestock sector. Key to this will be acquiring an understanding of the demand for such services, in terms of empirical evidence of the importance of other diseases, and of the capacity of rural teams to play an effective role in their detection and in appropriate and efficacious interventions.

And can the current database system of collection, analysis and synthesis accommodate additional diseases? The concept of additional modules to the current database has been proposed; some consider that while this might sound like a good idea, it will be extremely difficult to carry out from a technical point of view. Clearly this is a challenge which will need to be met, in order to respond to the demands for a broadened surveillance and response mandate.

Looking to the future, the evaluation team were made aware of two models for the possible transition of elements of the PDSR into future sustainable livestock surveillance and response systems that include HPAI. The first is presented in a draft concept note prepared by an FAO team member, based on a transition phase to be trialled in South Sulawesi. The second is a concept presented to the evaluation team by the Provincial Director of Animal health in Padang, West Sumatra. Both look towards sustainable animal health services that are funded

by Province and District offices. There may well be other models out there that the team did not encounter.

The evaluation team consider that there is an opportunity to use the ideas from these two models to initiate a national process to consider the evolution into sustainable veterinary services to meet the broad needs of different stakeholders, building on the strengths of the PDSR programme (in particular the community engagement elements), seeking a seamless interface with District and Province Dinas offices, retaining Indonesia-wide relevance for surveillance purposes and at the same time recognising the idiosyncrasies and particular demands of different regions. The South Sulawesi proposal is a 3 year process, but the team considers a 5 year process to be more realistic.

Critical to this process will be a clear definition of the goals, and a clear vision of the product that will emerge. Will it be focussed on HPAI, on disease surveillance in general, on surveillance and response, etc? In discussing the most feasible model the following elements should be taken into account: i) Adaptability: it should be capable of responding to new challenges and emerging diseases; ii) Inclusion of an exit strategy for external funding; and iii) Consideration of national/local demands which promote the long-term sustainability of the model.

CHAPTER VI: CONCLUSIONS AND RECOMMENDATIONS

The evaluation team concludes that the PDSR programme has played an important role in responding to the HPAI outbreaks in Indonesia. It has injected a renewed lease of life to animal health services in Indonesia, and extended services to rural and urban communities in many regions of the country. It has done this through the establishment of an institutional framework based on Local Disease Control Centres (LDCCs), under the national leadership of a Campaign Management Unit (CMU), which is seen by some to have created a parallel system to the existing decentralised veterinary services.

The PDSR programme initially assigned disproportionate attention to the backyard poultry sector, at the expense of a more strategic national approach involving all the diverse and growing sectors of the dynamic poultry industry of Indonesia; this has been recognised by FAO, and is currently being redressed by considered adjustments in the annual work plans of the FAO HPAI programme.

The PDSR does not appear to have had a significant impact on the prevalence of HPAI, and the tools at its disposal are weak. The evaluation team concludes that for effective HPAI control, greater attention must be paid to the commercial poultry sectors, particularly sector 3, in which participatory disease surveillance tools are likely to play a lesser role than in sector 4. Importantly, the very positive impacts that PDSR has had on revitalising veterinary services in Indonesia need to be captured, and form part of a transition into more sustainable and responsive services meeting the needs of a wider set of stakeholders in the growing livestock enterprises of Indonesia.

The evaluation team made a series of general and specific recommendations in six areas of work. These are provided below:

1. Programme management.

- a. The evaluation team recommends that much clearer lines of authority and responsibility are developed within the FAO programme to ensure that all staff has a clear understanding of the roles that they and their colleagues play, how they complement each other, and how these differing roles contribute to the overall strategy, work plan and programme deliverables.
 - i. As part of this process, consideration should also be given to long-term staff being subject to regular (annual) performance assessments.
- b. The evaluation team recommends that the programme further develops and publishes a clear Strategic Framework and derived Work Plans for all its activities, building on the informal matrix framework drafted in 2008 (based on different “sectors”), and on the geographically focussed Work Plan (also developed in 2008). These interlinked and enhanced Strategy and Work Plan frameworks should be used as management, communications and planning tools.
- c. The evaluation team would like to see the FAO programme, through its team leader and/or designated representatives, play a stronger and more direct role in the CMU-DAH, particularly as it relates to a greater engagement with the commercial poultry sectors, and the forthcoming transition process to a more sustainable deployment of selected elements of the PDSR surveillance and response tools and infrastructures in an evolving Indonesian veterinary service.
- d. The evaluation team recommends that to assist in monitoring and accountability, future contractual documentation developed by FAO with

donors provides much greater clarity of the goals and objectives, and identifies clear outputs that are achievable within the project lifetime.

2. Engagement with all sectors of the Indonesian poultry industries.

- a. Results emerging from the FAO programme and other sources indicate that sectors other than the backyard poultry sector play critical roles in the dynamics and maintenance of HPAI in Indonesia. The FAO programme has recognised this, and continues to adjust its programme of responses accordingly. The evaluation team considers that the programme would benefit substantially from commercial poultry production and value chain expertise as a core ingredient of its staffing, and endorses the identification of such a position in the staffing proposed for 2009-2010. It would be advantageous if such a post or posts could be filled by qualified Indonesian poultry experts. While it is understood that the next phase of the project proposes to engage a poultry industry veterinarian to meet this demand, the evaluation team considers that new knowledge and understanding of poultry enterprises from a Systems perspective, not exclusively a poultry health perspective, would bring important additional insights to the overall programme, and enhance its chances of success.
- b. Urgent efforts need to be made to evaluate the applicability of the PDSR tools as part of a fuller engagement with sector 3 of the poultry industry, often located in close juxtaposition to poultry in sector 4. Of particular importance will be the need for a focus on prevention of HPAI in sector 3, with an emphasis on vaccination and biosecurity, rather than on response.

3. Deployment of PDSR teams

- a. In the interests of greater efficacy in HPAI surveillance and control, the evaluation team recommends that the programme should adopt a flexible approach to the strategic deployment of PDSR teams, based on a regular analysis of emerging data.
- b. The evaluation team recommends a reassessment of the response mechanisms used by the PDSR teams to evaluate options for increasing efficacy (reducing the risk of human exposure) and cost effectiveness. This should include consideration of redeploying certain disease prevention mechanisms from sector 4 to sector 3.

4. Surveillance, epidemiology, monitoring and evaluation

- a. The evaluation team recommends improving the efficiency of the surveillance process, based on the evidence generated by the programme. In particular this will likely involve a considerable reduction, or possibly elimination, of the scheduled (active) visits, and greater focus on the callout (passive) surveillance. In addition, the need for Desa level data, currently renewed annually, should be re-evaluated based on empirical evidence of its use.
- b. The evaluation team recommends revisiting the length and detail of the PDSR database based on feedback from internal and external users, with the view of ensuring that it is an action-orientated tool for disease monitoring.
- c. The evaluation team recommends that the feedback of synthesised data should be enhanced considerably. This is not just sending out the 14 reports to LDCCs on a regular basis (and without the need for letters of request through the

Provincial Dinas), but more importantly feedback based on an analysis of data needs for decision making at CMU/DAH, RMU/DIC, Province and District levels, to ensure data has every chance of being useful, and at the same time that the motivation for data recording is institutionalised.

5. Capacity building

- a. The evaluation team commends the capacity building initiatives of the IEC team, and the high quality of participatory tool trainers. The evaluation team recommends consideration of new capacity building areas which respond to the evolving focus of the programme. These are:
 - i. Using the emerging database and the analytical tools developed as capacity building tools at two levels: a) at the senior management level on the application of emerging data to refining HPAI control policies and strategies, and b) at the field level on training in basic epidemiological principles (which data is useful, which is not, and why, and what are the most cost effective ways of gathering such data?).
 - ii. Amplifying the training of PDSR officers to include broader structured epidemiological investigative skills applicable to HPAI and to a wider range of animal species and diseases.

6. The transition of PDSR tools into a responsive and sustainable national veterinary service.

- a. The evaluation team recommends that the FAO programme plays a lead facilitating role in building a national process to consider the evolution of Indonesian veterinary services to meet the broad needs of different stakeholders, building on the strengths of the PDSR programme (in particular the community engagement elements), seeking a seamless interface with District and Province Dinas offices, retaining Indonesia-wide relevance for surveillance purposes and at the same time recognising the idiosyncrasies and particular demands of different regions.
- b. The evaluation team recommends that FAO, the Government of Indonesia and donors fund an orderly integration of the strengths of the PDSR programme into the national veterinary system as an exit strategy. The focus in this transition period should continue to be on capacity development of Indonesian systems, frameworks and personnel dealing with HPAI. Based on the experience of other community based health systems, a realistic timeframe is likely to be in the order of 3 to 5 years, with a horizon of 10 to 20 years of limited external support.

APPENDIX 1: Terms of Reference for the Evaluation of FAO's Participatory Disease Surveillance and Response Programme in Indonesia

*Funded through projects*²⁵:

GCP/INS/077/AUL - OSRO/INS/701/AUL - OSRO/RAS/505/USA - OSRO/INS/604/USA – OSRO/RAS/602/JPN

I. Background to the Evaluation²⁶

Indonesia, a country populated by over 237 million people and composed of 17,508 islands, is home to the world's largest Muslim population and the world's largest archipelagic state. On 25 January 2004, Indonesia reported to the World Animal Health Organization (OIE) an outbreak of Highly Pathogenic Avian Influenza (HPAI) H5N1 in poultry. The epidemic spread quickly, overwhelming the Government's ability to respond and control the disease. To date HPAI has been reported in 31 of the country's 33 provinces. Indonesia has also become the global epicentre for human HPAI infections with 139 confirmed cases as of December 2008 (of which 113 died), and has emerged as the most likely origin of a pandemic.



The Indonesian Poultry Sector. The country has an estimated standing population of 600 million birds, giving a population each year of approximately 1.5 billion. There are between 80 to 85 million layers and over one billion broilers are produced annually. FAO-defined Sector 4 (the village and backyard sector) is estimated to comprise 300 million birds in 30 million households. There is a substantial commercial (FAO-defined 1 & 2) and semi-commercial (Sector 3) poultry industry catering basically to the internal market. Total investment in poultry is estimated to be US\$ 35 billion, with a turnover of US\$ 30 billion per annum. The majority of production is sold daily through an estimated 13,000 markets, while major abattoirs are said to process only 20 percent. Bio-security has since the beginning been considered very low in Sectors 3 and 4, but in recent times bio-security of major commercial

²⁵ Details of FAO projects can be found in Annex 1.

²⁶ The complete list of references used in the background section can be found in Annex 2.

producers is also under scrutiny in view of recurrent outbreaks onsite and in their areas of influence.

Animal diseases in Indonesia. HPAI is one of many animal diseases affecting livestock production in the country. A recent study of the Australian Center for International Agricultural Research (2008) found that the highest priority zoonotic diseases for the country were Brucellosis and Cysticercosis, followed by Toxoplasmosis and HPAI. However, HPAI is of particular importance because it is a major bird killer and the poultry industry is a key source of livelihoods to the national and village economy.

Institutional Response and Structure. Since the first confirmed HPAI outbreak, the Government of Indonesia (GoI) has applied a H5N1 eradication policy to protect human and poultry health and reduce the socio-economic impacts of the disease. In 2006, the Ministry of Agriculture endorsed the “National Strategic Work Plan for the Progressive Control of HPAI, 2006 – 2008”, whose animal health component was developed with FAO assistance²⁷. This plan sets out nine key elements for progressive control of HPAI: (i) campaign management; (ii) enhancement of HPAI control in animals; (including vaccination; stamping out and movement control); (iii) surveillance and epidemiology; (iv) laboratory services; (v) quarantine services; (vi) legislation and enforcement; (vii) communications; (viii) research and development; and (ix) industry restructuring.

Element 1 above established a Campaign Management Unit (CMU) within the Directorate of Animal Health, of the Directorate General of Livestock Services (DGLS), which operates through nine Regional Management Units (RMUs) based within nine Disease Investigation Centers (DICs) and working through a number of Local Disease Control Centers (LDCCs) at provincial and sub-provincial level. The introduction of CMUs at the regional level was expected to provide a mechanism for coordination and clearer definition of roles and responsibilities of regional and district staff. Elements 2 to 9 of the Work plan are technical domains on which each Unit has responsibility for setting policy, addressing technical problems and defining operational plans and priorities in their respective areas under the coordination of the CMU.

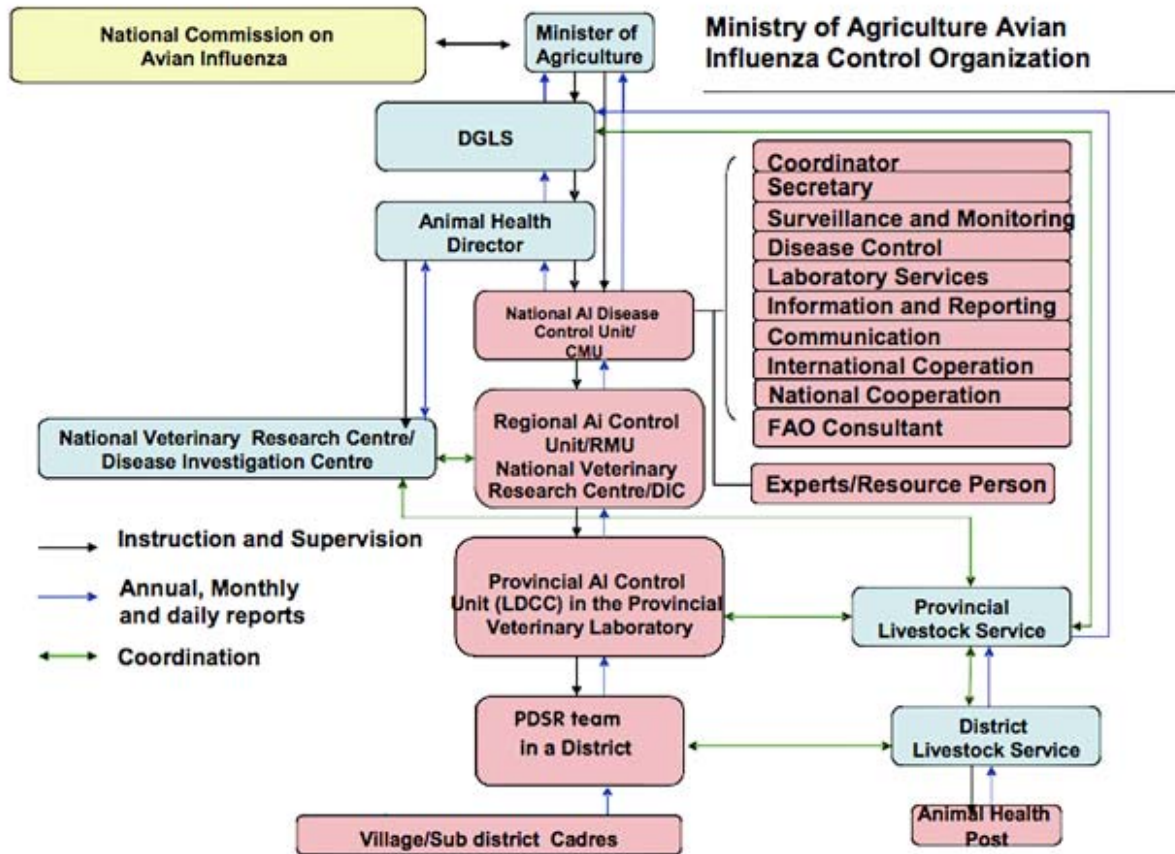
Throughout the Campaign, the GoI has had the following priority tasks:

- 1) Controlling disease outbreaks, through improved surveillance, early disease detection, and rapid response i.e. culling infected flocks and vaccinating populations at risk²⁸; and, through strengthening the legislative base and the enforcement of HPAI reporting.
- 2) Preventing further outbreaks, through improved bio-security particularly in sectors 3 and 4.

The organigram of the country’s Institutional Structure for the progressive control of HPAI as prepared by the DGLS (2007) can be found below.

²⁷ As reported by the Indonesia’s HPAI Campaign Management Unit in a Presentation at FAO (June 2007)

²⁸ Emergency vaccination against HPAI was discontinued in the PDSR program at the end of 2007.



Current situation: The continuing reporting on outbreaks to OIE highlights the severity of disease incidence, particularly in Java, Sumatra and South Sulawesi where it is considered endemic. Donors and development partners alike consider that there is a need to provide technical support to the GoI, particularly to facilitate the progressive implementation and expansion of the disease control component of the campaign.

A FAO-sponsored review of the National Strategic Work Plan that took place in mid-2007 indicated that the principles laid out remained valid but that more commitment with increased resources was required for success, particularly in support of the improvement of the poultry producers' bio-security and disease reporting levels. Proposals for a Phase 2 Strategic Work Plan for the period 2009-11 have been made to the DGLS following consultations held in May/June 2008. Due to the complexities of national decision-making and related financing arrangements, its finalization and formal approval has been delayed. FAO had active participation in the design of the original proposal, which served as a guiding tool to shape the HPAI country programme.

FAO HPAI Programme (2004-08)

FAO has implemented a sizeable and varied portfolio of activities in the country, ranging from high level advocacy and policy work to conducting active field surveillance for early detection and control of disease outbreaks. A complete list can be found in annex 1.

The FAO HPAI Programme in Indonesia covers among others the following areas:

- Emergency preparedness (e.g. TCP/INS/3001)
- Disease surveillance and early detection (e.g. TCP/RAS/3006, OSRO/INS/402/GER)

- Control and containment (e.g. OSRO/RAS/401/JPN, etc.)
- Vaccine efficacy (e.g. OSRO/INS/703/USA)
- Operational Research and socio economic studies (e.g. TCP/RAS/3010, etc.)
- Advocacy and Policy Advice (e.g. OSRO/INS/701/AUL)

SFERA HPAI funds have also been extensively used for a myriad of activities. In fact, several have had multiple purposes and in a few cases also multiple donors. A key example of this has been the **Participatory Disease Surveillance and Response (PDSR) programme**²⁹.

In early 2006, FAO and the Ministry of Agriculture piloted the PDSR programme with the objective of training and operationally supporting government veterinarians and other animal health officers in rapid HPAI detection and response. Through it, animal health teams are i) trained in surveillance, containment, and prevention skills; ii) provided with the means to conduct field activities and report findings into the national and local systems.

The goal of the programme (as stated in the original project document of OSRO/INS/604/USA, which is the main funding source of the ongoing PDSR programme) was to “*Enhance capacity and ability of national and local governments to carry out sensitive and timely surveillance and response to HPAI in sector 3 and 4 poultry, thereby contributing to reduction in viral load, safeguarding the livelihood of the Indonesian population.*” The successive extensions and the ongoing evolution of the programme have resulted in modifications to the programme’s goal, broadening its scope to place increasing emphasis on developing local capacity, to cover all village-based poultry production including the commercial sector and prevention activities.

The PDSR programme counts among its beneficiaries:

- Communities with sector 3 and 4 poultry farmers who benefit from early detection of and response to HPAI detections and increased awareness on how to prevent HPAI;
- District, municipal and provincial level government animal health and livestock services which benefit from increased capacity and expertise in HPAI surveillance and response and coordination of activities;
- Poultry owners, producers and traders who benefit from a reduced incidence of HPAI and improved poultry disease prevention and control methods;
- National veterinary and veterinary public health services;
- Local government human health services;
- The Indonesian population in general; and,
- The international community.

Several projects funded by AusAID (GCP/INS/077/AUL and OSRO/INS/701/AUL), USAID (OSRO/RAS/505/USA, OSRO/INS/604/USA and OSRO/INS/703/USA) and the Government of Japan (OSRO/RAS/602/JPN) have partly or fully supported the country-wide implementation of the PDSR programme in the last three years (data as of 15 December 2008) or have had inputs to the programme:

²⁹ For the purpose of this evaluation, the PDSR programme is defined as the “evolving LDCC-based disease surveillance, control, and prevention programme implemented by local governments with FAO support”.

Symbol & Title	Objectives	EOD	NTE	Budget	Delivery
OSRO/INS/604/USA Expansion of the Avian Influenza Participatory Disease Surveillance and Response Program in Indonesia	The project is specifically aimed to extend PDS/R capability to all the districts of Java; Implement PDS/R programs in Bali and defined areas of Sumatra (Medan and Lampung or Kalimantan); Initiate capacity PDS/R in Sulawesi and Kalimantan through training of trainers; and facilitate the strengthening of district level capacity to coordinate disease surveillance and response within the context of the national strategic plan.	9/6/06	29/9/09	25200000	16510408
OSRO/INS/701/AUL Assistance through FAO for the control of avian influenza in poultry in Indonesia	The international development goal of the project is to contribute to international efforts aimed at controlling and eliminating the threat of HPAI at source, thus reducing the impact on the agricultural sector and minimizing the risk to human health.	6/6/07	30/6/10	8033333	3191490
OSRO/RAS/505/USA Immediate assistance for strengthening community-based early warning and early reaction to Avian Influenza outbreaks in Cambodia, Indonesia, Lao PDR, PR China and Viet Nam	The overall objective remains to counter HPAI threats posed to animals and people across the sub-region, and restore sustainable poultry production and associated rural and socioeconomic development. Specifically the project aims are: Strengthen capacity for early detection and early warning of HPAI outbreaks through community-based field surveillance and effective disease outbreak investigations; the capacity for rapid and effective response to outbreaks of HPAI; Promote public awareness and education on HPAI; Support the national avian influenza vaccination campaign in Vietnam.	1/9/05	31/3/07	6000000	5945946
OSRO/RAS/602/JPN Strengthening the Control and Prevention of Highly Pathogenic Avian Influenza and Enhancing Public Awareness	The main purpose of the proposed project is to control HPAI in the Southeast Asian sub-region and contribute towards international efforts to progressively control HPAI in Asia. This will reduce the risk of human pandemic, increase food security, and promote the livelihoods of poor farmers in the region.	1/4/06	30/4/08	11400052	10961791
GCP /INS/077/AUL Emergency assistance for the control of avian influenza in Indonesia	The objectives of the supplementary assistance are to strengthen FAO's interventions in Indonesia by: Providing FAO with senior technical support to be able to play the lead role required of it by the international community, and Strengthen the ongoing project activities by providing additional technical assistance and operational funds for the surveillance and control programmes; Provide technical assistance to the FAO programme and local government veterinary services in Aceh.	1/3/06	31/3/07	1666910	1661104
OSRO/INS/703/USA Monitoring AI virus variants in Indonesian poultry and defining an effective and sustainable vaccination strategy	To determine: the distribution by species, locality and enterprise of variant virus strains antigenically related to the virus challenge (A/chicken/West Java/PTW-WIJ/06 9/2006); the extent of the mismatch between circulating HPAI strains and the	1/10/07	29/9/09	830500	423560

Symbol & Title	Objectives	EOD	NTE	Budget	Delivery
	vaccines used in Indonesia; and, an effective and sustainable vaccination strategy including the identification of new vaccine seed strains as required.				
Total Funding				53130795	38694299

From January 2006 to 11 September 2008, PDSR teams have reportedly conducted over 177,300 surveillance visits and reported 6,011 outbreaks of avian influenza in 324 districts, meeting with over 2 million poultry farmers and community members (USAID, 2008). In early 2008 the PDSR approach was re-designed, through the phased combination of PDS and PDR teams. Training needs of PDSR teams have also been reviewed, together with the PDSR M&E and information & reporting systems.

II. Evaluation Approach

Purpose

This evaluation will assess the relevance, efficiency, effectiveness and sustainability of the PDSR programme in Indonesia and make recommendations to improve the work undertaken. The evaluation *per se* is an integral part of the Second RTE of FAO's work on HPAI.

Scope

The evaluation team will specifically assess the:

- g) Relevance of the PDSR programme to the country's priorities and needs for animal disease prevention, mitigation, surveillance and control; in particular, the mission should review the longer-term relevance of the programme, including institutional arrangements, for increasing national capacities to prevent and control future outbreaks of HPAI and of other zoonotic and economically significant animal diseases;
- h) Clarity and realism of the programme's development (goal) and immediate objectives, including specification of target areas and identification of beneficiaries;
- i) Quality, clarity and adequacy of programme design, including;
 - realism, clarity and logical consistency between inputs, activities, outputs and progress towards achievement of objectives (quality, quantity and time-frame);
 - provisions for programme adjustments and flexible response to opportunities and changing circumstances;
 - realism and clarity of institutional relationships, in the managerial and institutional framework of the GoI for the implementation of the PDSR programme;
 - realism and clarity of capacity building and training approaches;
- j) Efficiency and adequacy of programme implementation including:
 - availability of funds and human resources;
 - the quality and timeliness of input and output delivery by FAO and the GoI;
 - managerial and work efficiency;
 - adequacy of M&E system, reporting and transparency and accountability mechanisms put in place;
 - extent of national support and commitment, and quality and quantity of administrative and technical support by FAO;

- PDSR results, including a full and systematic assessment of outputs and outcomes produced to date in the following areas:
 - vi. Campaign Management.
 - vii. Surveillance and epidemiology.
 - viii. Enhancement of HPAI control in animals.
 - ix. Information, education and communication.
 - x. Research and development.
- k) Strengths, weaknesses and constraints to effectiveness of the PDSR programme approach;
- l) Sustainability prospects of the PDSR programme, taking into account:
- Institutional issues surrounding PDSR implementation.
 - Possible alternatives in the absence of donor support.

The evaluation will also assess any possible effects the PDSR programme might have had on national policy reform and programme development, national investment in – and attention for – animal health.

Given the major overhaul of the programme in early 2008, it will be unrealistic for the team to capture impact of the revised programme at this stage. The team will nevertheless attempt to provide an indication of its likely impact.

Logic Model

A model linking the programme's inputs and outputs to immediate and long-term development results (outcomes) has been prepared (see next page) to show the results chain of the PDSR Programme and illustrate the scope of the evaluation. This results chain will be used as the framework for assessing the relevance, efficiency, effectiveness, sustainability and – to the extent possible – impact of the PDSR programme.

A set of possible indicators (with targets) have been developed by the PDSR Programme itself (see annex 3). More generally, USAID has sponsored the development of a Guide for Monitoring and Evaluating Avian Influenza Programs in Southeast Asia (Measure, September 2008). The evaluation team will take both sources into account as well as any appropriate indicator that allows an objective measurement of the performance of the PDSR programme.

Tools and methods

The evaluation will use a wide range of quantitative and qualitative tools and methods, including *stakeholder* consultation through group and semi-structured interviews; check lists; *desk study* to review all relevant background information; *field survey* and *visits* to project sites. The evaluation will adopt a consultative approach whenever possible, seeking and sharing opinions and feed back with stakeholders at different points in time of the process.

Stakeholders will include:

- FAO staff in HQ and at Regional and Country Office levels;
- Government staff within DGLS/DAH/CMU including provincial and district DINAS and LDCCs;
- UN regional and country team staff dealing with HPAI issues; and,
- Development partners and donors involved in the PDSR Programme.

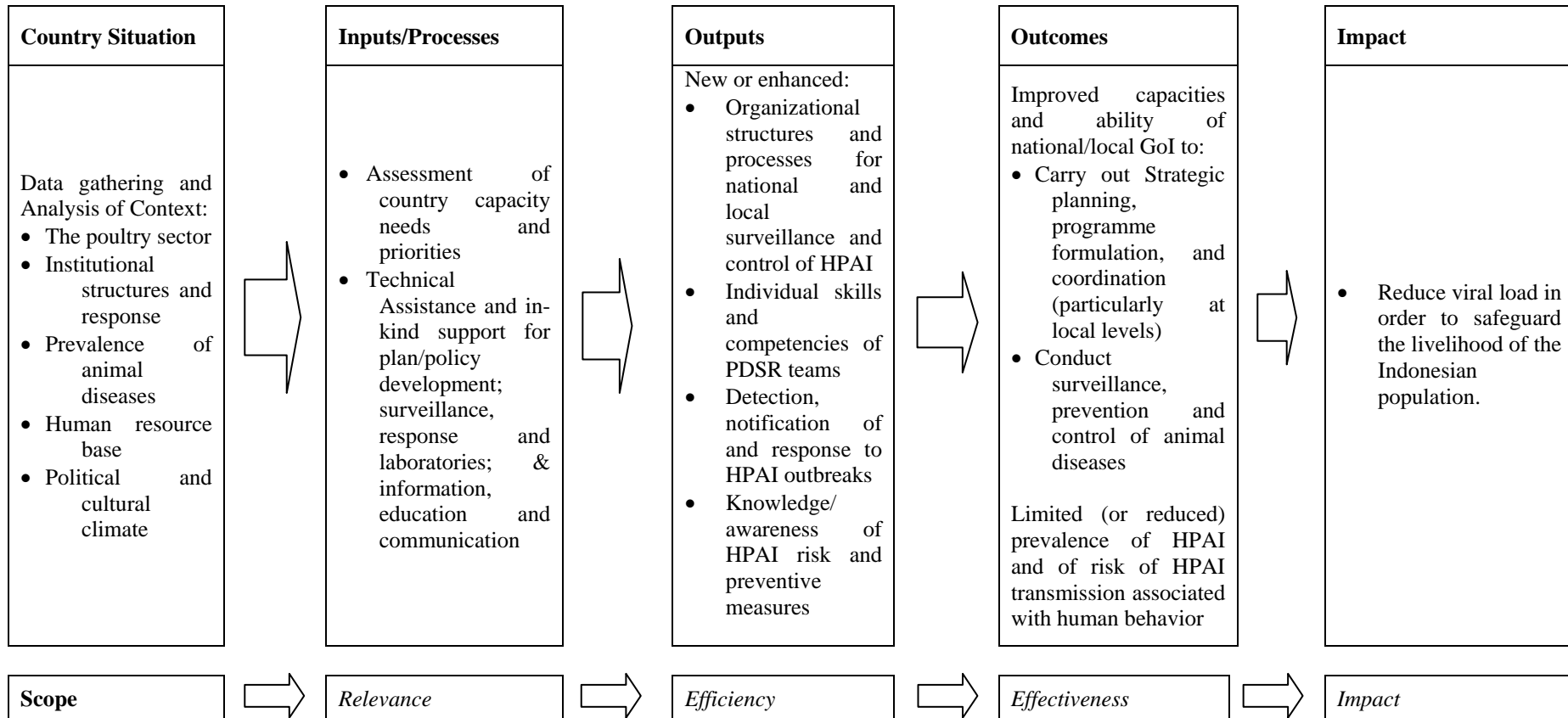
Discussions will be held with FAO staff at HQ, and at the Regional and Country offices to solicit their contributions towards the finalization of the Terms of Reference. Key stakeholders within other UN agencies, development partners and donors will be met by the evaluation team at the start of the fieldwork. Prior to this, the evaluation team should receive an updated set of documents including progress reports of the PDSR programme.

The field surveys will be set up well in advance to the evaluation mission, so that their results can be used by the team. These surveys will investigate the actual and potential effects of some aspects of the PDSR programme that cannot be covered sufficiently in-depth during the period of the evaluation mission. A first survey will be designed to assess the extent to which animal health services' capacities have been strengthened at district and provincial levels. Another survey will focus on the outcomes of the information, education and communication activities of the Programme through the conduct of qualitative household and focus group interviews at the level of ultimate beneficiaries (i.e, smallholder poultry producers and village-based commercial producers). The surveys will be conducted in a sample of project sites selected in co-ordination with the FAO Country Office. During the selection process, specific emphasis will be placed on geographical coverage, gender and ethnicity aspects, animal health and livelihood issues (e.g. recurrence of HPAI, socio-economic importance of poultry production, etc).

During the evaluation mission in Indonesia, the evaluation team will split up in two groups to visit a representative number of project sites in order to observe and gain insights on the results achieved by the programme in terms of capacity, knowledge and skills developed at local levels.

Towards the end of the mission, meetings will be held with the Government, key donors and development partners to discuss the team's initial findings which will take into account results from previous external donor evaluations and internal reviews of the PDSR programme. When a draft evaluation report is ready, both the FAO staff in Jakarta and Bangkok will be asked to comment on the overall findings and to support the finalization of the recommendations.

Figure 1. Logic Model of the PDSR Programme in Indonesia



Composition of the Mission

The evaluation team will consist of:

- A Team Leader/Senior Expert in Veterinary Sciences and epidemiology with some 15 years of international experience in the sector and extensive knowledge of community based animal health systems. Experience in Asia and as Team Leader in previous evaluation work is highly desirable.
- A Team Member with expertise in areas such as surveillance and epidemiology of animal diseases; information, education and communication as well as research and development for HPAI control. Knowledge of the local situation (including language skills) is highly desirable.
- FAO Evaluation Officer with experience in field programme evaluations.

Timetable and Itinerary of the Mission

The Mission will be fielded for 3 weeks (ie, tentatively in late May-June 2009). Its itinerary will comprise of (de-) briefings at FAO Offices in Bangkok and Jakarta prior to inception and at completion of the mission, and short field visits to major project sites. Relevant documentation as well as an updated and comprehensive Progress Report of the PDSR Programme will be made available to the Mission at least one week before the start of the mission.

The itinerary of the mission will tentatively comprise:

- Desk Study (one week)
- Briefing by FAO Regional HPAI team in Bangkok, Thailand (one day)
- Briefing by FAO National HPAI team in Jakarta, Indonesia (three days)
- Meetings with Government and Partners/Donors (four days)
- Field visits to sample districts (one week)
- Report Writing, workshop preparations and follow-up meetings (four days)
- Debriefing session with FAO Indonesia staff (one day)
- Stakeholders Workshops in Jakarta (one day)

6. Reporting

A draft report should be made available for comments within two weeks of the end of the mission. The final report should be submitted within four weeks of the end of the mission to the FAO Evaluation Manager. The report outline will be agreed upon by the Evaluation Manager on the basis of the FAO standard outline for evaluation reports.

Annexes with information on the people met by the mission, documentation reviewed and any supportive evidence used (including analysis of data sets gathered by the programme, etc.) during the assessment should also be included.

APPENDIX 2: Documentation Reviewed

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- FAO. Avian Flu Projects Operated in Indonesia. FPMIS Report as at 20 November 2008.
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FAO. Project Document OSRO/INS/701/AUL “Assistance through FAO for the control of avian influenza in poultry in Indonesia”. 2006

FAO. Terminal Report project GCP/INS/077/AUL “Emergency Assistance for the Control of Avian Influenza in Indonesia”. 2008.

Gulati, A., N. Minot, C. Delgado, and S. Bora, 2005. Growth in high-value agriculture in Asia and the emergence of vertical links with farmers. Paper presented at the Symposium toward High-Value Agriculture and Vertical Coordination: Implications for Agribusiness and Smallholders. National Agricultural Science Centre, Pusa, New Delhi, March 7, 2005.

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APPENDIX 3: Executive Summary of the Field Surveys Report

In early 2006, under OSRO/RAS/505/USA project, FAO and the Government of Indonesia piloted the Participatory Disease Surveillance and Response (PDSR) programme with the objective of training and operationally supporting government veterinarians and other animal health officers in rapid detection of, reporting and response to Highly Pathogenic Avian Influenza (HPAI).

As an integral part of the Second Real Time Evaluation of FAO's Work in HPAI, the FAO Evaluation Service will conduct an evaluation of the PDSR Programme in late May-June 2009. In view of the programme size and coverage, two field surveys have been conducted to collect information on the programme's effects at district and village levels for the evaluation mission. The first survey focused on outputs and outcomes of the programme activities relating to enhancing HPAI awareness and knowledge among small scale commercial and backyard poultry producers. The second survey focused on outputs and outcomes of the programme activities relating to the development and strengthening of local animal health services capacity to deal with HPAI.

The surveys were conducted from April 2009 to May 2009 in six districts. The areas included in the study were: LDCC Makasar (Makasar City, Bantaeng district, and Sinjai district), LDCC Lampung (Central Lampung, East Lampung and South Lampung), LDCC Yogyakarta (Kulon Progo district and Gunung kidul district), LDCC Bandung (Garut district, Kuningan district, and Majalengka district), LDCC Bogor (Bogor district and Bekasi City) and LDCC Jakarta (West Jakarta City and South Jakarta City). In each district the team of surveyors visited two villages. Key characteristics of the surveys sample can be found below.

No	LDCC	Start time of PDSR Program	Importance of poultry production	Number of PDSR staff	Number of HPAI cases in poultry			Number of HPAI cases in poultry 2007-2009
					2007	2008	2009	
1	LDCC Makasar							
	Kota Makasar	2007	High	8	0	0	9	9
	Kab. Bantaeng	2007	High	8	0	0	0	0
	Kab. Sinjai	2007	High	8	0	0	0	0
	Total			24	0	0	9	9
2	LDCC Lampung							
	Lampung Tengah	2006	High	9	7	5	0	12
	Lampung Selatan	2006	High	7	24	31	3	58
	Lampung Timur	2006	High	8	18	34	5	57
	Total			24	49	70	8	127
3	LDCC Yogyakarta							
	Kab. Kulon Progo	2006	High	9	127	41	6	174
	Kab. Gunung Kidul	2006	High	8	107	50	29	186
	Total			17	234	91	35	360
4	LDCC Jakarta							
	Jakarta Barat	2006	Low	6	NA	NA	NA	NA
	Jakarta Selatan	2006	Low	9	NA	NA	NA	NA
	Total			15	NA	NA	NA	NA
5	LDCC Bogor							
	Kab. Bogor	2006	High	12	13	20	6	39
	Kota Bekasi	2006	High	7	2	7	0	9

No	LDCC	Start time of PDSR Program	Importance of poultry production	Number of PDSR staff	Number of HPAI cases in poultry			Number of HPAI cases in poultry 2007-2009
					2007	2008	2009	
	Total			19	15	27	6	48
6	LDCC Bandung							
	Garut	2006	High	7	NA	NA	NA	NA
	Kuningan	2006	High	8	92	38	0	130
	Majalengka	2006	High	8	35	51	20	106
	Total			23	127	89	20	236

Evidence on programme' effects were collected through individual interviews with key informants and focus group discussions. In the case of the first field survey, individual interviews were held with chiefs (and in their absence, with senior staff of local animal health services), while the group discussions were held with animal health staff (mainly field veterinarians or paravets). In the second field survey, individual interviews were held with community leaders (village elders, religious leaders) considered to be key informants by the FAO/CMU team, while the group discussions were held with poultry producers from the village. Detailed information on the survey instruments used and the profile of the respondents can be found in the full report. The results of the field surveys are summarized below.

According to the respondents, crucial gaps that the PDSR programme was expected to address included improving disease investigation in their respective areas as well as identification of poultry diseases. The PDSR programme was also expected to enhance the timeliness of disease control (following the identification of disease) and develop disease surveillance, prevention and control plans.

So far the PDSR programme has undertaken several activities to address the above gaps. They include identifying and mapping HPAI vulnerable and infected areas, increasing community awareness of HPAI (through training on prevention and control measures, etc), responding to reports of outbreaks in the community and conducting identification of Avian Influenza by collecting sample swab, blood sample and rapid test in dead poultry.

The programme has however faced several obstacles to deliver, including: (1) a limited number of PDSR officers which affect the programme coverage, (2) cultural issues in some areas created difficulties in conducting advocacy and training on HPAI, (3) lack of people's awareness and concern in preventing and controlling HPAI, (4) delays in the distribution of HPAI diagnostic equipments for PDSR teams, (5) that most PDSR teams are also staff of Dinas and thus have also to perform their other duties as livestock service staff and (6) the lack of a compensation fund for poultry depopulation, which is a major obstacle to implement the response component of the PDSR programme.

The survey respondents found the main strengths of the PDSR programme to be: (1) the clear Standard Operating Procedures for controlling HPAI, (2) the relatively good levels of funding available, and (3) the intensive training and the excellent facilities provided to support HPAI surveillance, prevention and control activities. The database developed by the PDSR programme was also considered a very good tool for monitoring purposes.

On the other hand, the major weaknesses of the PDSR programme have to do with the Local Disease Control Center (LDCC) being the programme implementer. Some local authorities (from the provincial and district livestock services) found that the LDCC was not really transparent regarding the activities and results of the PDSR programme (e.g. effectiveness of the response component). The mechanism for information exchange from LDCC to livestock services was thus considered not very good. Data and information from LDCC are given only if it is requested by dinas. If there is no request, the information is not reported.

The surveys also found positive and negative impacts of PDSR programme on livestock services and their staff. As positive impact, the PDSR programme was recognized as being very helpful to support the work of the livestock services, especially of the animal health division, in preventing and controlling HPAI. Negative impacts from the PDSR programme reported included: (1) PDSR officers sometimes ignored their main duties as Government staff because they were too busy in performing their duties as PDSR officers, (2) the facilities and honorarium (DSA) given to PDSR teams were often source of jealousy with livestock service staff who were not PDSR, (3) PDSR officers paid less attention to other animal diseases because they focused too much on HPAI control activities, (4) PDSR officers and their family had a higher risk of getting infected with the HPAI virus and (5) PDSR officers had less time for their families because they had to be ready to respond to disease notifications even on holidays/weekends.

In conclusion, the PDSR programme was found to have played a significant role in the surveillance and prevention of HPAI at village level. The PDSR teams were also found to be supporting HPAI eradication at village level but not with the same level of success. In general, PDSR teams are assessed to be quick in handling and responding to HPAI cases. The training provided by the PDSR programme has improved the knowledge and awareness on HPAI, and a higher concern and alertness on HPAI is noticeable.

Several recommendations are given in the full field surveys report. Most are addressed to the LDCC as the implementers at local level. The key recommendation for them is to coordinate more with local livestock services regarding planning, reporting and evaluation of the PDSR programme. Their role, duties and authority should also be clearly explained to avoid misunderstanding. There is also a need to increase the number of PDSR teams especially in districts with high HPAI incidence rates, big population of poultry and greater areas to cover. This should be accompanied with the procurement of additional vehicles (cars and motorbikes) and equipment (rapid diagnostic tools and laboratory supplies) which should also arrive on a timely basis. The PDSR reporting system (forms) needs to be simplified and it is necessary to have a special reporting mechanism to facilitate the information and data flow among PDSR, LDCC and Dinas. Training (and refresher courses) is still needed to improve and update the knowledge and skills of Government animal health officers (and not just PDSR teams). It is also necessary to involve village government officials in PDSR activities and have regular coordination sessions between PDSR officers and village leaders in view of the significant role the local government plays in mobilizing community members (particularly in the absence of compensation funds).

APPENDIX 4: Conclusions of the Stakeholder Workshop

As part of the evaluation of the PDSR programme, a stakeholder workshop was held on Monday 22 June at the Ministry of Agriculture's offices in Jakarta. The main objective was to present the preliminary findings and conclusions of the evaluation team to key stakeholders met by the team. The workshop agenda (below) also considered time for open discussions of three emerging issues.

10.00	Opening
10.15	Brief summary of the evaluation process, the initial draft findings and conclusions, and the next steps in the run up to a final report.
10.30	Group discussions on three issues that are emerging as important to seek feedback and ideas on how they might best be addressed as we look forward to the future. The areas are: 1. Enhancing engagement and partnership with the commercial poultry enterprise sectors for more strategic control of avian influenza 2. Increasing the response capacity of PDSR and DINAS officers for greater impact on avian influenza control and human disease risk 3. The transition towards a sustainable and effective surveillance and response capacity in Indonesia: whither the PDSR?
11.45	Group presentations and discussions
12.15	Closing

The workshop was attended by senior staff from the Ministry of Agriculture (including DAH/CMU and the Bureau of Planning/International Co-operation Bureau), Ministry of Health, the National Committee on Avian Influenza (KOMNAS FBPI), Provincial Dinas and LDCCs (from the South Sulawesi Livestock Service, the Central Java provincial service, the West Java Livestock Service, the Bandung LDCC office, the Riau LDCC office, the Makassar LDCC office and Lampung), donors (USAID, JICA), private sector (Indonesia Poultry Association, Indonesia Poultry Forum, PT KMS, Biotec Indonesia), development partners (CBAIC, ILRI and IDP) and FAO.

The conclusions reached during the group discussions can be found below.

Topic # 1: Enhancing engagement and partnership with the commercial poultry enterprise sectors for more strategic control of avian influenza

- Industry has problems with small scale commercial farms that run businesses in their surrounding areas since they often do not apply bio security measures and do not join farmer association.
- Another problem is poorly regulated licensing of new small scale farms which are easily granted. Sub-district offices have authority to grant the license and the officers do not understand and thus follow the [central government] regulation on farm licensing.
- Government and industry have strong will to start public-private partnership but joint work and further cooperation will take time (until trust has been built)

Topic # 2: Increasing the response capacity of PDSR and DINAS officers for greater impact on avian influenza control and human disease risk

- Response capacity of PDSR should urgently be enhanced.
- Support and commitment from stakeholders and decision makers is required to improve PDSR's technical capacity e.g. Budget allocation for training cadres who will supplement to the existing PDSR and village volunteers
- Involve local leaders to become "cadres" as people normally listen more to their leaders.
- PDSR officers should not be transferred to other department; career security should be given to them.
- Network in the field is necessary so that an integrated response and quick detection is possible to be done.
- Consensus with the regional parliament (and local authorities in general) needs to be built through coordination meetings.
- Local government commitment to provide compensation for culling is necessary.

Topic # 3: The transition towards a sustainable and effective surveillance and response capacity in Indonesia: whether the PDSR?

- PDSR "knowledge strengthening" component should, in the future, be part of national animal health capacity building system.
- There is a need to continue advocacy work with regional government to convince them on the importance of animal health so that they can provide funds.
- Cost-sharing can be implemented according to the capability and capacity of central, regional and local governments as well as international partners. For instance, FAO has a role in providing trainings. Central and Regional government may assist in the operational matters

The evaluation team has taken into account the above conclusions (and the more detailed workshop report prepared by the FAO translators group) in the finalization of the evaluation report.

APPENDIX 5: Programme of Meetings in Jakarta, Indonesia

Site					Bangkok	Bangkok	Jakarta
Time	Monday	Tuesday	Wednesday	Thursday 28/5	Friday 29/5	Saturday 30/5	Sunday 31/5
AM					RAP briefings		
Noon to 6 pm							Arrive Jakarta @ 11.25am on TG 433
After 6 pm							Briefing with ECTAD Team Leader

Site	Jakarta - FAOR	Jakarta - Deptan	Jakarta - Deptan	Jakarta	Jakarta		
Time	Monday 1/6	Tuesday 2/6	Wednesday 3/6	Thursday 4/6	Friday 5/6	Saturday 7/6	Sunday 8/6
AM	Briefing with ECTAD personnel @ Aceh Room, FAOR	Briefing with ECTAD personnel @ Deptan 1. M&E team 2. Epi team	1. AusAID – 07.30 2. CMU/DAH - 10.00 3. CREATE Presentation 11.00, VPH mtg room	1. DGLS - 08.00 2. FAO Operational Research– 09.00 3. FAO Translation team – 09.45 4. – Christine Jost, ILRI, 10.30	1. WHO – 08.30 2. Ministry of Health – District Surveillance Officer Program – 10.00 3. UNICEF – AI communication - 12.30		Evaluation team to divide into 2 teams for field visits. Both teams to depart on Sunday.
Noon to 6 pm	(continued)	3. Training team 4. IEC team 5. Operations	4. Ivo Claussen, IDP 13.00 5. Detailed discussion with National Project Coordinator (CMU), Ibu Ade 14.00 6. Lisa Kramer, Kendra & Artha, USAID – 16.00	5. National Avian Influenza Committee (KOMNAS FBPI) – 13.00 6. Ministry of Internal Affairs – Mohammad Roem - 14.30	4. Japan Embassy – Mr Toru Semba – 14.30 5. Community-based Avian Influenza Control Project – village volunteer project – CBAIC staff- 16.00		

Site	Jakarta	Jakarta	Jakarta	Jakarta	Jakarta - FAOR		
Time	Monday 15/6	Tuesday 16/6	Wednesday 17/6	Thursday 18/6	Friday 19/6	Saturday 20/6	Sunday 21/6
AM	1. Giuliano Maciocci, FAO Senior Finance officer, 09.15, FAOR 2. Ken Shimizu, Operations Officer and team, 11.00 Deptan,	1. Meeting with Jonathan Bell, CBAIC (PDSR evaluation) – 09.00 2. Percy Hawks, USDA (OFFLU & Markets) – 10.30 3. Meeting with Shobha Shetty, World Bank – 12.00	1. Mr. Suriyan Vichitlekan, Senior Officer for Agriculture, ASEAN – 09.00 2. Anton J. Supit and Don Utoyo (Commercial Industry) – 11.00	Meeting with Mr. Man Ho So (FAOR) – 12.00			
Noon to 6 pm	3. Luuk Schoonman, ILRI, 14.00, Deptan 4. LDCC coordinators, 17.00, Grand Flora Hotel, Kemang.	4. Lynleigh Evans, AusAID – 14.00 5. Kendra Chittenden, USAID – 16.00			14.00 Debriefing with ECTAD personnel and Regional ECTAD Manager @ Aceh Room		
After 6 pm							

Site	Jakarta	
Time	Monday 22/6	Tuesday 23/6
AM	09.00 Meeting with FAO ECTAD team, Ministry of Agriculture 10.00 – 12.30 Stakeholders' workshop, Ministry of Agriculture	Depart Jakarta

APPENDIX 6: Full list of projects implemented in Indonesia since 2004

Project Symbol	Project Title	Project Objectives	Actual EOD	Actual NTE	Total Budget	Donor
TCP/INS/3001	Emergency assistance for the control of avian influenza	To support efforts aiming at an immediate control of avian influenza outbreaks in all poultry species so as to stop the transmission of the disease from poultry to humans. Specific objectives will be defined during the inception mission of the project and could include: <ul style="list-style-type: none"> - preparation of a zoning plan where culling could start in areas with the highest incidence and risk of disease; - training of farmers and government workers on safe disposal and disinfection techniques and precautions needed; - laying the groundwork for a national epidemiological study of the disease through surveillance, mapping, disease modelling and enhanced laboratory diagnostic capacity. 	2004-02	2005-12	388170	FAO
TCP/RAS/3004	Emergency regional coordination assistance for the control of avian influenza in Southeast Asia	The primary objective of this project is to support national efforts aiming at an immediate control of avian influenza A outbreaks in poultry so as to stop the transmission of the virus from poultry to humans. Country-specific activities in support of disease control have been tailored to local needs and are being financed by national governments, bilateral donors and national FAO/TCP emergency projects. Specific immediate objectives of the assistance are to: <ul style="list-style-type: none"> - determine and apply new strategies to halt avian influenza A disease spread in poultry and humans; - reinforce regional epidemio-surveillance and reporting systems with the aim to halt the disease and verify disease-free status in zones or compartments within countries; - reconstruct the recent avian influenza A outbreak history in the region with the aim to prevent future outbreaks 	2004-02	2006-01	384231	FAO

Project Symbol	Project Title	Project Objectives	Actual EOD	Actual NTE	Total Budget	Donor
TCP/RAS/3006	Diagnostic laboratory and surveillance network coordination for control and prevention of avian influenza in Southeast Asia	Primary objective of the Southeast Asia subregional emergency coordination assistance is to support national efforts aiming at immediate control or elimination of avian influenza A disease in flocks so as to stop transmission of the virus from poultry to humans.	2004-03	2006-02	394668	FAO
OSRO/INS/402/GER	Emergency assistance to prevention, disease investigation, control and surveillance of avian influenza in the Republic of Indonesia	<p>Procurement of anti sera: The anti sera will mainly consist of inactivated H5 antigen for use in HI tests, mono-specific reference serum for H5, H7, and H9 (positive control serum), and negative control serum derived from SPF birds. The anti sera will be purchased, from the Veterinary Laboratory Agency of Weybridge, UK. The procurement will be done during the months of April and May 2004.</p> <p>Preparation and implementation of training: Support public awareness activities through the implementation of extension training for field veterinarians and farmers. Four training workshops will be conducted; one national training workshop in Yogyakarta and three regional workshops in outer Java, in Lampung (Sumatera), Banjarbaru (Kalimantan) and Denpasar (Bali Island). About 400 veterinarians and farmers will be targeted in the four training workshops. The Directorate of Animal Health in cooperation with the local government and universities will prepare and conduct the training in the period of March to May 2004.</p>	2004-03	2004-09	61000	Germany

Project Symbol	Project Title	Project Objectives	Actual EOD	Actual NTE	Total Budget	Donor
OSRO/RAS/401/JPN	The Japan/FAO Joint Emergency Programme for the Control of Avian Influenza in Cambodia, Indonesia, Lao PDR, Viet Nam	<p>General Objective: Provision of technical expertise, emergency equipment, materials and supplies in support of the field operations carried out by local centres/national institutions to control Avian influenza;</p> <p>To provide suitable facilities for the establishment of local disease control centers at national level;</p> <p>To provide basic equipments and materials for disease investigation, culling operations, cleaning and disinfection of infected premises;</p> <p>To assist coordination of disease control activities at the local level.</p>	2004-03	2005-11	1610083	Japan
TCP/RAS/3010	Emergency regional support for post-avian influenza rehabilitation	<p>The overall objective is to assist the participating countries to prepare for a post-avian influenza rehabilitation programme by providing them with a rational basis for decision-making. The more specific objectives to achieve this will include:</p> <ul style="list-style-type: none"> - analysing the country specific socio-economic impact of the AI epidemic on the major production systems and livelihoods of producers and ancillary workers; - establishing a typology of the typical enterprises in the country (size, marketing, technical parameters); - analysing the spatial distribution of poultry enterprises and the market channels; - analysing the issues, options and implications for rehabilitation of the poultry subsector; - collating information relating to the impact of the AI epidemic and rehabilitation issues; and - reviewing the longer-term issues relating to trade, comparative advantages and the whole structure of the poultry industry in Asia. 	2004-04	2005-09	398307	FAO

Project Symbol	Project Title	Project Objectives	Actual EOD	Actual NTE	Total Budget	Donor
TCP/INT/3010	EMPRES Emergency Centre for Transboundary Animal Disease operations (ECTAD) - Coordination	<p>The objective of the assistance is to optimize FAO's direction, management and implementation of projects on HPAI and other TADs. This will be achieved by assembling all FAO personnel working on the technical, scientific and operational management of these projects and additional personnel into the EMPRES Emergency Centre for TAD Operations (ECTAD). Under the leadership of the Chief, Animal Health Service (AGAH), ECTAD will aim for excellence in supervision, service delivery, quality control, feedback generation, coordination and communication in relation to the prevention, control and eradication of HPAI in Asia and of other TADs. The Centre is a key component of systems for global early detection, emergency preparedness and contingency planning that the EMPRES programme (livestock component) is currently developing in the context of the FAO/OIE agreed Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TADs). The objective in forming the ECTAD is to implement, at the FAO level the Good Emergency Management Practices (GEMP), as recommended by FAO to Official Veterinary Services (OVS) that are dealing with serious animal disease outbreaks . It is a fundamental principle of GEMP that the chain of command between the field and the headquarters of the veterinary services is clearly defined, and that coordination and communication between all the groups and services involved in programme management and delivery are centralized in order to deal efficiently and effectively with emergencies.</p>	2004-11	2006-07	370052	FAO

Project Symbol	Project Title	Project Objectives	Actual EOD	Actual NTE	Total Budget	Donor
OSRO/INT/501/NET	Netherlands support to and collaboration with FAO to control highly pathogenic avian influenza in Asia	Overall Objective To protect humans and the poultry sector, in particular smallholder producers, against HPAI, in Asia and beyond, through the effective control and prevention of the disease and the restoration towards a sustainable, viable poultry production sector. Direct Objective To support FAO in its role of coordination, strategic planning support, project and programme development and general technical assistance to the control and prevention of HPAI in Asia.	2005-04	2007-12	629238	Netherlands
OSRO/RAS/505/USA	Immediate assistance for strengthening community-based early warning and early reaction to Avian Influenza outbreaks in Cambodia, Indonesia, Lao PDR, PR China and Viet Nam	Objectives of the project: The overall objective remains to counter HPAI threats posed to animals and people across the subregion, and restore sustainable poultry production and associated rural and socioeconomic development. Specifically the project aims to: Strengthen capacity for early detection and early warning of HPAI outbreaks through community-based field surveillance and effective disease outbreak investigations; Enhance the capacity for rapid and effective response to outbreaks of HPAI; Promote public awareness and education on HPAI;	2005-09	2007-03	6000000	USA
OSRO/GLO/504/MUL BABY01	Emergency assistance for the control and prevention of avian influenza	The purpose of the proposed support is to assist in the control of HPAI in three infected countries (Indonesia, Viet Nam and Lao PDR), and to assist countries at risk of avian influenza introduction in the South and Central Asia regions to be prepared for such potential introduction. Such support will contribute towards international efforts to progressively control HPAI in and beyond Asia, thereby reducing the risk of a human pandemic, improving food security, and promoting stakeholder livelihoods. There are, in addition, activities at the regional and international levels which need to support and synergise such action at the national level.	2005-12	2007-04	3506326	Norway

Project Symbol	Project Title	Project Objectives	Actual EOD	Actual NTE	Total Budget	Donor
OSRO/GLO/504/MUL BABY02	Emergency assistance for the control and prevention of avian influenza	Global and regional coordination, management of the international response and technical expertise; Support to infected countries in their efforts to control and eradicate the disease; Assistance to unaffected countries in their efforts to be prepared to face an incursion of the disease; Provision of resources to enable support for a rapid response, should new countries become infected.	2006-01	2007-12	3696573	Switzerland
OSRO/GLO/601/SWE BABY01	Emergency assistance for the control and prevention of avian influenza - AI activities in Asia, Middle East and North Africa	The objective of the Swedish support to the project is to contribute to the Global Programme on Avian Influenza Control and Eradication.	2006-03	2009-12	6604494	Sweden
GCP /INS/077/AUL	Emergency assistance for the control of avian influenza in Indonesia	The objectives of the supplementary assistance are to strengthen FAO's interventions in Indonesia by: Providing FAO with senior technical support to be able to play the lead role required of it by the international community, and Strengthen the ongoing project activities by providing additional technical assistance and operational funds for the surveillance and control programmes; Provide technical assistance to the FAO programme and local government veterinary services in Aceh.	2006-03	2007-12	1666910	Australia
OSRO/RAS/601/ASB	Regional Coordination of Avian Influenza Control and Prevention in Asia	To improve control of HPAI in infected countries and to enable rapid detection of the disease in countries at risk by strengthening diagnostic and surveillance activities and through a better understanding of the epidemiology of the disease.	2006-04	2010-08	7990000	ADB

Project Symbol	Project Title	Project Objectives	Actual EOD	Actual NTE	Total Budget	Donor
OSRO/RAS/602/JPN	Strengthening the Control and Prevention of Highly Pathogenic Avian Influenza and Enhancing Public Awareness	The main purpose of the proposed project is to control HPAI in the Southeast Asian sub-region and contribute towards international efforts to progressively control HPAI in Asia. This will reduce the risk of human pandemic, increase food security, and promote the livelihoods of poor farmers in the region.	2006-04	2008-04	11400052	Japan
OSRO/INS/604/USA	Expansion of the Avian Influenza Participatory Disease Surveillance and Response Program in Indonesia	The project is specifically aimed to: Extend participatory disease surveillance and rapid response capability to all the districts of Java; Implement PDS/R programs in Bali and defined areas of Sumatra(Medan and Lampung or Kalamaten); Initiate capacity PDS/R in Sulewasi and Kalamaten through training of trainers; and facilitate the strengthening of district level capacity to coordinate disease surveillance and response within the context of the national strategic plan.	2006-06	2009-09	25200000	USA
GCP /RAS/221/JPN	Strengthening coordination network for diagnosis and surveillance for the control and prevention of Highly Pathogenic Avian Influenza in Southeast Asia	The main purpose of the proposed project is to control HPAI in the Southeast Asian sub-region and contribute towards international efforts to progressively control HPAI in Asia to reduce the risk of human pandemic, increase food security, and promote the livelihoods of poor farmers in the region.	2006-09	2011-08	658658	Japan

Project Symbol	Project Title	Project Objectives	Actual EOD	Actual NTE	Total Budget	Donor
OSRO/INS/701/AUL	Assistance through FAO for the control of avian influenza in poultry in Indonesia	<p>The international development goal of the project is to contribute to international efforts aimed at controlling and eliminating the threat of HPAI at source, thus reducing the impact on the agricultural sector and minimizing the risk to human health.</p> <p>The national development goal of this project is to support the Government of Indonesia in its efforts to prevent and control HPAI and to strengthen in a sustainable manner the national veterinary services and their capacity to respond to future epizootics.</p> <p>Provide sound technical and policy advice to the Government of Indonesia on avian influenza.</p> <p>Support the efficient establishment of the surveillance and control of avian influenza programme in South Sulawesi.</p>	2007-06	2010-06	8365333	Australia
OSRO/INS/703/USA	Monitoring AI virus variants in Indonesian poultry and defining an effective and sustainable vaccination strategy	To determine: the distribution by species, locality and enterprise of variant virus strains antigenically related to the virus challenge (A/chicken/West Java/PTW-WIJ/06 9/2006); the extent of the mismatch between circulating HPAI strains and the vaccines used in Indonesia; and, an effective and sustainable vaccination strategy including the identification of new vaccine seed strains as required.	2007-10	2009-09	1630500	USA
OSRO/IND/802/USA	Immediate technical assistance to strengthen the control of Highly Pathogenic Avian Influenza (HPAI)	The overall objective of the programme is to contribute to the elimination of the threat posed by HPAI in which India no longer presents a risk for the development of human pandemic influenza from the H5N1 virus by controlling the disease in poultry.	2008-09	2009-09	720000	USA
OSRO/INS/803/WBK	Consultant Services for Participatory Disease Surveillance and Response.	Consultant Services for Participatory Disease Surveillance and Response.	2008-12	2009-08	467874	World Bank

Project Symbol	Project Title	Project Objectives	Actual EOD	Actual NTE	Total Budget	Donor
OSRO/INS/804/WBK	Consultant Services for Community Based Vaccination	Consultant Services for Community Based Vaccination	2008-12	2009-08	1156052	World Bank
OSRO/GLO/802/USA	Improved biosecurity and hygiene at production, collection points and live bird markets (LBM), including decontamination	The objective of this project is to develop and implement an integrated programme for cleaning and decontamination of select live bird markets in target countries, thereby contributing towards the efforts to minimize the risk to human health and reduce transmission and spread of HPAI virus.	2009-01	2009-09	2500000	USA

SECOND REAL TIME EVALUATION OF FAO's WORK ON HIGHLY PATHOGENIC AVIAN INFLUENZA

REGIONAL REPORT: ECTAD BAMAKO (WEST AND CENTRAL AFRICA)

15-16 OCTOBER 2009

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I. INTRODUCTION

When highly pathogenic avian influenza (HPAI) spread to Africa, the Middle East, Central Asia and Europe early in 2006, FAO decided to establish regional ECTAD units in those regions. In Africa and in the Near East, FAO and OIE agreed to jointly establish Regional Animal Health Centres (RAHCs)¹ on the basis of the soon-to-be created FAO ECTAD offices and OIE (sub-) regional representations.

The first regional ECTAD office for Africa was established in Bamako in early 2006. It was set-up following DGB 2004/31² and due to its relatively new creation it was not reviewed in detail by the First Real Time Evaluation (RTE). The first RTE report noted the early start of “regional activities” using TCP funding in Africa and the Near East. The First RTE qualified this move as “a very positive strategy in during that early phase when donors and others are not yet moving, and early in the disease spread when key advice can have a much greater impact.”

¹ ECTAD Functions, Structure and Instruments (2007)

² EMPRES Emergency Centre for Transboundary Animal Disease Operations

Dr Emmanuel Camus from CIRAD and Mr Carlos Tarazona from the FAO Office of Evaluation visited ECTAD Bamako from 15 to 16 October 2009 as part of the Second RTE of FAO's Work on Highly Pathogenic Avian Influenza. In line with the evaluation's terms of reference and the inception report, the focus of the visit was to evaluate the relevance, efficiency, effectiveness, sustainability and likely impact of the assistance provided by ECTAD Bamako in the past few years. The Office of the Regional Manager prepared a programme of meetings (see annex 1), provided documentation and materials relating to the office's work (annex 2) and made logistical arrangements for the mission. In view of the short time available, the second RTE has focused their assessment on the regional activities conducted by ECTAD Bamako (which are the bulk of the office work), and to a lesser extent on the direct support provided to countries in the region (i.e. Cote d'Ivoire and Togo were prioritized as these are the main affected countries and benefit from two of the largest national projects backstopped by ECTAD Bamako). To this end it has taken into account the responsibilities assigned to ECTAD sub-regional units as defined in the ECTAD Functions, Structure and Instruments Charter (see annex 3) and relevant strategic documents and work plans for the region.

II. OVERVIEW OF ACTIVITIES

The Emergency Centre for Transboundary Animal Diseases (ECTAD) for West and Central Africa was officially created in April 2006 in Bamako, Mali. This office (referred to as "ECTAD Bamako") was together with the OIE and AU-IBAR offices in Bamako expected to form the Regional Animal Health Centre (RAHC) for West and Central Africa. The choice for a RAHC in Bamako was made on the basis of potential synergies with these organizations. The office of AU-IBAR has historically played a major role in the sub-region through the Pan African Rinderpest Campaign (PARC) and then through the Pan African Control of Epizootics (PACE), a programme that run between 1999 and 2007, and now through the ongoing SP-INAP project. The OIE Regional Representation for Africa, which was established in Bamako in 2000, was expected to be part of the RAHC in the context of the GF-TAD agreement of 2004 to improve the surveillance and the control of animal diseases at sub-regional level. For reasons beyond FAO control, these three organizations have not yet been able to develop joint work plans. ECTAD Bamako, as probably OIE and AU-IBAR, has its own staff, coverage, strategy and work plan.

Staff: ECTAD Bamako was originally staffed by a project co-ordinator and a regional manager for most of 2006, but since 2007 it has basically kept the same structure with a core group of 5-6 staff members providing technical support on early warning (laboratory capacity building and network development, which are mainly the responsibility of the Laboratory expert), emergency response (animal health strategy and epidemiological networks, which are mainly the responsibility of the regional manager), socio economic & poultry production (including biosecurity, census, safe trade and impact analysis) and communications. At the time of the team's visit there were nine professional staff members including three programme and operations staff. In the past two years the office have also hired four national long-term consultants (based in Senegal, Cote d'Ivoire, Benin and Togo) who to date remain under contract, and ten regional short-term consultants for specialized inputs.

Coverage: The office currently serves twenty three countries³ of varying characteristics (most are francophone but there are also a few anglophone and lusophone countries). ECTAD Bamako supervises activities in all these countries with the exception of Nigeria, which is supervised directly from Rome. Although direct assistance has been provided to numerous countries with greater attention reportedly given to countries with greatest needs such as Sierra Leone and Liberia, regional activities have mostly targeted francophone countries of West Africa, partially because they are the most numerous but also because they were those most affected by the disease (with the exception of Nigeria) and are easier to reach from Bamako. In the past three years eight countries (six francophone: Benin, Togo, Cote d'Ivoire, Burkina Faso, Cameroon and Niger; and two anglophone: Nigeria and Ghana) had reported infection with only one human casualty recorded (Nigeria). The last outbreak in the region was reported by Togo in September 2008.

Strategy and work plan: In the first year of operations (early 2006-early 2007), activities were mainly driven by the urgent need to support countries affected by the disease while strengthening preparedness of those not yet infected. In late 2007 FAO developed a strategy (also called "programme") for West and Central Africa for the period 2008-09, which is based on the FAO/OIE Global Strategy for Prevention and Control of H5N1 Highly Pathogenic Avian Influenza and the FAO's regional strategy for Africa developed in 2006. According to this strategy, ECTAD Bamako global objective for the biennium is to "contribute to poverty reduction through sustainable development of the livestock sector in west and central Africa". To this end, three specific objectives (with expected results and activities) were defined:

- Support prevention, control and eradication of HPAI in west and central Africa;
- Strengthen National Veterinary Services; and,
- Promote safe and sustainable animal production.

FAO has developed an annual programme of work to operationalizing the above strategy. The work plan provides clear linkages between the strategy's global and specific objectives and expected results with the activities and inputs undertaken through regional and national projects. The evaluation team considers the strategy and work programme developed as very positive and potentially useful managerial tools. It is early to assess the strategy's effectiveness in aligning ECTAD Bamako work to regional demands and context, but it is noticeable that the existence of the strategy is bringing and forcing people to plan ongoing activities in a more strategic way.

Regional Projects. Around US\$ 12.5 m (see table 1) have been budgeted for regional projects during the period 2005-2009. ECTAD Bamako has had a leading role in their implementation. These have been funded by a number of donors (FAO, Sweden, UK, Canada, France and USA) and channelled mainly through SFERA. The latter has provided some flexibility for preparing, within the limits imposed by the different donors, a comprehensive work plan; the drawbacks being that funding decisions and overall fundraising have been done mostly outside Bamako, and that given the source of funding, activities, most of which of a non-emergency nature (e.g. such as development of networks), had to be (re-)planned on a short-term (annual but sometimes also monthly) basis.

³ Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Democratic Republic of the Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone, Togo

Table 1. Regional Avian Influenza Projects in West and Central Africa (2005-09)

Project symbol	Project Title	Donor	Total budget	Delivery	EOD	NTE	Beneficiary countries
TCP/RAF/3016	Emergency assistance for early detection and prevention of avian influenza in Western Africa	FAO	402,815	402,815	1/11/05	30/6/07	All West and Central African countries
OSRO/GLO/504/MUL Baby 4	Emergency assistance for the control and prevention of avian influenza	France	1,976,807	1,956,650	1/1/06	30/4/07	All West and Central African countries
OSRO/GLO/601/S WE Baby 2	Emergency assistance for the control and prevention of avian influenza- AI activities in Africa South of Sahara	Sweden	1,139,349	1,136,129	28/4/06	31/12/09	All West and Central African countries
OSRO/GLO/604/UK Child	To support the implementation of the "Avian Influenza Response Programme" through the "Special Fund for Emergency and Rehabilitation Activities (SFERA)" in the countries affected by the epizooty	UK	1,796,218	1,479,962	29-Mar-07	31-Mar-10	All West and Central African countries
OSRO/GLO/702/CAN Child	Contribution of the Government of Canada to FAO's global programme for HPAI control and eradication in support to Africa other regions	Canada	2,609,120	1,732,648	14-Mar-07	13-Apr-10	Regional for all West and Central African countries
OSRO/GLO/706/F RA	Appui au système d`alerte précoce mondial et aux initiatives des réseaux régionaux pour la prévention et le contrôle de l`Influenza Aviaire en Afrique Centrale et de l`Ouest	France	705,490	706,168	01-Dec-2007	31-Dec-2008	All Western Africa
OSRO/RAF/612/USA Baby 3	Support FAO`s Global Avian Influenza and Eradication Programme for Regional Activities in West Africa	USA	225,000	205,995	1/6/07	30/3/09	Regional for all West and Central African countries
OSRO/RAF/717/USA	HPAI Early Warning, Early response and preparedness strategy support in Western and Central Africa	USA	1,432,000	823,140	1/3/08	31/3/10	All West and Central African countries
OSRO/RAF/722/S WE	Support for the control of HPAI in Sub-Saharan Africa	Sweden	2,246,215	1,552,395	28/11/07	31/12/09	All West and Central African countries
Total			<u>12,533,014</u>	<u>9,995,902</u>			

Table 2. National Projects in West and Central Africa backstopped by ECTAD Bamako (2006-09)

Project symbol	Project Title	Donor	Total budget	Delivery	EOD	NTE	Beneficiary countries
OSRO/BKF/601/USA	Intervention d'urgence pour la lutte contre l'influenza aviaire hautement pathogène au Burkina Faso	USA	130,000	115,067	1/5/07	30/3/09	Burkina Faso
OSRO/NIR/601/MUL	Technical Assistance to the Government of Nigeria for Control and Eradication of Highly Pathogenic Avian Influenza	USA/UNDP	1,725,520	1,657,989	06/11/06	31/01/09	Nigeria
OSRO/NIR/602/EC	Active Avian Influenza Surveillance Study in Nigeria	EC	953,274	931,568	01/08/06	31/12/07	Nigeria
NIR/08/002/01/12	Capacity Building for National Prevention and Preparedness for Avian and Human Influenza Pandemic beyond Emergency.	UNDP	311,000	24,997	03/04/09	02/04/10	Nigeria
OSRO/IVC/603/EC	Intervention d'urgence pour la prévention, la détection précoce et la lutte contre la grippe aviaire en Côte d'Ivoire	EC	734,537	660,625	1/7/06	30/4/08	Ivory Coast
OSRO/NER/603/USA	Surveillance et contrôle de l'influenza aviaire au Niger	USA	200,000	183,312	1/8/06	30/3/09	Niger
TCP/SIL/3103	Support to Strengthening the Veterinary Services	FAO	304,000	288,928	1/6/07	31/5/09	Sierra Leone
TCP/GAB/3102	Renforcement des services vétérinaires et des mécanismes de coordination nationale pour la prévention de la grippe aviaire	FAO	237,000	242,678	1/7/08	30/6/09	Gabon
OSRO/CHD/602/EC	Intervention d'urgence pour la prévention, la détection précoce et la lutte contre l'influenza aviaire hautement pathogène au Tchad	EC	5,371,479	2,267,870	1/12/07	30/11/10	Chad
OSRO/TOG/801/EC	Assistance au Gouvernement du Togo dans la prévention et le contrôle de l'Influenza Aviaire Hautement Pathogène (IAHP)	EC	2,512,953	461,929	13/11/08	13/11/11	Togo
OSRO/GAB/801/EC	Intervention d'urgence pour la prévention, la détection précoce et la lutte contre la grippe aviaire au Gabon	EC	1,466,380	382,742	16/12/08	16/6/10	Gabon
Total			<u>13,946,143</u>	<u>7,217,705</u>			

National projects: Including the Nigeria country programme, around US\$ 13.9 million (see table 2 in the previous page) have been budgeted for national projects on avian influenza. ECTAD Bamako also support two projects in other transboundary animal diseases (AHS in Senegal and Anthrax in Togo). ECTAD Bamako has provided technical backstopping to these interventions while ECTAD Rome and the FAORs generally led the fundraising process. Most of the projects were indeed negotiated at HQ or country level and have largely been funded by the European Commission, USAID or FAO. Another characteristic of the national projects is that two of the biggest project targeted avian influenza prevention in non-affected countries (Chad and Gabon).

A detailed analysis of the activities funded by the regional projects with an emphasis on the networks established as well as a brief analysis of the support provided by ECTAD Bamako to national projects in affected countries (e.g. Togo and Cote d'Ivoire) can be found below.

III. ROLES, RESPONSIBILITIES AND IMPACTS IN THE REGION

Roles: The technical role of ECTAD Bamako in the region is mainly conducted through networks on epidemio-surveillance (RESEPI), socio-economics and production network for animal health (RESECOP), communication (RESOCOM) and laboratory capacity development (RESOLAB) as well as direct support to national projects.

RESEPI is a network on epidemio-surveillance. Regional work has been mainly funded by project OSRO/GLO/702/CAN and OSRO/RAF/717/USA whereas country level pilots have been funded through the national EC funded projects. RESEPI is functional in West Africa only and has been designed to incorporate reporting to GLEWS and WAHIS. Some of the activities conducted include a workshop with members of national epidemiology networks to facilitate exchange of disease information and promote better cooperation and consistency among countries on their approaches to disease control. To this end regional desk top simulation exercises were carried out in Bamako (Mali), Accra (Ghana) and Praia (Cap verde) and national field simulation in Somone (Senegal) and Segou (Mali) and cross border meetings organized in cooperation with ECOWAS and UEMOA to address trade related issues (traceability and biosecurity). Another important activity has been the deployment of TADinfo software in Nigeria, Ghana, Burkina Faso, Benin, Mali, Niger, Togo, the Gambia and Guinea Bissau to increase disease reporting capabilities.

RESOLAB is a network of avian influenza reference laboratories. Regional work has been funded by projects OSRO/GLO/702/CAN and OSRO/RAF/717/USA and with contributions from USDA whereas country level work has been funded through national projects. RESOLAB was developed two years ago to improve and link veterinary laboratories in West and Central Africa. The network is closely associated with the Padova OIE/FAO international reference laboratory and two national laboratories (Dakar in Senegal for French speaking countries and Vom in Nigeria for anglophone countries) have been designated as Regional Laboratories for avian influenza so that they can receive and analyse samples from neighbouring countries and provide training whether in their own accommodations or by sending experts. Although support has generally been provided at regional level, some priority was given to renovate laboratories in the least developed places (such as Liberia and Sierra Leone). Trainings have been organized for more than 70 laboratory staffs coming from 23 countries on diagnosis for avian influenza and Newcastle Disease and on advanced molecular and sequencing diagnosis in Padova. Equipments and reagents were supplied to every laboratory and a bank of reagents was set up in Bamako to rapidly respond to any

urgent request. Some successes include reduction in testing times (from 30 days in 2006 to 1 day in Nigeria) and the conduct of the inter-laboratory proficiency testing which are being carried out for the first time in the region.

RESECOP is a platform to exchange information and experiences between actors and countries on animal production and its socio-economic aspects, and to promote and enhance the consultation processes among these stakeholders in relation to themes such as biodiversity preservation, biosecurity improvement, improvement of health status of domestic animals, socio-economic impact of bird flu, etc. Regional work has been funded by projects OSRO/RAF/722/SWE and OSRO/RAF/717/USA whereas country level work has been funded by the relevant national project. Other activities include the development of capacity and strengthening of the role of socio-economics and poultry production disciplines at regional and national levels particularly through pilot work in 4 countries (Togo, Burkina Faso, Ghana and Cote d'Ivoire) and supporting national programmes and specific regional activities e.g. on bio-security.

RESOCOM is a network on communication. Its work has largely been funded through e OSRO/RAF/722/SWE. It has organized several training workshops in the region. A recent Regional Planning and Skills-Building Workshop for West Africa on HPAI Communication in Dakar with 60 participants concluded that there was a need to focus messages on animal health aspects and a need to use RESOCOM for improving communication activities in the region.

ECTAD Bamako has also supported other aspects of communication work such as: i) dissemination of technical information via internet (www.fao-ectad-bamako.org); and ii) changing risky attitudes through awareness raising activities. With regards to the latter, besides the Website, CD/DVDs, badges, leaflets, manuals and films containing a variety of technical information has been produced. Regarding the former, several workshops (in Dakar and Bamako) as well as pilot communication projects at national level have been conducted. Field activities have recently been suspended as the post for a communications officer became vacant. RESOCOM also produced two films on simulation exercises, one in French in Mali and the other one in English in Ghana.

The role of ECTAD “in containing HPAI...and in elaborating the surveillance and preparedness plans for the region...” and of RESOLAB “in dealing with outbreaks of AI in the region and establishing links with international reference laboratories” was appreciated by ALive experts in their evaluation of Laboratory Networks in Africa (February 2009) and of Epidemiology Networks (May 2009).

ECTAD Bamako has also played a major role providing direct technical assistance to countries in West and Central Africa. Assistance (in the form of backstopping missions) has focused on affected countries such as Togo and Cote d'Ivoire) but also on non affected countries with substantial resources for avian influenza prevention such as Chad and Gabon. A common denominator in these countries has been the presence of national projects to pay for ECTAD Bamako services. Nevertheless, most countries in the region are still eligible and benefit from direct technical support as they are considered to be “at risk of re-infection” basically because of their proximity to Nigeria⁴.

⁴ Report Exercise on Highly Pathogenic Avian Influenza: FAO contribution to the UNSIC report (2008)

In this regard, the role of national experts deserves a separate mention. As seen in Cote d'Ivoire, they are an important link between local Veterinary Services, FAO country representatives and ECTAD offices (in this case, Bamako). Having a national consultant on call is a cost-effective strategy to follow-up on prevention activities (e.g. biosecurity in live bird markets; preparedness plans; disease surveillance), to manage national projects but most importantly, to channel emergency assistance and allowing rapid disease reporting following suspect disease outbreaks.

The evaluation team was informed that although levels of preparedness greatly vary among countries, some are now considered to have made much progress. The simulation exercises conducted by FAO in the past three years indeed show that countries such as Ghana, Senegal and Mali have all strengthened their response capacity and would be able to rapidly contain minor outbreaks, whereas countries such as Cote d'Ivoire, Liberia, Sierra Leone, Guinea and Guinea Bissau, all recently affected by civil wars, and least developed countries such as Togo do still need major support, to re-build the whole or specific parts of their animal health response systems.

Given the limited technical expertise often available at country representations, the combination of national experts and direct technical support from Bamako is a cost-effective way to increase the technical base of FAO country offices on animal health issues. A practical example of ECTAD Bamako support to affected countries (in this case Togo) and the role played by the national consultant is given below.

Box 1. ECTAD Bamako support to Togo's avian influenza response

In September 2008, and following an outbreak of avian influenza diagnosed in 3 farms close to Lomé, ECTAD Bamako fielded three experts to the country with the objective of providing critical support to the veterinary services in a wide array of activities.

The FAO team, which also brought critical materials and supplies (e.g. reagents, PPPs, etc.), organized together with the Veterinary services the culling of 8,000 poultry, as well as compensation and disinfection of farms. They also supported the conduct of an epidemiological survey, the establishment of active surveillance of farms in the infected region; monitoring of quarantine in affected farms; a ban for movement of poultry and live birds markets; the setting up of border movement control; reinforcement of laboratory capacity (through RESOLAB); development of an emergency plan and a pilot project for development of the poultry sector.

The FAO team also supported regular contacts with the press on the disease situation and prepared a plan on how to deal with the media. Similar to Cote d'Ivoire, this process was facilitated by the full participation of national staff.

Although the outbreak was successfully controlled, much remained to be made to prevent and detect disease incursion. Following an official request from the Government of Togo, ECTAD Bamako prepared 2 projects for disease surveillance and control of Anthrax and African swine fever. These two projects were funded by FAO and a donor, and now a project proposal on Newcastle Disease has recently been prepared and submitted for funding to FAO HQ.

Responsibilities: A specific objective of ECTAD Bamako includes “support the prevention, control and eradication of HPAI in West and Central Africa”. In this regard, ECTAD Bamako was responsible for supporting prevention activities such as:

- Increased cross border movement control through better knowledge of trade flows, holding of cross-border meetings, provision of equipment and training of check-point staff.
- Improvement of bio-security, safe production and trade through value chain analysis, socio-economic studies, training on good practices and pilot bio-security work in live birds markets.
- Increased surveillance and laboratory training and equipment.

Regarding preparedness and control, ECTAD Bamako has:

- Contributed to the preparation of the Integrated National Avian Influenza Plan (INAP) as well as several emergency contingency plans and needs assessments.
- Developed and advocated for compensation plans.
- Carried out simulation exercises.
- Provided timely response to outbreaks in collaboration with the CMC-Animal Health and conducted follow up missions as appropriate.

The evaluation team noted the ample spectrum of expertise needed by the office to carry out their responsibilities. It was acknowledged that technical work conducted in support of the above elements has been successfully conducted but more work was still needed to improve institutional (rather than just individual and organizational) capacity. To sustain these efforts ECTAD Bamako was also charged with mobilizing resources for animal health activities. This function is perhaps the one much appreciated by countries. The evaluation team however noted that fund-raising has mainly taken place at HQ or country level, with potential regional donors or partners not having been sufficiently involved or approached. Even if regional donors are not numerous, a noticeable one is the European Union, which can and must be mobilized for regional activities. Another possibility is to mobilize international donors at regional level through projects prepared at ECTAD Bamako level but discussed/negotiated at international level by FAO HQ. For real long-term regional projects it would probably be necessary to have dedicated staffing (i.e. not just operations but also programming/resource mobilization expertise) in Bamako.

On the programming/operational side the evaluation team was informed of past difficulties regarding the somewhat lengthy process at HQ to clear some specific technical, managerial or financial decisions. The evaluation team noted that most of the issues raised happened in the early days and that in recent times more authority, particularly for technical decisions, has been delegated to the office (e.g. full oversight of and clearance of national projects reports). Also, the team noted that the issue of having a greater say in the management of regional and national projects was largely resulting from HQ, and not ECTAD Bamako, being responsible for funding allocations and being ultimately accountable to donors for the funding.

Impact: The evaluation team was not able to assess or gather evaluative information on the likely impact of the work conducted by ECTAD Bamako in the region. The team was however made aware that the institutional sustainability of the centre is still far from being guaranteed for a number of reasons (e.g. lack of a formal agreement between FAO and AU-IBAR; limited involvement of OIE in RAHCs; weak fundraising capacity at regional level; uncertainty of funding for regional activities, etc). Another key stakeholders in terms of institutional (and financial) sustainability are ECOWAS and UEMOA, but as it is discussed

below there are no firm collaborative agreements reached yet with this or any other regional partner or donor to assure long-term funding and support to ECTAD Bamako.

IV. PARTNERSHIPS

As indicated earlier, FAO does collaborate with a number of regional organizations such as AU-IBAR, OIE, UEMOA and ECOWAS (CEDEAO in French) but so far and mainly due to internal constraints of each organization this collaboration has mainly taken place in an informal or ad-hoc basis e.g. FAO/AU-IBAR/OIE co-financing the publication of a field manual, sharing information about the SP-INAP project activities with AU-IBAR, supporting the development of zoo-sanitary certificates for intra-regional trade with ECOWAS, or holding joint workshops with OIE).

FAO and ECTAD Bamako in particular are still committed to foster collaborative arrangements and there are partners who are very receptive to this. For example with ECOWAS an Action Plan is being developed to strengthen cooperation between the two organizations. The development of the action plan follows findings from a Feasibility Study on Epidemiology Networks in Africa conducted by the World Bank sponsored ALIVE platform which concluded that “there is clear interest at the ECOWAS Secretariat in the work of the RAHC [ECTAD] Bamako” and that “it is also appreciated that the current efforts to widen the scope of the network to a wider aspect of TADs and zoonoses will be beneficial to the region.”

FAO has also reached out to other partners such as USDA-APHIS and USAID (and their implementing partners: STOP-AI, ILRI, AI-COM). FAO has carried out joint activities on biosecurity with both partners. FAO has also made use of EISMV expertise in a number of regional and country activities. ECTAD Bamako also keeps working relations with donors such as SIDA, European Union (particularly in the case of national projects), the World Bank and the UN system (WHO, OCHA and UNICEF)

The evaluation team overall noted that regional and country level stakeholders were increasingly interested in partnering with ECTAD Bamako to develop programmes for other Transboundary animal diseases like PPR, ASF, CBPP, FMD, etc. This indeed represents an opportunity for FAO to use, and by doing so sustain the networks established and the capacities created to deal with avian influenza in the region.

V. CONTRIBUTION TO NATIONAL AND REGIONAL INITIATIVES

At national level, ECTAD Bamako most noticeable contribution are the technical support to national initiatives including projects in Togo, Cote d’Ivoire, Chad, Gabon, etc. In Togo ECTAD prepared the national project, started the activities during a workshop grouping all stakeholders, appointed the project staff, followed and supported the activities including the administrative and financial management and organized several trainings for stakeholders.

In the above countries, national projects are lead by FAO consultants, two nationals and one international, under the supervision and back-up of ECTAD Bamako. Links are strong and national projects would be, if not impossible, at least very difficult to carry out without ECTAD Bamako.

At regional level, ECTAD Bamako has contributed to different collaborative arrangements such as:

- Collaborative work with external partners: ECTAD Bamako has developed excellent collaboration between RESOLAB and the International FAO/OIE reference laboratory of Padova. A regional organization on livestock (UOFA) is also developing collaboration with ECTAD. For other partners see section IV on Partnership.
- Collaborative Work with FAO Office in the region: The FAO sub-regional office for West Africa in Accra is working more on animal production issues and there is a good complementarity with ECTAD Bamako which focuses on animal health (and also on poultry production); it is not really collaborative work.
- Collaborative work with UEMOA and ECOWAS - Discussions to sustain the network through a Steering Committee and through ECOWAS activities and funding. Private Public Partnership at a regional level with the future organization of a Regional Poultry Association modelled in UFA/UEMOA Association.

This collaborative and transparent approach has also improved several aspects of avian influenza prevention and control programmes e.g. for the first time identification of two regional laboratories in Dakar (Senegal) and Vom (Nigeria) able to receive samples to confirm HPAI from countries which can only suspect HPAI was reached. The approach followed has also created trust: Regional and bilateral meetings between CVOs to exchange information and experiences and networks of expertise have started to take place.

VI. SYNTHESIS AND DISCUSSIONS OF REGIONAL ECTAD'S CONTRIBUTIONS

Co-ordination of regional and country activities;

ECTAD Bamako has played, and continues to play, a central role in the coordination of regional and country activities through the development of networks, projects, national programmes, training, workshops, and provision of expertise, information and communication. This is built on the excellent relationship between the FAO staff in Bamako and other stakeholders in the region. The appointment of national and international consultants to manage large projects in Togo, Cote d'Ivoire and Chad also facilitates the coordination.

Formulation and implementation of regional programmes/projects;

ECTAD Bamako contributed to the formulation and implemented national and regional projects. The most noticeable projects are:

- Assistance to the Government of Togo in the prevention and control of HPAI, funded by EC, for 2 million Euros over three 3 years
- Emergency intervention for the prevention, early detection and control of HPAI in Chad, funded by EC for 3.88 million Euros over 3 years
- Backstopping to the control of HPAI in Gabon, funded by EC for 1 million Euros over 2 years

Promotion and coordination of regional networks;

Four very active regional networks were developed for epidemiological (RESEPI), laboratory (RESOLAB), socio-economics & production (RESECOP) and communication (RESOCOM) activities. They have and remain largely coordinated by ECTAD Bamako. Some (RESOLAB

in particular) are more matured than others, but in the absence of real buy-in and ownership from countries they still require FAO championing and promotion.

Advocacy and fund-raising for HPAI and Transboundary Animal Diseases interventions;

The fund-raising is probably the most questionable and challenging aspect of ECTAD, Bamako. Most of the projects, even the regional ones, were discussed and negotiated between FAO HQ and donors. There is probably a way for ECTAD Bamako, particularly through the TADs prioritized by country, to discuss together with countries and with regional donors like the EU and/or in partnership with Regional Economy Commissions (RECs) such as UEMOA and ECOWAS. It is not only a matter of financial sustainability but also of recognition.

The institutional and financial sustainability of the (sub-) regional ECTADs

The institutional sustainability of ECTAD Bamako: The evaluation team assigns a high priority to this action, and considers that FAO could, through an official agreement together with OIE and AU-IBAR, begin a real RAHC and not only a FAO ECTAD. It should be one priority for the ECTAD coordinator and FAO in the region. At the time of the evaluation mission it seems that there was already an agreement with OIE to clarify, and that AU-IBAR would be ready for such an agreement.

The financial sustainability of ECTAD Bamako depends on projects, national (supported from Bamako) and regional. Next year the last regional projects will finish. There is an urgent need to develop new ones with the support of FAO HQ. Some could be funded by regional donors such as the EU and some by international donors identified with FAO HQ support. Beside this short to medium term perspective, a longer term one should be sought by identifying activities that could be transferred to regional organizations. RESOLAB and RESEPI for instance are typically activities that could be handled by UEMOA or ECOWAS. Such activities should be anchored to African regional sustainable organizations otherwise there is a risk that, like in the PACE program, every activity stops when the funded projects stop. And it should be considered, discussed and decided rapidly, before it is too late.

The efficiency and adequacy of working arrangements within FAO (with HQ, regional and country offices)

The clearance from FAO HQ of some technical, managerial and financial decisions seems now easier and faster than it has been in the past, particularly when ECTAD Bamako started. As noted in Cote d'Ivoire in case of disease emergency there is a good complementarity and a rapid sharing of information and decision making between FAO country office, ECTAD and CMC-AH at FAO HQ. The role of FAO regional offices with ECTAD needs to be clarified; so far the interactions seem limited to exchange of information. Is there a role for these regional offices in the fund-raising for HPAI and TADs?

In conclusion, the evaluation team found several positive points regarding FAO ECTAD Bamako's work:

- Good organization and management. Excellent team with multidisciplinary expertise on: animal health, laboratory, epidemiology, socio-economics, animal production, data management, communication, operations and administration.

- More than 3 years of field experience.
- Emergency interventions with ECTAD experts in the different neighbouring countries
- Active regional networks: RESEPI (epidemiology), RESOLAB (laboratory), RESECOP (socio-economics & production), RESOCOM (communication).
- RESEPI: coordination, facilitation, stimulation, harmonization and auto-evaluation of national epidemio-surveillance networks.
 - Good background of activities with the PACE Programme.
 - Extension of surveillance beyond HPAI to other important TAD.
- RESOLAB: rehabilitation, upgrading, training of 25 national laboratories.
 - Providing equipment and reagents in particular with a bank of reagents organized in Bamako.
 - Development of Quality Assurance.
- RESECOP: Development since 2007 of activities on socio-economic & production aspects: identification of poultry farms, description of the poultry sector in each country, reflexion on a regional strategic plan to develop the poultry sector.
- RESOCOM: development of various tools of communication in partnership with countries, like leaflets, movies, websites and organization of trainings.
- Organization of simulation exercises filmed and discussed to identify weaknesses in the National Strategic Plans.
- Management and/or coordination of many regional and national projects including support to the survey on the epidemiology of avian influenza in Africa led by FAO HQ.
- Data management through the implementation of TADinfo in 11 countries.

On this basis, the evaluation team recommends FAO the following priority actions:

At regional level

- Pursue discussions with OIE and AU-IBAR to obtain a legal status for the RAHC Bamako, and in particular by signing an agreement with AU-IBAR. This agreement should not just elicit responsibilities and roles but also clearly define areas of joint work. As part of the discussions FAO should clarify with OIE eventual duplications between FAO RESOLAB and OIE regional activities on twining and networking of laboratories.
- Continue discussions with UEMOA and ECOWAS concerning long-term funding and location of regional networks and involve other potential partners on specialized areas of work (such as FAO/IAEA Joint Division on laboratory issues, ILRI on socio-economic research, CIRAD on wild birds research, etc.)
- Enhance mobilization of resources from regional donors such as the EU if possible in partnership with regional economic consortia (RECs). The appointment of a programming/ fundraising officer to help designing projects in the right format for each donor should also be considered. Depending on the success in fundraising, consider in consultation with FAO offices in the region the setting up of a new ECTAD unit for Central Africa given the high number of countries covered by ECTAD Bamako.
- Review the effectiveness of some modalities of assistance, such as Training of Trainers (ToT) or Workshops, with a focus to increase follow-up and uptake at national level.
- Explore possibilities of giving a greater role, responsibilities and say to countries participating in the different networks. This process can be easier to follow in case of a transition of networking functions to RECs in the more mature and relevant areas.
- Improve management of human resources; and particularly avoid the use of experts for very brief assignments when the activity is planned for a relatively long term.

At national level:

- Continue supporting and technically backstopping projects in the region (Chad, Gabon, Togo), but giving higher priority to mobilizing resources for countries in most need of assistance (e.g. those affected by wars) and those deemed to be at higher risk of infection.
- Support the development of links between TADinfo and OIE information system for official declarations of diseases.
- Support the application of risk analysis in the different countries together with the National Veterinary Services (only being undertaken completely in Senegal).

ANNEX 1. List of People Met

Frédéric POUDEVIGNE, ECTAD regional manager
Boubacar SECK, coordinator of FAO RESOLAB
Youssef KABORE, RESOLAB expert
Olivier ADIER, FAO communication expert
Felicia ZAENGEL, FAO administrative officer
Fallou GUEYE, FAO Animal Production expert
Cecile SQUARZONI, FAO Chad expert
Jean HOUNKALI, FAO Togo expert
Sadibu FALL, FAO Senegal expert
Sophie MOLIA, Cirad expert on HPAI
Mamadou NIANG, LCV, Central Veterinary Laboratory
Oumou SANGARE, regional coordinator of AU-IBAR
Zacharie CAMPAORE, coordinator of SPINAP
Yaya DOLO, president of National Poultry Association
Alphonse TEME, deputy CVO of Mali

ANNEX 2. Documentation Reviewed

Abidjan 3-5 Septembre 2008, B.Seck et C.Squarzoni

Alerte à Ségou. Un exercice de simulation pour la maîtrise d'un foyer de Grippe Aviaire, 25-27 juin 2009

Alive feasibility study on Epidemiological Networks in Africa, M.Rweyemamu, M.Fanikiso, P.Seck, Dec 2009

ALive feasibility study on Laboratory Network in Africa, G.Cattoli, C.R.Wilks & Y.Thiongane, Feb 2009

Atelier sur l'Assurance Qualité dans le Laboratoire de Diagnostic Vétérinaire, Douala, 14-18 septembre 2009

Epidemiology of Avian Influenza in Africa (EPIAAF) Survey. Final report, LOA PR 37212 between FAO and Cirad, October 2008.

Global HPAI Status. African outbreaks characteristics. Atelier Togo 12-14 octobre 2007, B.Seck et C.Squarzoni

HPAI: Current Status. Atelier transfrontalier sur le renforcement de la collaboration pour la surveillance, la prevention et le controle de l IAHP en Afrique de l Ouest et du Centre.

La lutte contre l'IAHP en Afrique : Sommaire régional. Conf.Vaccination/ a tool for the control of HPAI. Verona, Italy, B.Seck, C.Squarzoni & J.Litamoi

Situation sur la Grippe Aviaire au Togo et point sur les activités ECTAD/FAO du CRSA Bamako, Y.J.Hounkanli, Oct 2009

Strategies for Poultry Sectors Revival in West Africa, 28-30 Sept 2009, Bamako, Mali

Synthèse des activités de l' Unité ECTAD Bamako au CRSA Afrique de l'Ouest et Centre, Oct 2009

Unité Régionale FAO/ECTAD au CRSA Bamako : Plan de travail, Oct 2009

West and Central Africa Network of Diagnostic Veterinary Laboratory for AI and others TADs. Second Action Plan 2009, B.Seck

Plus more than twenty FAO Project documents (both regional and national) and reports of regional workshops and events organized by ECTAD Bamako.

ANNEX 3: Terms of Reference ECTAD Sub-regional Units

The terms of reference of ECTAD (sub-)regional units include the following responsibilities:

- ensure establishment of operational and technical capacities at regional, subregional and country level through efficient decentralized mechanisms;
- assist the heads of FAO Decentralized Offices with mainstreaming HPAI and TADs concerns into FAO's national, subregional and regional priority frameworks;
- gather and consolidate information on HPAI and other TADs and support, in close collaboration with the FAO Representative, country needs assessments;
- advise the CVO, with copy to the concerned heads of FAO Decentralized Offices, on the disease situation in the region including strategic recommendations on FAO's response;
- in consultation with the concerned FAO Representative, maintain links with member countries and advise the governments on the formulation of relevant response strategies;
- in close cooperation with concerned heads of FAO Decentralized Offices, (sub)regional institutions and partners develop a (sub)regional programme based on a (sub)regional strategy to be updated on a yearly basis;
- promote and foster, in collaboration with the concerned head of FAO Office, regional networks (epidemiology, surveillance, laboratories, wildlife and socio-economics and production);
- building on FAO's multidisciplinary and in consultation with the concerned heads of FAO Decentralized Offices, ECTAD Programming Unit, EMPRES and with partners, assist in the formulation of relevant programmes and projects;
- design and implement, in collaboration with heads of FAO Offices, a regional fund raising strategy and support FAO Representatives with country level fund raising initiatives concerning HPAI and TADs; promoting ECTAD programmes in the region with government partners, UN Agencies, NGOs and donors and facilitating partnerships;
- facilitate at regional and subregional level the programming of donors resources; take the lead for the development and implementation of Standard Operating Procedures for management of ECTAD operations at regional and country level;
- take direct responsibility for implementation (including reporting) of regional and subregional projects as well as projects in countries with no FAO Representative;
- carry out backstopping missions in support to country operations;
- continuously Monitor implementation of HPAI and other TADs operations in the region; contribute to the mobilization of CMC/AH missions and collaborate with them in taking follow-up measures upon completion of the mission.
- participate, with guidance of the head of FAO Decentralized office, in interagency/donor coordination meetings and programming exercises concerning HPAI/TADs;
- prepare regularly updated briefs, for concerned Headquarters units and heads of FAO Decentralized Offices, on regional/subregional projects and on country projects for countries where there is no ECTAD country team.

SECOND REAL TIME EVALUATION OF FAO's WORK ON HIGHLY PATHOGENIC AVIAN INFLUENZA

REGIONAL REPORT: ECTAD NAIROBI (EASTERN AFRICA)

23 OCTOBER 2009

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I. INTRODUCTION

When highly pathogenic avian influenza (HPAI) spread to Africa, the Middle East, Central Asia and Europe early in 2006, FAO decided to establish regional ECTAD units in the affected regions. In Africa and the Near East, FAO and OIE agreed jointly to establish Regional Animal Health Centres (RAHCs)¹ on the basis of soon-to-be created FAO ECTAD offices and OIE (sub-) regional representations.

The first regional ECTAD office for Africa was established in Bamako at the end of 2006; that in Nairobi was established in July 2007. These units were not reviewed in detail by the First Real Time Evaluation (RTE), as they had hardly been established. The first RTE report noted the early start of “regional activities” using TCP funding in Africa and the Near East. Their report qualified this move as “a very positive strategy during that early phase when donors and others are not yet moving, and early in the disease spread when key advice can have a much greater impact.”

¹ ECTAD Functions, Structure and Instruments (2007)

Prof. Brian Perry, Dr Emmanuel Camus from CIRAD and Dr. Humphrey Mbugua visited the ECTAD Nairobi office on 23rd October as part of the Second Real Time Evaluation of FAO's Work on Highly Pathogenic Avian Influenza. In line with the evaluation's terms of reference and the inception report, the focus of the visit was to evaluate the relevance, efficiency, effectiveness, sustainability and likely impact of the assistance provided by ECTAD Nairobi in the past few years. The Office of the Regional Manager prepared a programme of meetings (see annex 1), provided documentation and materials relating to the office's work (annex 2) and made logistical arrangements for the mission.

ECTAD Eastern Africa was established to facilitate the sharing of information and to ensure the provision of technical assistance to FAO member countries before and during animal disease outbreaks. The centre supports trans-boundary animal diseases prevention, control and eradication campaigns in the region in close collaboration with regional epidemiology and laboratories networks. ECTAD Eastern Africa has its headquarters in Nairobi, Kenya and covers ten countries namely: Burundi, Djibouti, Ethiopia, Eritrea, Kenya, Rwanda, Somali, Sudan (South and North), Tanzania and Uganda.

According to the ECTAD Eastern Africa website (<http://www.fao-ectad-nairobi.org/>), the role of the RAHC is designated as:

- The establishment and maintenance of working networks with Government Ministries, NGOs, Research organisations, Universities, other relevant institutions (AU-IBAR, RECs), and donors
- Prepare concept notes and proposals for the prevention and control of HPAI and other trans-boundary animal diseases within the region
- Provide technical backstopping on epidemiology, laboratory, socio-economics and coordination of HPAI and other trans-boundary animal diseases in the region, through the identification and filling of gaps in laboratory diagnosis and surveillance capacities
- To review and develop poultry sector analysis and the harmonisation of relevant legislation for the improvement of poultry production.

Within the RAHC, the ECTAD unit provides countries with expertise in the following areas:

- Epidemiology
- Preparedness and contingency planning
- Disease surveillance and control
- Veterinary laboratories
- Animal production
- Socio-economics (livelihoods, value chain and trade flows analysis and impacts of animal diseases and their control programmes.)
- Communication (risk communication in particular) and
- Implementation of operations (management of full project cycle)

Initially established to strengthen FAO's capacity to respond effectively to the HPAI crisis, the ECTAD unit, particularly in non-HPAI infected regions, gives support to economically important TADs such as PPR, FMD and RVF, in close coordination with the specific roles of OIE (standard setting) and AU-IBAR on policy.

In carrying out its assessment the evaluation team has taken into account the responsibilities assigned to ECTAD sub-regional units as defined in the ECTAD Functions, Structure and Instruments Charter (see annex 3) and relevant strategic documents for the region.

II. OVERVIEW OF ACTIVITIES

In 2006-2007, a regional TCP/RAF/3017 (US\$ 400,000) was implemented covering eastern and southern Africa to “strengthen the capacity for generating and sharing HPAI disease intelligence and using this to mount emergency preparedness planning against the eventuality of HPAI being introduced into the region, specifically in relation to migration of and trade in domestic and wild birds.” About US\$ 65,000 were also allocated through project OSRO/RAF/612/USA to “support laboratory capacity to conduct Animal Disease Surveillance and Diagnosis in Burundi, Djibouti, Somalia and South Sudan”. These two activities took place before the establishment of ECTAD Nairobi, but, particularly the regional TCP, provided a diagnosis and a preliminary assessment of the regional situation, thus laying the ground for the development of the current portfolio.

Funding. In 2007-08, FAO mobilized SFERA funds and its own resources to partially cover operating costs of the newly established regional structure for HPAI and other TADs. Also in the same period donors such as the OPEC Fund (US\$ 700,000), USAID (US\$ 1,209,600), Canada (US\$ 150,000) and the European Commission (Euro 1,680,000) agreed to fund inter-country programmes. A complete list of regional and national projects in eastern Africa largely implemented and/or backstopped by ECTAD Nairobi can be found in tables 1 and 2.

Staffing and location. In 2006-07 FAO had an international regional co-ordinator (Epidemiologist) based in Rome who was responsible for five TCP projects and a regional coordinator based in Nairobi (AU-IBAR) for TCP/RAF/3017. Following the progressive implementation of donor-funded activities and the arrival of the Regional Manager in July 2007, the unit’s staffing increased after one year of operations to nine full time employees (one senior staff member/regional manager, five specialized consultants, one operations officer, one administrative assistant/secretary and one logistician/driver).

ECTAD Nairobi has technical and functional linkages with staff at HQ (in AGA and TCE), but particularly with FAO’s CVO, as well as in decentralized offices such as the FAO Sub Regional office for Eastern Africa (SFE) located in Addis Ababa, the FAO Representative in Nairobi, Kenya and the Regional Office for Africa of the FAO Emergency Division (TCE) also located in Nairobi, Kenya. Of particular importance for the functioning of ECTAD are the technical contacts with AGA staff in SFE and HQ, and, for operational and fundraising purposes, TCE staff in Nairobi and Rome. There is also daily contact with the TCES Food Chain Crisis – Emergency Management Unit in relation to other TADs of importance (such as RVF, PPR, etc.).

Currently the ECTAD Eastern Africa office is headed by a regional manager, working with a multidisciplinary team consisting of two epidemiologists, one person in livestock production and biodiversity (mostly poultry), one in socioeconomics, an operations staff member (to be transferred from Rome to Nairobi), and a communications expert (whose contract in ECTAD was ending at the time of the RTE team visit). The ECTAD team is housed within the offices of AU-IBAR in Nairobi. FAO makes financial contributions to common services and utilities.

Coverage: The office currently covers ten countries namely: Burundi, Djibouti, Ethiopia, Eritrea, Kenya, Rwanda, Somalia, Sudan (South and North), Tanzania and Uganda. Two of these countries, Djibouti and Sudan, have reported cases of HPAI. Djibouti reported one non-fatal human case of H5N1 in 2006.

Table 1. Regional Projects in Eastern Africa

Project symbol	Project Title	Donor	Total budget	Delivery	EOD	NTE	Beneficiary countries
OSRO/RAF/802/EC	Avian Influenza Regional Response	EC	2,173,349	102,714	10-Jun-08	09-Jun-11	Burundi, Kenya, Rwanda, Tanzania, Uganda
OSRO/RAF/718/USA	Strengthening capacity of the eastern Africa sub-region to prevent and control HPAI	USAID	1,209,600	958,975	01-Oct-07	30-Sep-10	Burundi, Djibouti, Ethiopia, Kenya, Rwanda, Sudan, Tanzania and Uganda
OSRO/GLO/702/CAN Child	Contribution of the Government of Canada to FAO's global programme for HPAI control and eradication in support to Africa other regions	Canada	2,609,120	1,732,648	14-Mar-07	13-Apr-10	All Eastern Africa
OSRO/RAF/722/SWE	Support for the control of HPAI in Sub-Saharan Africa	Sweden	2,246,215	1,552,395	28-Nov-07	31-Dec-09	All Eastern Africa
OSRO/GLO/605/OPF	"Socio-economic support to livelihoods of smallholder farmers by strengthening avian influenza control strategies and capacities in East Africa"	Opec Fund	700,000	661,907	01-Feb-07	31-Dec-08	Burundi, Kenya, Rwanda, Tanzania, Uganda, Sudan, Somalia, Eritrea, Djibouti, Ethiopia
OSRO/GLO/504/MUL Baby 4	Emergency assistance for the control and prevention of avian influenza	France	1,976,807	1,956,650	01-Jan-2006	30-Apr-2007	All Eastern Africa
OSRO/GLO/601/SWE Baby 2	Emergency assistance for the control and prevention of avian influenza- AI activities in Africa South of Sahara	Sweden	1,139,349	1,136,129	28-Apr-2006	31-Dec-09	All Eastern Africa
OSRO/GLO/604/UK Child	To support the implementation of the "Avian Influenza Response Programme" through the "Special Fund for Emergency and Rehabilitation Activities (SFERA)" in the countries affected by the epizooty	UK	1,796,218	1,479,962	29-Mar-07	31-Mar-10	All Eastern Africa
OSRO/RAF/612/USA Baby01	Supporting laboratory capacity to conduct Animal Disease Surveillance and Diagnosis	USAID	65,000	58,347	01-Jul-06	30-Mar-09	All Eastern Africa
GCP/INT/010/GER	Promoting strategies for prevention and control of HPAI that focus on smallholder livelihoods and biodiversity	Germany	340,026	296,469	15-Aug-06	15-Nov-09	Uganda
TCP/RAF/3017	Emergency assistance for early detection and prevention of avian influenza	FAO	363,101	363,101	1-Nov-05	30-June-07	Eastern and Southern Africa
Total			<u>14,618,785</u>	<u>10,299,297</u>			

Table 2. National Projects in Eastern Africa (backstopped by ECTAD Nairobi)

Project symbol	Project Title	Donor	Total budget	Delivery	EOD	NTE	Beneficiary countries
OSRO/KEN/601/UK	“Early detection, prevention and control of avian influenza in Kenya”	UK	1,683,607	1,669,887	01-Jul-06	31-Aug-08	Kenya
OSRO/ETH/601/MUL	“Urgent Intervention for the Early Detection, Prevention, and Control of Avian Influenza in Ethiopia”	UK, USA	2,163,231	2,035,461	01-Mar-06	30-Apr-10	Ethiopia
OSRO/UGA/603/UK	“Funding proposal for a Consultancy Mission to Develop a National Strategy and formulate an Implementation Project for HPAI Preparedness, Prevention and Response in Uganda”	UK	43,013	25,431	20-Feb-06	13-Mar-06	Uganda
OSRO/UGA/604/USA	“Emergency assistance for the implementation of the surveillance and communication components of the National Plan of Action for Preparedness and Response to Avian Influenza in Uganda”	USA	375,000	363,999	01-Aug-06	31-Mar-09	Uganda
OSRO/UGA/711/USA	“Support the implementation of surveillance and communication components of the National Plan of Action for Preparedness and Response to HPAI in Uganda”	USA	417,850	276,066	01-Dec-07	30-Jun-10	Uganda
Total			<u>4,682,701</u>	<u>4,682,701</u>			

III. ROLES, RESPONSIBILITIES AND IMPACTS IN THE REGION

Roles and responsibilities: The technical role of ECTAD Eastern Africa in the region is focussed on five interrelated disciplinary areas. These are:

- Epidemiology (in particular through the recent establishment of an Eastern Africa Epidemiology Network, EAREN),
- Livestock production and biodiversity,
- Socio-economic assessments,
- Diagnostic laboratory capacity development and networking (under the auspices of the Eastern Africa Regional Laboratory Network, EARLN),
- Communications (recently suspended; the ECTAD unit has been seeking funds for a more stable position for a communications officer).

Activities on wild bird surveillance have also been conducted in the region (particularly in Ethiopia, Kenya and Sudan) in partnership with CIRAD and Wetlands International; these have largely been managed from FAO HQ with little involvement of ECTAD Nairobi.

Epidemiology:

This activity has been supported by OSRO/RAF/718/USA, OSRO/GLO/702/CAN Child, OSRO/RAF/802/EC and OSRO/RAF/722/SWE.

The EAREN is a relatively new initiative, trying to emulate the interchange of information and methodologies on disease occurrence achieved in many regions of the world, but until recently absent in the eastern African region. EAREN recently held an inauguration workshop in Mombasa, Kenya in which the goals and activities were discussed among the different regional countries represented². The objectives of the workshop were to establish contacts as part of building and bonding epidemiology teams, to refresh and / or update participants' knowledge on HPAI, to receive updated country reports on current HPAI status and national epidemio-surveillance systems, activities and plans, to review the findings of questionnaires on national epidemio-surveillance systems for HPAI and other TADs among others. The workshop made strong recommendations that were specifically targeted for various stakeholders involved in the control of Trans-boundary Animal diseases in the Eastern Africa region.

The network aims to:

- Revitalize national epidemio-surveillance networks through emulation of models and exchange of relevant information, and the training of national network officers (regional focal points).
- Harmonize the structure of the networks (notably articulation between field level surveillance and diagnosis) and support the setting up of realistic and operational strategic surveillance plans (including performance indicators).

The epidemiology team has also been involved in developing contingency plans and running simulations for HPAI preparedness. This included a table-top regional simulation and national level simulations undertaken in Tanzania, Kenya, Ethiopia and Uganda with separate USAID funding. The team is also engaged in strengthening the contributions of participatory disease

² http://www.fao-ectad-nairobi.org/IMG/pdf/FAO_Networking_Mombasa_Workshop_-_F.pdf

surveillance (PDS) to national mechanisms. Regular consultations were maintained between FAO ECTAD Nairobi and ILRI on the implementation of PDS training or refresher, field and laboratory activities in collaboration with NGOs in Kenya, Sudan (North and South) and Tanzania. A letter of agreement (LoA) has been developed between ILRI and FAO.

The epidemiology team has also been engaged in a pilot evaluation of digital pen technology (DPT) disease reporting in Kenya. This built on the concept that form-filling discourages the collection of epidemiological data and that application of modern communications tools e.g. mobile phones, could speed up surveillance reporting and hopefully trigger much faster action at field level. A field monitoring of the DPT trial was undertaken by a combined team from the Department of Veterinary Services (DVS) Kenya and FAO-ECTAD to the five trial districts. A workshop to evaluate the outcome of the trial was held in Machakos, Kenya from 16 – 18 September 2009. Workshop participants were drawn from DVS Head Office, Pilot districts, ECTAD – Eastern and Southern Africa and Kenya FAO Representation Office. Following technical presentations and group work discussions especially on comparison of the current DVS disease reporting system vis-à-vis the use of DPT for similar purpose, the workshop strongly recommended the adoption of the DPT animal disease reporting in Kenya and urged both the DVS and FAO to mobilize resources for the up-scaling of implementation of DPT in support of disease prevention and control, although questions of the sustainability of the technology were raised.

Diagnostic laboratory capacity:

This activity has been supported by OSRO/GLO/702/CAN Child and OSRO/RAF/612/USA Baby01.

The Eastern Africa Regional Laboratory Network (EARLN) was launched in Debre Zeit, Ethiopia in June 2008. The meeting was attended by participants from Burundi, Ethiopia, Kenya, Somalia, Sudan, Rwanda, Tanzania and Uganda, FAO Headquarters, FAO-ECTAD-Nairobi, OIE/FAO Reference Laboratory, Padova (Italy), AU-IBAR and PANVAC. The purpose of the workshop was to receive updated country reports on current HPAI status and activities, refresh and/or update participants' knowledge on HPAI laboratory safety codes, basic and molecular methods for Avian Influenza diagnosis as well as sample collection, processing, storage and shipment. Discussions held were designed to arrive at consensus on the following broad topical issues:

- Harmonization of standardised laboratory protocols for HPAI throughout the network
- Organization and participation in inter-laboratory exercises such as competency and proficiency tests as well as arrangements for implementation of such tests.
- Mechanisms of sharing of information useful to the network
- Appointment of specific national and regional focal points to be linked to the network
- Considerations on stakeholder roles including that of the ECTAD unit of the Regional Animal Health Centre (RAHC) for Eastern Africa in the network
- Mapping out ways and means to operate and sustain the network
- Training equipment and other material needs
- Criteria and road map for designation of regional AI laboratories

As a basis for selection of regional laboratories, an evaluation of the status of central veterinary laboratories in the region has been undertaken. So far the CVLs in Burundi, Ethiopia, Kenya, Tanzania, southern Sudan, Djibouti, and Somalia have been completed. The

assessments were carried out by IZSve, OIE/FAO reference laboratory Padova, Italy in collaboration with ECTAD Nairobi.

Laboratory personnel from Ethiopia, Kenya and Tanzania have been sponsored to attend advanced course in diagnostic techniques for HPAI and Newcastle disease at the OIE/FAO reference laboratory in Padova, Italy. A PCR *in situ* training was conducted for CVRL, Khartoum personnel by a scientist from IZSve, Padova, Italy.

Four CVLs (Ethiopia, Kenya, Sudan and Tanzania) have participated in proficiency/inter-laboratory ring trials for HPAI and Newcastle disease diagnosis in November 2008. The tests involved were serological and molecular (PCR) procedures. The results were mixed and important lessons were learned and these will act as guides in the design of targeted training for individual or group trainings.

The Annual Coordination meeting for EARLN was held in Kigali, Rwanda in July 2009. The purpose was to receive updated country reports on current activities of national AI diagnostic laboratories and future work plans, update participants on the status of HPAI and Influenza H1N1 in the region as well as to review the overall progress and activities of the laboratory network in the previous one year. The workshop also discussed findings of laboratory proficiency/competency tests and assessments that have so far been carried out in the region. The workshop offered an opportunity to exchange information on the existing diagnostic laboratory and epidemio-surveillance network in West and Central Africa. Perspectives on linking epidemio-surveillance and laboratory networks as well as modalities of integrating the laboratory network into the organs of the RECs were discussed.

Livestock production and biodiversity

These activities have been supported by RAF/718/USA; RAF/802/EC; 702/CAN and the closed OPEC project; they can be conveniently divided into four main groups:

1. Training workshops on safe poultry production in sectors 3 and 4 have been conducted in Kenya and Tanzania (2008) and in southern Sudan (2009). Each workshop was attended by 25 participants including field veterinarians, para-veterinarians, farmers and poultry production associations (where available). The coverage of the workshop was general poultry production with emphasis on biosecurity practices on the farm and markets. The workshops were conducted through collaboration between Ministries responsible for livestock; higher learning institutions involved in animal health and were backstopped by FAO ECTAD unit at RAHC.
2. Review and analysis of the poultry sector in the countries within the region. Country poultry sector reviews have been accomplished in seven countries in the region namely, Burundi, Ethiopia, Kenya, Rwanda, northern Sudan, Tanzania and Uganda. Five reports (Burundi, Ethiopia, Kenya, Tanzania and Uganda) have already been published by FAO. The Rwandan country poultry sector review is complete but is currently being translated into English from French. The northern Sudan report is being finalized in Rome. A consultant is currently working on the poultry sector review for southern Sudan.

Specific studies to evaluate Poultry Biosecurity in Kenya, Tanzania, Ethiopia and northern Sudan were commissioned. The Kenya, Tanzania and Northern Sudan studies

are at different stages of technical review, while the one in Ethiopia has been completed.

3. Production and distribution of literature for safe poultry production. Two main publications were produced to assist stakeholders in safe poultry production.
 - There is the farmers guide in simple language and plenty of illustrations titled “How to Grow Healthy Chickens – Improve your Income”.
 - The second publication is a manual for trainers and producers titled “Good Practices in Small Scale Poultry Production: A manual for trainers and producers in East Africa”
4. Backstopping for field testing of the Hay Box Brooder Technology. A simple technology for artificial brooding for chicks in small-scale poultry sector developed at the Jimma University (Ethiopia) was tested in the field in Ethiopia, Kenya and Tanzania. FAO financed the testing and provided backstopping during implementation. The testing has been concluded in Ethiopia and Kenya and is nearing completion in Tanzania.

Socioeconomic studies

These activities have been supported by OSRO/GLO/605/OPF, OSRO/RAF/718/USA, OSRO/RAF/802/EC and **TCP/RAF/3113 (E)**

Activities under the umbrella of socioeconomics have fallen into the following main categories:

- Poultry and livelihoods (understanding the dynamics, importance and roles).
- Poultry value chains and trade flows- mapping, characterization, and identification of biosecurity lapses, being undertaken in Kenya, Uganda, Tanzania and southern Sudan.
- Impact assessment of diseases and their programmes on livelihoods and national economies
- Economics of poultry production, (incomes, gross margins, net returns, will farmers invest in biosecurity?)
- Development of compensation strategies. These have been completed for Kenya and Uganda. The process is on for southern Sudan and Tanzania. In Kenya and Uganda they have now been adopted at the veterinary department level, but the funding of such schemes remains a big issue. In Tanzania disaster management funds are being considered, while in Kenya a livestock development fund is under consideration. Uganda is the only country of the region where the compensation plans have been adopted as policy.

National project support

The regional ECTAD has also provided some specific project support and backstopping to country projects in Ethiopia, Kenya, Uganda and the Great Lakes area. For Kenya, the project OSRO/KEN/601/UK, Early detection, prevention and control of avian influenza in Kenya, is an example, with a diverse set of contributions on surveillance, preparedness, communications and laboratory capacity development. For Uganda, two projects OSRO/UGA/604/USA & OSRO/UGA/711/USA were backstopped by this unit. In both cases

the timeliness and quality of the inputs provided by ECTAD Nairobi were reportedly key for the successful completion of these initiatives (see projects results chain in annex 4).

ECTAD Institutional environment

The Eastern African ECTAD unit is housed in the AU/IBAR (Inter-African Bureau for Animal Resources) facilities. IBAR was created in 1951 to eradicate rinderpest. In 1965, IBAH (Inter-African Bureau for Animal Health, as it was then known) became a regional technical office of the OAU. In 1970 it took the current name of IBAR. In 2003, IBAR was put under the supervision of the AU Department of Rural Economy and Agriculture. IBAR is clearly identified by most as being the lead continental institution engaged in promoting livestock production and health, and has gained increasing credibility and recognition in this role, but it is still to emerge from its high dependency on project funding. At the continental level, IBAR is increasingly viewed by most stakeholders as the lead political institution in animal health and production; the weight of its recognition has regional differences, depending on the relative strength of other organisations. The close interface with the FAO is seen as extremely valuable. It is understood that OIE is soon to appoint a regional coordinator for Eastern Africa, to be housed under the same roof. The World Bank-sponsored ALive Initiative already has an officer hosted by AU-IBAR in Nairobi.

External to this partnership, but very important to the success of the ECTAD office, are the regional economic consortia (REC), which in eastern Africa are plentiful. They include the East African Community (EAC), the Common Market for Eastern and Southern Africa (COMESA), the Intergovernmental Authority on Development (IGAD), and on overlap (in the case of Tanzania) with the Southern African Development Community (SADC). This multiple and confusing membership creates duplication and sometimes competition in activities. It seems reasonable to assume that the regional capacities in animal production and health would be better positioned under a united regional economic community, should that ideal become a reality.

Table 3. Membership of Eastern African countries to RECs³

RECs / IGOs COUNTRIES	COMESA	IGAD	EAC	CEN-SAD	CEPGL	ICGLR	IOC	SADC	ECCAS	Total
Burundi	X		X		X	X			X	5
Comoros	X						X			2
DR Congo	X				X	X		X	X	5
Djibouti	X	X		X						3
Ethiopia	X	X				X				3
Eritrea	X	X		X						3
Kenya	X	X	X	X		X				5
Madagascar	X						X	X		3
Rwanda	X		X		X	X		X		5
Seychelles	X						X			2
Somalia		X		X						2
Tanzania			X			X		X		3
Uganda	X	X	x			X				4

³ http://www.uneca.org/ice/content/ICE-state_regional_integration-en.pdf

IV. PARTNERSHIPS

The Eastern African ECTAD appears to have developed many institutional partnerships, so important in the building of relatively new regional capacity in the arena of animal health. These have included the governments and veterinary departments of the ten countries it serves, the regional economic communities to which its members belong (and particularly the EAC), the various donor agencies operating in the region, the multitude of NGOs operating in the region, and the international research organisations, such as ILRI. These partnerships are potentially rewarding, but their development and maintenance are time consuming, and have a cost to them.

There is an opportunity to further develop partnership with the RECs. The EAC, for example, has a working group on HPAI⁴, which has amongst its terms of reference to coordinate, review and harmonise the AI surveillance, national preparedness and action response plans, functions which are very similar to that of the RAHC. AU-IBAR also has its own specific projects of animal and human influenzas, such as the Support Programme to National Action Plans for Avian and Human Influenza (SPINAP-AHI⁵), the Emergency Relief Support to combat Avian Influenza (ERSCA⁶) from the African Development Bank, which involves Sudan and Djibouti within the eastern African region, and is part of the USAID supported Early Detection, Reporting and Surveillance – Avian Influenza in Africa project⁷

V. CONTRIBUTION TO NATIONAL AND REGIONAL INITIATIVES

The Eastern African ECTAD has made very strong progress in a relatively short period of time in acquiring funds, developing sensible and supportive networking relationships with the countries it serves, and recruiting well trained and committed staff from the region to lead the different initiatives. Contributions have been strong in developing two networks (laboratory and epidemiology), which while could and should have been in place for years, have only emerged with the establishment of the ECTAD unit.

Beyond this the ECTAD has engaged in several bilateral partnerships with individual countries on specific projects in the different areas of disciplinary strengths.

VI. SYNTHESIS AND DISCUSSIONS OF REGIONAL ECTAD'S CONTRIBUTIONS

Co-ordination of regional and country activities;

The young ECTAD unit has done extremely well in establishing communication with the 10 countries within the region, and providing technical backstopping, training and specific project support to them. It has not been so much in terms of “coordination”, but rather “facilitation”. Within this communication, it has focussed on a few key areas. One area which appears to have received less corporate attention has been that of communication. In a new regional initiative such as this, and particularly in an environment where the focus is widening from HPAI preparedness and response to building on capacities for other priority diseases of the region, good communications between FAO ECTAD and its various partners, as well as to the key beneficiaries, will be extremely important. This is also critical as new partnership opportunities are explored with the RECs of the region.

⁴ http://www.eac.int/health/index.php?option=com_content&view=article&id=65&Itemid=121

⁵ http://www.au-ibar.org/ach_animhealth/spinap.htm

⁶ http://www.au-ibar.org/ach_animhealth/ersca.html

⁷ http://www.au-ibar.org/ach_animhealth/edrsaia.html

Formulation and implementation of regional programmes/projects;

This is an area in which the ECTAD unit has built on some of the more flexible funding to develop regional programmes of key relevance. Of particular importance are the initiatives on compensation and vaccine use policies for HPAI control. As the disease focus changes and/or widens to issues of Rift Valley fever, PPR, Newcastle disease, foot and mouth disease, etc. there will be a need for the ECTAD unit to provide strategic assistance to the regions as a whole. Of particular importance will be in the area of FMD control. The disease affects the entire region, and countries of the region have different aspirations as to how to address it, and better exploit regional market access opportunities. In this regard, the development of a strategic framework for ECTAD Nairobi that builds on the current and emerging regional programmes on HPAI and other TADs will be a valuable tool for long-term planning and will provide greater clarity in its interactions with regional partners and governments.

Another aspect to highlight is that since the creation of ECTAD Nairobi, Governments, donors, partners and other FAO staff have noted a more efficient, timely and responsive operation, especially when compared to the situation in the absence of the unit. Back in those times, FAO had little visibility, low responsiveness and poor implementation capacity.

Promotion and coordination of regional networks;

The Eastern African ECTAD has two networks that it is promoting (EARLN and EAREN), and both are in their infancy. Epidemiology and laboratory capacity are fundamental necessities within the region, and the RTE team gained the impression that these are off to a good start, broadening the horizons of national capacities in epidemiology and diagnostics, but also fostering interface and communications between countries, something that is surprisingly weak in eastern Africa. An important element of this is the evaluation of individual laboratories, bringing in objective international expertise into the evaluation process, in a progressive process of identifying a limited set of reference laboratories that meet the needs of all countries of the region.

Some partners met by the team raised the question of whether the ECTAD unit should be engaged in more network activities. While it is important to walk before running, there are several potential options to supplement the current set of networks. On the epidemiology side is the need to build the central capacity in each country with the overall responsibility for assuring data quality and sound analysis, potentially through regional courses which respond to priority needs in each country. This should ideally have a broader focus than HPAI, and this philosophy has been advanced by the ECTAD coordinator, but a move in this direction has been limited by funding restrictions. As part of this should be a greater understanding of the value of sound and well analysed epidemiology data in real time feedback mechanisms for decision makers such as CVOs, and advocacy for greater funding to develop good “institutional epidemiology”.

Closely linked to this is a need for a market chain approach to understanding disease risk, as a way of identifying critical control points for surveillance and control interventions for a variety of priority diseases, not just HPAI. This is becoming ever more important in eastern Africa, as livestock commodity trading patterns within and outside the region diversify.

On the laboratory side, inevitably the ECTAD needs to be re-assessing national needs in the region with regard to other priority diseases, and seeking to progressively build regional mechanisms to enhance diagnostic capacities for these.

Advocacy and fund-raising for HPAI and Transboundary Animal Diseases interventions;

This is a perennial challenge for the ECTAD, and must be tackled in partnership with FAO Rome, with individual countries, and with specific donors. Most funding goes to individual countries, but regional initiatives like this play key roles in raising awareness, in promoting collaboration and in allowing for continued dialogue at the technical level in areas where political level disagreements between countries sometimes compromise good communications. ECTAD Nairobi has engaged the donor community, resulting in funding from USAID, OCHA and the EC. Continuous efforts are being made to get funding for PPR prevention and outbreak control through the prism of common humanitarian needs, restoration of peoples' livelihoods and food security and not merely as a generic disease control action.

The institutional and financial sustainability of the regional ECTADs and RAHCs;

From an institutional viewpoint, the concept of having an "indigenous" regional capacity which can promote regional communication and collaboration, as well as demand-driven national level support in specific areas, is an ideal that few would contest. And the promotion of a central role of AU-IBAR also represents continued, some might argue long overdue, leadership in this area. The RTE evaluation team, while endorsing the initiative of FAO and OIE as international organisations who have responsibly responded to a particular crisis, questions as to whether these organisations should be mobilizing resources for the establishment of RAHCs on their own. The difficulty is, however, the weak institutional capacity of AU-IBAR, and the fact that it is still in the early stages of drawing up agreements on RAHC establishment in Bamako and Gaborone. A pragmatic way forward, at least for a few years, is probably a partnership arrangement in which FAO (and OIE, within its mandate) to provide the technical and some operational support to RAHCs, supporting the strong political leverage (at least in eastern Africa, but potentially growing in the other regions) of AU-IBAR.

Part of that comparative advantage is of course providing advice and support to proposals for ensuring the financial sustainability of these regional centres of expertise. This will be a critical area as the funding for HPAI wanes.

The efficiency and adequacy of working arrangements within FAO (with HQ, regional and country offices)

ECTAD Nairobi has established excellent relations with FAO HQ, SFE, the TCE office in Nairobi (Regional Emergency Office for Africa – REOA), and the FAO country representation in Kenya and other FAO country offices within the region. A main factor for this success is the presence of a well respected and motivated FAO team leader who is supported by a multidisciplinary team of scientists from the region, with epidemiologists, a laboratory specialist, animal production, socio-economics, communications (until recently) and operation specialists. It is very important that the standards of staff recruited to such regional positions is extremely high, that staff are seen to be drawn from many countries of the region, not just the host country, and that gender issues are considered in recruitment, if the regional ECTAD is to demonstrate clear comparative advantage over national institute capacity, as well as set high standards for the future. Skills should not only include high technical competence, but also good communications, facilitation and interpersonal skills.

Conclusions and recommendations

The RTE team concludes that the sub-regional ECTAD for eastern Africa has set itself a sound institutional base, building a key partnership with AU-IBAR, sharing office accommodation with the pan-African institution. It is encouraged to understand that a sub-regional representation for OIE will soon be established within the same grouping. The ECTAD has built up a multi-disciplinary team covering the key areas of laboratory support, epidemiology, socioeconomics, livestock production and, until recently, communications. This team is well placed to handle both sub-regional projects, as well as provide coordinated support to national projects to the countries in the region.

The RTE team concludes that FAO is playing a most important role in building this embryonic but important regional leadership in livestock disease preparedness and control, and also concludes that stronger interface with the various RECs operating in the region could only be of advantage.

On this basis, the evaluation team recommends FAO the following priority actions:

At regional level:

- Give greater priority to the formalization of partnerships with AU-IBAR and OIE in line with the original RAHC concept. This should be carried out in parallel to the development of a strategic framework and work plan for ECTAD Nairobi.
- For future funding and institutional strengthening of the RAHC, engage in discussions with the EAC, COMESA and IGAD concerning their specific sub-regional animal health priority demands, as well as longer term funding opportunities.
- Continue and expand research/development linkages with other partners in the region, such as ILRI, for support to capacity development in disease surveillance, value chain analyses and risk assessment, with the aim of providing stronger strategic support to the national veterinary services of the region.
- Enhance mobilization of resources from regional donors such as the EU, ideally in partnership with the RECs. The appointment of a permanent operations officer with programming and fundraising experience to help designing projects in the right format for each donor should also be considered.
- Continue to develop and promote the regional networks on epidemiology and diagnostic capacity and pursue the evaluation of laboratory capacity with a view to identifying regional reference laboratories, and explore modalities for their effective use.
- Consider expanding the epidemiology capacity development in the region to take into account the need for a greater understanding of the value of sound and well analysed epidemiology data in real time feedback mechanisms for decision makers such as CVOs, and advocacy for greater funding to develop good “institutional epidemiology”.
- Ensure that the communications position is re-introduced and assess on a regular basis the need for additional expertise based on regional needs (such as on wild bird surveillance).

At national level:

- Continue to provide demand-driven backstopping support to the countries of the region on issues such as national policy development.
- In close co-ordination with FAO country offices and Government Authorities provide support to strategic development processes (such as the development of INAPs) including playing a role in the mobilization of resources for plan implementation.

ANNEX 1. List of People Met

List of People Met by the RTE team in Nairobi-FAO/ECTAD & AU-IBAR

	Name	Rank
1	Nouala Simplicie	Ag. Director; AU-IBAR
2	Samuel Muriuki	SPINAP Coordinator; AU-IBAR
3	Germain Bobo	ALive Coordinator; AU-IBAR
4	William Amanfu	Regional Manager-FAO ECTAD Unit, Nairobi
5	Peter Msoffe	Poultry Production Biosecurity/Biodiversity; FAO
6	Tabitha Kimani	Socio-economist; FAO
7	Joseph Litamoi	Veterinary Epidemiologist/Laboratory focal point; FAO
8	Samuel Okuthe	Veterinary Epidemiologist
9	Abdoulkarim Bah	Operations Officer; FAO Hqrs (to be transferred to Nbi)
10	Joseph Othieno	National Communications Consultant
11	Rose Kibanya	Administration Assistant
12	Alban Bellinguez	DG Technical Advisor, AU-IBAR

In addition, the evaluation team also interacted with representatives of partner organizations from the region such as ILRI, USAID, OIE, PANVAC, etc. as well as with FAO staff from the Kenya representation and the FAO Regional Emergency Office for Africa in the Regional Stakeholders Workshop held in Nairobi (see proceedings of the workshop).

ANNEX 2. Documentation Reviewed

Technical Reports

- Omiti, J., Okuthe, S. 2009. Overview of poultry sector and status of HPAI in Kenya. Africa Indonesia Team Working Paper No 4.
- Thurlow, J. 2009. Implications of avian influenza for economic development in Kenya. Africa Indonesia Team Working Paper No 22.
- Siraw, B., Chaka, H. 2009. Qualitative risk assessment for the introduction of H5N1 into Ethiopia. Africa Indonesia Team Working Paper No 21.
- Alemu, D., Degefe, T., Fereda, S., Nzietztcheung, S., Roy, D. 2009. Overview and background paper in Ethiopia's poultry sector: relevance for HPAI research in Ethiopia. Africa Indonesia Working Paper No 1.

ECTAD Staff Reports

Back to Office Reports of ECTAD Manager (BTOR)

- Mission to Amman 27 June-2 July 2008
- Mission to Bamako 2-8 December 2007
- Mission to Ethiopia 10-14 June 2008
- Mission to Ethiopia 16-22 September 2007
- Mission to France 4-7 February 2008
- Chief Technical Advisors Meeting in Nairobi July 2008
- Mission to Kampala 2-6 March 2008
- Mission to Kampala 12-15 August 2008
- Mission to Lusaka 8-11 July 2008
- Mission to Paris 21-23 July 2008
- Mission to Pretoria 7-8 April 2008
- Mission to Tanzania 22-27 May 2008
- Mission to Uganda 26-29 March 2008

BTOR and documents of Poultry Production Expert

- TOT Workshop Morogoro 21-23 July 2008
- Ethiopia UMM 1 November 2007
- Tanzania EAC UMM Meeting 3-7 June 2008
- Uganda UMM Meeting 28 August 2007
- SPINAP Workshop Kampala 13-15 August 2008
- Workshop Proceedings of OPEC Project
- Tot Manual OPEC Project
- End of Contract Report, Poultry Production Expert
- Final Project Report
- First Progress Report
- OSRO/605 Project Document
- Ethiopia Poultry Sector Country Review
- Kenya Poultry Sector Country Review
- Tanzania Poultry Sector Country Review
- Uganda Poultry Sector Country Review
- Kenya Biosecurity Country Report
- Tanzania Biosecurity Country Report
- OPEC Project Training Manual
- Arusha TADS
- Bangladesh Poultry Country Farming

TOT Kenya Workshop Proceedings
TOT Tanzania Workshop Proceedings
Several Power Point presentations

BTOR and documents of Epidemiology Expert

BACK TO OFFICE REPORT ERITREA-Litamoi-final
BTOR-TCP-SUD-3105-Okuthe
Uganda, Soroti 17-21 Sep.08
Uganda 25-26Apr.08
Tanzania 23-28 Sep.07
FSNWG-Note for the File
Ethiopia 8-14 Jun.08
Ethiopia 8-14 Jun - HPAI Lab Network Report
Ethiopia 5-16 Aug.07
Eriteria 3-7 Nov.07
Terminal Report Project TCP/3017
Inception Workshop Report Project OSRO/RAF/718
HPAI Laboratory Networks Report
Several Power Point presentations

Communications Reports

Avian Influenza Communications Workshop Proceedings
ECTAD-UNICEF Meeting 04.07.08
BTOR_Mali_27_07_08
Mali 27-31Jul.08
Uganda 15-19 Sep.08

Operations reports

End of contract report
ToR communication for Mission to Dar and Arusha
BTOR Tanzania
GANTT - USAID Regional
718 quarterly report 07 to 09 2008
Narrative report 711 UGA
Narrative report RAF 612
Narrative report RAF 718

Various BTOR and documents

Adul - TOT Workshop - KENYA 2-4 Jul.08
Mission of Antonnio Stocchi
Nicolas- Kenya April 2008
Rose- Harare.
Taylor- Mission Report-Nairobi TCP-RAF-3113E
AI coordination meeting - East Africa 15th September 2008
ECTAD Unit Team Meeting 23rd June Final
minutes from 29 November 2007 socio-economic meeting
Minutes from OCHA meeting
Minutes of DFiD meeting
Minutes of ECTAD meeting with Sabrina 28 Feb. final
Minutes of ECTAD Unit meeting Sept 5th

Minutes of ECTAD Unit team meeting Sept 30
Minutes of USAID date setting meeting
Minutes on Socio economic handover meeting
RAHC weekly Corrected meeting 01 Oct 07
Team Meeting Minutes 28 Jan 08
RAHC-13 Sep
RAHC-27th Aug

ANNEX 3: Terms of Reference ECTAD Units

The terms of reference of ECTAD (sub-) regional units include the following responsibilities:

- ensure establishment of operational and technical capacities at regional, subregional and country level through efficient decentralized mechanisms;
- assist the heads of FAO Decentralized Offices with mainstreaming HPAI and TADs concerns into FAO's national, subregional and regional priority frameworks;
- gather and consolidate information on HPAI and other TADs and support, in close collaboration with the FAO Representative, country needs assessments;
- advise the CVO, with copy to the concerned heads of FAO Decentralized Offices, on the disease situation in the region including strategic recommendations on FAO's response;
- in consultation with the concerned FAO Representative, maintain links with member countries and advise the governments on the formulation of relevant response strategies;
- in close cooperation with concerned heads of FAO Decentralized Offices, (sub)regional institutions and partners develop a (sub)regional programme based on a (sub)regional strategy to be updated on a yearly basis;
- promote and foster, in collaboration with the concerned head of FAO Office, regional networks (epidemiology, surveillance, laboratories, wildlife and socio-economics);
- building on FAO's multidisciplinary and in consultation with the concerned heads of FAO Decentralized Offices, ECTAD Programming Unit, EMPRES and with partners, assist in the formulation of relevant programmes and projects;
- design and implement, in collaboration with heads of FAO Offices, a regional fund raising strategy and support FAO Representatives with country level fund raising initiatives concerning HPAI and TADs; promoting ECTAD programmes in the region with government partners, UN Agencies, NGOs and donors and facilitating partnerships;
- facilitate at regional and subregional level the programming of donors resources; take the lead for the development and implementation of Standard Operating Procedures for management of ECTAD operations at regional and country level;
- take direct responsibility for implementation (including reporting) of regional and subregional projects as well as projects in countries with no FAO Representative;
- carry out backstopping missions in support to country operations;
- continuously monitor implementation of HPAI and other TADs operations in the region;
- contribute to the mobilization of CMC/AH missions and collaborate with them in taking follow-up measures upon completion of the mission.
- participate, with guidance of the head of FAO Decentralized Office, in interagency/donor coordination meetings and programming exercises concerning HPAI/TADs;
- prepare regularly updated briefs, for concerned Headquarters units and heads of FAO Decentralized Offices, on regional/subregional projects and on country projects for countries where there is no ECTAD country team.

Annex 4a: Results Chain of project OSRO/KEN/601/UK “Early detection, prevention and control of avian influenza in Kenya”

Goal	Objectives	Support areas	Services	Activities	Outputs	Outcomes
Address the short- and medium-term actions to be undertaken by the Government of Kenya to strengthen its capacity to rapidly detect the introduction of HPAI into the country and minimize its spread in the case of its occurrence.	(i) strengthen the capacity for surveillance and laboratory diagnosis of HPAI;	Disease Surveillance	Capacity building	<ul style="list-style-type: none"> * Carry out a stakeholder analysis of the poultry value chain. * Hold workshops for veterinarians and animal health assistances on disease recognition, disease reporting, collection and submission of biological samples for laboratory diagnosis; and use of rapid antigen tests for avian influenza, Newcastle disease and infectious bursal disease. * Prepare a surveillance/risk assess manual. * Develop a surveillance strategy for HPAI for use in the training above. * Undertake a risk assessment for the main pathways of introduction and spread of AI. 	<ul style="list-style-type: none"> * 777 participants, including 166 veterinarians and 169 animal health assistances, from the various stakeholder groups were trained on avian influenza, bio security, disease recognition, disease control, disease reporting, regulatory framework and import requirements to minimize risks of introduction of H5N1. This included five technical staff from different laboratories trained on the use of real-time reverse transcriptase polymerase chain reaction for H5N1 and Newcastle disease and on the use of enzyme-linked immunosorbent assay for sero surveillance of avian influenza. Almost 35 percent of the field veterinarians were trained on diagnosis of poultry diseases and surveillance. * A risk map for HPAI in Kenya developed using the risk assessment. * A surveillance and risk assessment manual developed. * A surveillance strategy for avian influenza in domestic and wild birds developed was developed to guide implementation of risk-based and targeted surveillance for avian influenza. 	<ul style="list-style-type: none"> * Government capacity to make laboratory diagnosis and carry out surveillance of avian influenza and clinically related diseases of poultry has markedly improved (The Central Veterinary Lab now has the ability to give a diagnosis of H5N1 within 30 minutes using a RAT kit and within 24 hours using real-time RT-PCR instead of 2-3 weeks). * A preparedness plan with strategies and protocols to follow in case of infection were prepared. * There is a better understanding of socio-economic implications of an outbreak of HPAI. * Awareness and information on early detection, prevention and control of HPAI has improved on the part of poultry producers, the general public and poultry consumers. * Provided any initial outbreak of avian influenza in birds is notified quickly and multiple outbreaks do not overwhelm available resources, Kenya should be able in the short term to prevent the disease becoming endemic and reduce the risk of it spreading to humans. In the long term, this enhanced capacity would improve disease control and contribute to improved incomes at the household level.
				[new] * Undertake a needs assessment for the procurement of laboratory equipment and supplies	* All Labs were provided with diagnostic reagents and other supplies. Regional Labs were also equipped with class II microbiological safety cabinets, while the Central Veterinary Lab was supplied with an automatic egg incubator, a gel documentation system and high precision digital pipettors.	
	(ii) develop emergency preparedness plans for HPAI	Emergency Preparedness	Policy advice	<ul style="list-style-type: none"> * Develop contingency plans and standard operating procedures (SOPs) for the prevention and control of HPAI. * Assess the current use of bio security in the poultry value chain. * Review the regulatory framework for safe poultry production. 	<ul style="list-style-type: none"> * A contingency plan for the prevention, early detection and rapid response to an HPAI outbreak developed and tested. This included the development of a clear chain of command and criteria for a compensation strategy. * Bio security guidelines that are appropriate to specific production scenarios were produced. * Review of the regulatory framework to make it more supportive of safe poultry production and marketing conducted. * Draft rules for implementation of compensation were developed for enactment by both Parliament and the Minister for Livestock Development. 	
	(iii) safeguard human health by improving public awareness and information	Support measure (communication)	Knowledge sharing	* Assess communication needs of veterinary and livestock extension staff.	<ul style="list-style-type: none"> * Pilot models for rapid community-based communication (reporting) were developed and an HPAI communication strategy developed and included in the contingency plan. * Field livestock extension staff from the Department of Livestock Production were trained on avian influenza prevention and control methodologies, particularly in disease recognition, bio security guidelines for avian influenza and communication. 	
(iv) undertake a comprehensive assessment of the socioeconomic impact	Support measure (socio-economics)	Policy advice / advocacy	* Assess socio economic impact of an outbreak of avian influenza	<ul style="list-style-type: none"> * An study of potential impacts associated with the threat of HPAI in Kenya was conducted. * An analysis of trade flow of poultry in Nairobi and its environs to determine the distribution of live bird markets and the sources of birds was conducted. * An study of duck farming systems in urban and rural areas was undertaken. 		

Annex 4b Results Chain, OSRO/UGA/604/USA "Emergency assistance for the implementation of the National Plan of Action for Preparedness and Response to Avian Influenza in Uganda"						
Goal	Objectives	Support area	Service	Activities	Outputs	Outcomes
Strengthen local capacity for emergency preparedness planning against the eventuality of HPAI being introduced into the region, through trade (legal and illegal) and migration of wild birds.	(i) Development and dissemination of the HPAI compensation policy and guidelines	Preparedness and prevention	Policy advice	* Assist in the development of a compensation policy for HPAI and conduct policy sensitisation. * Print, disseminate and communicate compensation guidelines for all levels (in major languages).	Initiation of compensation policy and guidelines.	* Increased awareness resulted in greater efforts by medium and small scale poultry producers to comply with bio security measures. This has also led to a greater demand for [public] veterinary services which is in most of the cases unable to cope with it.
	(ii) Development, production and dissemination of HPAI guidelines for prevention and control		Knowledge sharing	* Printing guidelines (Standard Operating Procedures (SOPs)/Protocols) and diagnostic manuals for surveillance, response, sample collection, clinical and laboratory diagnosis, bio-security and bio-safety, decontamination and stamping out, and strategy for eventual vaccination based on OIE recommendations. * Disseminating the above guidelines and SOPs through eleven regional workshops and hand over of materials and guidelines (each covering seven (7) districts, six (6) people per district).	HPAI guidelines for prevention and control developed, produced and disseminated to 10 districts neighbouring Sudan.	
	(iii) Conducting simulations of the HPAI contingency Plan for Uganda		Capacity building	* Conducting eleven regional table top simulation exercises of the Contingency Plan (at the same time as dissemination of SOPs) with district staff and other stakeholders to cover seven (7) districts each. * Hold four (4) field simulation exercises with entire range of communication, outbreak response and sample collection.	Seven (out of 11) field outbreak simulation exercises were conducted covering 59 districts (out of 76).	
	(iv) Identification and operationalisation of Rapid Reaction Teams (RRTs)			* Identify Rapid Reaction Teams (Ministry level) and Disaster Preparedness Teams (Local Government level) and disseminate SOPs. * Train and equip Rapid Reaction Teams. * Provide financial support to national teams (Ministry level) to do "drop in" surveillance visits every three (3) months to monitor and train RRTs (Local Government level). * Provide financial support to RRT to do outbreak investigations and reporting.	76 District Rapid Reaction Teams (DRRT) formed. 9 regional workshops for DRRT conducted. US\$ 800 granted to each DRRT for operational expenses.	
	(v) Establishing, equipping and operationalisation of the National Command and Control Centre			* Strengthen the response command structure with efficient communication (PC, telephone hotline, communication guidelines, all SOPs) between Central and Local Government structures. * Provide technical support and supervision of local government activities. * Report writing to NTF, NSC, FAO, USAID and other partners.	National Command and Control Centre equipped (2 computers, 1 photocopy, etc.). 1000 PPEs procured.	
	(vi) Promotion of bio-security and hygiene in markets chains and the community	Protection (Bio security)	Policy advice	* Develop guidelines for safe keeping and transportation of domestic poultry from communities to markets. * Develop safe procedures and guidelines of selling domestic poultry in markets chains. * Develop bylaws to enforce these guidelines in markets chains.	Activities not undertaken (see follow-up project)	

Annex 4c: Results chain of project OSRO/UGA/711/USA "Support to implementation of surveillance and communication components of the Uganda Plan of Action"

Goal	Objectives	Support area	Service	Activities	Expected Outputs
Improve the poultry production practices of smallholder farmers, contribute to the development of prevention strategies against HPAI, improve livelihoods and provide the relevant platform for collaboration on HPAI and other Transboundary animal diseases prevention.	(i) Enhance capacity in surveillance and communication for HPAI (ii) Strengthen veterinary services.	Preparedness and prevention	Capacity building	* train laboratory staff in HPAI diagnosis; • provide public and private veterinarians with surveillance protocols and formats; • provide rapid detection kits to district veterinary offices; • train field veterinary staff in disease detection and reporting; • rehabilitate and equip the MAAIF laboratory to BSL-2 level; and • carry out regular risk-based surveillance of commercial and smallholder poultry and wild birds.	HPAI epidemio-surveillance network, including laboratory diagnostics, strengthened
				• support the command and control structure (hotline, fax, email); • provide technical support and supervision of local government HPAI activities; • enhance regional and international linkages and information networks; and • monitor the project and report to NTF, NSC, FAO, USAID and other partners.	National command and control centre strengthened
				• train local government technical personnel in rapid response and outbreak containment; and • conduct tabletop and field HPAI outbreak simulation exercises.	Rapid response and outbreak containment capabilities enhanced
			Policy advice	* finalize HPAI contingency plan and development of compensation policy; • establish operational modalities for compensation schemes; • assist local governments to develop bylaws to promote poultry registration and marketing; • promote the regulation of movement of poultry and poultry products (internal and external)	
			Knowledge sharing	• print and disseminate the HPAI contingency plan to local governments and stakeholders; • print and disseminate compensation-related policy and guidelines to stakeholders; • inform stakeholders on the compensation policy;	
		Protection (Bio security)	Policy advice	• conduct feasibility study for improving bio security in commercial and backyard farming systems; • develop guidelines for safekeeping, transportation and marketing of domestic poultry; and, • assist local governments to develop bylaws for enforcing these guidelines in markets chains.	Biosecurity and hygiene in market chains and community promoted
			Know' sharing	• print and disseminate bio security guidelines.	
		Support measures (Communication and awareness)	Policy advice and advocacy	• carry out knowledge, attitudes and practices (KAP) study on HPAI; • sensitize personnel who handle poultry and poultry products on HPAI (butchers and vendors, especially those on highway markets); • carry out impact assessment on disseminated messages; and participate in TV/radio programs..	Communication and public awareness on AI improved [together with GCP/INT/010/ GER]
			Knowledge sharing	• print and disseminate information, education and communication materials; and, • print and disseminate the Integrated National Action Plan (INAP) on HPAI.	
		Support measures (socio-economic analysis)	Policy advice	• determine the likely risk and consequence of outbreaks of HPAI; • assess social and economic impacts throughout the poultry value chain from inputs to consumers; • increase the understanding of poultry movement within the country, specifically looking at local and international trade and any formal and informal mechanisms; • derive risk and consequence assessment of the structure and livelihoods dependence of poultry production in Uganda; and • support policy development in defining control strategies for Uganda, through evidence-based policies and through the costing of options.	Socio-economic impacts and livelihood analysis carried out to serve as entry point in mitigating impact of an eventual incursion of HPAI [together with GCP/INT/010/ GER]

SECOND REAL TIME EVALUATION OF FAO's WORK ON HIGHLY PATHOGENIC AVIAN INFLUENZA

REGIONAL REPORT: ECTAD-RAP

4 – 6 NOVEMBER 2009

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Acknowledgements

The evaluation team is very grateful to all the FAO staff and partners encountered, and particularly to the ECTAD-RAP Regional Manager, Dr Subhash Morzaria and his staff, for their candid comments on the regional avian influenza programme.

I. INTRODUCTION

Early in 2004, FAO initiated country-specific, as well as sub-regional, TCPs to provide: a) immediate assistance to -affected countries, and b) to establish sub-regional networks for surveillance and diagnosis to improve disease diagnosis, and the collection and analysis of epidemiological data. With these limited funds, the Organization held several expert meetings and consultations with the aim of developing guiding principles for HPAI surveillance and diagnostic networks in the region. In 2005, and following the spread of HPAI across Asia to Europe and then to the African continent, funds started to flow in for emergency responses and capacity building, but mainly for country level activities.

The ECTAD Regional Unit for Asia (“ECTAD-RAP”) was officially established in December 2005 at the FAO Regional Office for Asia and the Pacific (RAP) with ToRs matching those of ECTAD at FAO headquarters. The new unit was given major responsibility for regional work with the rationale that being closer to the field would allow a more timely assistance and provision of support to forty three HPAI-affected or at risk countries in the Asia Pacific region. The First RTE considered being too early to assess the work of ECTAD-RAP, and just noted that this unit was in the “*process of taking over the responsibility of coordinating [sub-regional HPAI surveillance and diagnostic] networks [established in Southeast Asia, East Asia, and South Asia]*”.

Prof. Brian Perry, Dr Trevor Ellis, Mr. Shashi Kapur and Mr. Carlos Tarazona visited the ECTAD-RAP office from 4 – 6 November as part of the Second Real Time Evaluation of FAO’s Work on Highly Pathogenic Avian Influenza. In line with the evaluation’s terms of reference and the inception report, the focus of the visit was to evaluate the relevance, efficiency, effectiveness, sustainability and likely impact of the assistance provided by ECTAD-RAP in the past few years. Since the contribution of ECTAD-RAP to national programmes has been captured in the country reports, the evaluation team focussed its assessment on the regional activities conducted. The office of the Regional Manager prepared a programme of meetings with key people (see Annex 1 for the complete list), and made logistical arrangements for the mission as well as provided the team with documentation and materials developed by ECTAD-RAP since 2005 (see annex 2).

II. OVERVIEW OF ACTIVITIES

With a portfolio of over US\$ 152 million in the period 2004-09, the Asia region is the main recipient of avian influenza grants to date. Funding levels reached their peak in 2007 and although they have decreased the levels of delivery in the past two years have remained higher than at the start of the response (see table below).

Table 1. HPAI Funding allocation for Asia

Approval Year	Total Budget (DWH)	Contribution received
2004 Total	\$5,693,275	\$5,692,743
2005 Total	\$15,959,430	\$15,915,576
2006 Total	\$36,115,810	\$47,573,214
2007 Total	\$42,784,887	\$17,232,104
2008 Total	\$20,138,588	\$7,628,277
2009 Total	\$32,003,079	\$18,436,440
Grand Total	\$152,695,069	\$112,478,354

Source: HPAI Global Programme: Operational Briefing Note, October 2009

ECTAD-RAP has reportedly provided backstopping services to most HPAI projects (over 60) in the region and as of October 2009 it had directly supported the implementation of 24 regional and national projects with a budget allocation of US\$ 10 million (see the full list of HPAI projects in annex 3). In the period 2007-April 2009 it has organized or supported 26 HPAI-related workshops and events (see full list in annex 4). The size and type of activities conducted in support of regional prevention and control of HPAI H5N1 can be broadly differentiated in three stages:

The Initial Response to HPAI H5N1 in the Region (2004-05): In this period, avian influenza activities in Asia were handled by the Animal Health and Production Group in RAP. As reported by the First RTE, “*three sub-regional HPAI surveillance and diagnostic networks were established to assisting member governments in Asia to put in place effective, harmonised frameworks and policies to support enhanced epidemiological surveillance and diagnostic capability*”. The evaluation went on to say that “[TCP] projects have ended [in early 2006] and new funding will be necessary to maintain network activities.”

The strengthening of the Regional Response to Avian Influenza (2006-08): In early 2006 FAO mobilized extra-budgetary funds for regional work (particularly from the Asian

Development Bank), which allowed the establishment of ECTAD-RAP and the subsequent appointment of a Regional Manager in January 2006. A Regional Strategy for Asia for the period 2006-08 was also developed. In this period, the newly formed unit largely focussed on backstopping national projects while mobilizing funds for getting the regional strategy underway. In late 2007, the staffing of the regional unit was at its peak with nine (two of them part-time) international technical staff and four operations officers fully dedicated to HPAI matters based in Bangkok. The 2006 Regional Strategy had called for 9 full time international [technical] positions based in Bangkok, 11 full time international [technical] positions based throughout the region and 9 short term specialists. The short-term nature of most of the funding received and the emergency situation of affected countries (which diverted attention from senior staff) were acknowledged as reasons for not having put a full team in place. The shortage of staff during this period was mainly felt at field level in countries such as Cambodia, which reportedly experienced less in the way of backstopping/oversight when compared to countries such as Indonesia or Vietnam. In late 2008, the operational branch of ECTAD-RAP was re-organized following the arrival of an International Senior Emergency Coordinator and a Senior Operations Officer in order to mirror the ECTAD HQ structure.

The Stabilization of Avian Influenza and focus on other Emerging infectious diseases, EIDs (2009-present): In spite of continuous shortage of staff¹, ECTAD-RAP managed to continue to mobilize resources, organize regional workshops and training, and provide technical backstopping to national HPAI projects.

Currently ECTAD-RAP is headed by a regional manager, and in the past few months it has filled in various senior coordinating staff positions: These include: Senior Regional Emergency Coordinator, Senior Operations Officer, Regional Project Officer, Animal Health Officer, Regional Veterinary Epidemiologist, Regional Coordinator for Wildlife Avian Influenza, Regional Public Private Partnership Coordinator, and Advocacy and Communication Coordinator. With a view of increasing long-term sustainability and move towards building regional capacity, recent recruitments have mainly been from countries in the region at different levels.

Another distinctive feature of this period has been the greater engagement with regional organizations (ASEAN, SAARC) and donors (EU, USAID, ADB) and the implementation of operations not only on HPAI but also on other animal diseases. Between February and July 2009 a second strategy (“The FAO Regional Strategy for HPAI and other EIDs of animals in Asia and the Pacific”) was prepared through a consultative process that involved a regional meeting in Pattaya (February 2009), regional consultations with country teams (June-July 2009) and consultations with regional organizations (ASEAN, OIE, donors) and country CVOs. The regional strategy considers the evolving disease situation, characterized by the spread of HPAI to South Asia, the establishment of endemic zones, the need for long term approaches and stronger regional co-operation as well as the emergence of new diseases. Besides a regional focus on the Gangetic Plains, the Great Mekong sub-region and Indonesia, the strategy advocates greater engagement with countries such as China and India for HPAI prevention and control and “an expansion of attention from HPAI to include other influenza viruses and EIDs”.

An issue that was brought to the attention of the evaluation team was the need to strengthen the interface between ECTAD-RAP and the Animal Health and Production Group in RAP. There is clearly a need to have a strong link between the regular development programme of

¹ In March 2009 ECTAD-RAP only had seven international technical staff and four full time operations officers to implement the regional programme and support the country programmes.

the region and that carried out with extra-budgetary resources mainly by ECTAD. The epidemiologist in RAP with a major role in GF TAD animal health projects is a member of ECTAD who works in the field, is given specific country responsibilities, and has played a very judicious role of ensuring at least good communications between the ECTAD and the GF TADs framework, the regional control of FMD, and other longer term and established initiatives in the region. This interaction has been satisfactory and should be substantially enhanced over time.

III. ROLES, RESPONSIBILITIES AND IMPACTS IN THE REGION

Roles and responsibilities:

The ECTAD-RAP office plays a variety of different roles within the region and at country level. These have been summarised by the office itself as follows.

At regional level:

- Maintain a functional Regional ECTAD and mobilize resources;
- Develop regional strategies on HPAI, TADs and EIDs;
- Implement regional projects; and,
- Coordinate partners (international, regional, INGOs and donors)

At country level:

- Assist in preparation of proposals and mobilization of resources;
- Provide technical and operational backstopping;
- Promote inter-country coordination;
- Provide operational training;
- Quality clearance and clearance of reports;
- Recruitment; and,
- Procurement.

Discussions on the **ECTAD functions** and structure (in terms of staffing and location) over the past few years have been presented in the previous section. Mobilization of resources by ECTAD-RAP in co-ordination with ECTAD Rome and country offices had reached US\$ 179 million by November 2009. This includes 87 projects out of which 38 were still ongoing. Over 90% were OSRO and TCP emergency projects. Major country programmes in the region were Indonesia (US\$ 50 million) and Vietnam (US\$ 18m). Funding for regional activities stood at around US\$ 30m.

As indicated earlier the ECTAD-RAP unit had produced a **regional strategy** in 2006 and has recently developed an updated Regional Strategy for highly pathogenic avian influenza and other emerging infectious diseases of animals in Asia and the Pacific for the period 2009-2015. The revised strategy has developed a vision, a goal and a strategy based on two major “thrusts”. These are to a) continue to support measures specifically addressing HPAI prevention and control, and b) to broaden “appropriate components” of the support to embrace the needs for other EIDs that are of international importance or of high national priority. The revised regional strategy has identified planned outcomes to meet four key objectives. The document also goes on to list indicators for the assessment of progress against the planned outcomes. This is a very progressive development, and the indicators will be valuable tools for future real time evaluations.

Clearly the strategic approach for HPAI prevention and control envisaged in the Regional Strategy focus on regional perspectives but within them, the following have in the view of the evaluation team the greatest relevance:

- a) Identification of regional epidemiological hotspots. The strategic designation of focus areas within the region (Indonesia, the Gangetic plain, and the Greater Mekong sub-region) that are epidemiologically distinct, or that demand different approaches in preparedness and response, is highly appropriate. The justification for these groupings is reported by the office to include animal/poultry population, production system, market and trade between/among the countries, and shared international borders. It is unclear however what the particular characteristics that make them mutually exclusive are.
- b) South Asia cross border project. This is a well led and constructive initiative dissecting out the pressures driving poultry movements across borders in the South Asian region, through market and values chain analysis and other tools, and looking for incentives for trade in healthy poultry products.
- c) Greater Mekong sub region focus. This looks at the dynamics between production and consumption clusters and infection risks through potential movement corridors in the closely knit cluster of countries in South East Asia and China. Its activities appear to extend well beyond the Mekong, and include the Red River basin. This seems a highly valuable focus on an area that includes both endemic and high risk countries; the RTE team also noted the role played by virus characterization exercises in defining the need for a sub regional focus.

In the past few years ECTAD-RAP has implemented a number of regional projects in the following thematic areas: epidemiology, regional surveillance and laboratory networks, HPAI in wildlife, advocating and communicating for HPAI prevention and control, Public-Private Partnerships and, more recently, surveillance for novel influenza A subtype H1N1 viruses. Capacity building² has been a major feature in all these activities; over 40,000 people are considered to have benefited from capacity building activities in the Asia region between January 2008 and September 2009. These have been carried out in co-ordination with country and HQ level staff. Each project in the region has dedicated technical and operational staff at ECTAD-RAP, ECTAD HQ and in the field. Other forums for discussion and co-ordination include stakeholders workshops³ (such as the USAID partnership meetings), annual regional/strategic ECTAD meetings, and internal venues such as the weekly ECTAD-RAP meetings, the twice weekly ECTAD Management and Operations meetings with HQ, the monthly brief with ADG of RAP, backstopping missions to countries and (de-) briefings with consultants. These various thematic activities have been supported by several donors, including USAID, the Asian Development Bank and Japan.

An assessment of the activities under all regional projects supported by ADB, Japan, Sweden, FAO (TCP), and USAID is provided below.

Epidemiology capacity building

This activity has been supported by all the regional projects. A Regional Epidemiology Network within ECTAD-RAP has been established to foster the development of

² :ECTAD-RAP has been gathering information since January 2008 and on a quarterly basis relating to capacity building exercises (mainly training, fellowships and study tours) conducted in the region.

³ 15 regional workshops with the participation of FAO and partner organizations were conducted between November 2008 and October 2009.

epidemiological expertise within the region. The regional epidemiological network has been in place since 2004. FAO has been facilitating epidemiological information sharing through the AI-Network-Asia email circulation list starting in 2006. Recently, a regional framework for molecular epidemiology of HPAI was formulated and agreed upon by the member countries in the region. Other activities included organizing training workshop on the Computer Software for Animal Disease Surveillance using several shareware available online and promote the used of TADinfo system in some countries, which lack computerized animal health information systems.

The FETPV concept developed from FETP, which is a well established global public health programme. Other related national efforts include AVET in the Philippines and in Viet Nam. Thailand FETP is the host of the Regional FETPV through a formal collaboration with the Thailand Department of Livestock Development (DLD) and the Ministry of Public Health. In addition, capacity building for emergency preparedness and response for veterinarians and community animal health workers has been conducted, including training on outbreak investigation. This has been undertaken through FETPV, a number of regional workshops and by directly supporting national training courses. Other regional and national initiatives for enhancing emergency preparedness and response include the development of harmonized approaches and Standard Operating Procedures based on international standards and country experiences. The concept is to build a training programme appropriate for the needs of the countries of the region. In addition there is some formal undergraduate and graduate training in epidemiology at universities in Asia, but this is very limited and clearly inadequate for the demands of the region. The ECTAD-RAP has developed a programme for an initial FETPV cohort in Thailand, in collaboration with DLD, and has ASEAN interest and approval.

The Regional FETPV is a user-driven regional training programme intended to improve early detection and early response to animal health and related public health emergencies by providing practical knowledge of epidemiological concepts, outbreak investigation, disease surveillance and communication. The curriculum stresses both zoonotic as well as animal-specific diseases. The first group of trainees enrolled in the FETPV programme have come from Thailand, Myanmar, Indonesia and China.

Regional surveillance and laboratory networks

This network has two components, one on epidemiology (surveillance) and one on laboratory functions. These networks form part of the Southeast Asia Regional HPAI Surveillance and Laboratory Network which contribute on a daily, weekly and monthly basis to EMPRES-i. An information platform (ECTAD Asia) has been set up in collaboration with the FAO ECTAD Office in China as a discussion forum for disease tracking information and as a repository for HPAI related documents. The laboratory network is more ambitious, and sets out to not only build capacity, but also ensure adequate standards through proficiency testing processes and protocols. More recently, and in collaboration with OFFLU, AAHL in Geelong and other partners, the ECTAD is initiating a molecular epidemiology project which aims to gain a much greater insight into the evolving patterns of the influenza viruses in the region.

ECTAD-RAP had a major coordination role in strengthening capacity in laboratory diagnosis in Cambodia, China, Laos, Myanmar and Vietnam. This role was extended to providing enhanced disease control capacity for HPAI by strengthening the networking for sharing field and laboratory information on HPAI through the Southeast Asia Regional HPAI Surveillance and Laboratory Network project, which is coordinated through the ECTAD-RAP and includes

8 ASEAN Countries (Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand and Vietnam). This initially involved nominating country focal points for informal communication and involving the International Reference Laboratory for the region at CSIRO-AAHL, Geelong. A consultative meeting for a Regional Laboratory Network for HPAI Diagnosis in Southeast Asia was held in Bangkok on 23-24 June 2009 including representatives from major partners (FAO, OIE, AAHL, the ASEAN Reference Laboratory - VRI Malaysia, NIAH Thailand, USDA and OFFLU). A follow up regional workshop and training was jointly organized with OIE in Bangkok on 28-30 September 2009. More recently, and in collaboration with OFFLU, AAHL in Geelong and other partners, the ECTAD is initiating a molecular epidemiology project which aims to gain a much greater insight into the evolving patterns of the influenza viruses in the region.).

Progress on avian influenza disease diagnosis capacity in the involved ASEAN countries has been demonstrated with national laboratories in all 8 countries now having the ability to conduct serological testing by HI test and virus detection by avian influenza Matrix and H5 specific RT-PCR tests. These countries also have access to a laboratory for virus isolation in chicken embryos or MDCK cell culture so further virus characterisation can be undertaken, including molecular characterization by gene sequencing, either in-country or by submission to international influenza reference laboratories. Four countries have a national laboratory with ability to conduct AI virus gene sequencing; it has been proposed that other countries acquire gene-sequencing equipment. This needs to be considered carefully, especially if they have access to gene sequencing at other facilities within the country, as this equipment is expensive to purchase and maintain, and requires well-trained dedicated staff to get accurate and consistent results.

The Regional Laboratory Network (RLN) was established in July 2004 and has been further strengthened after the consultative meetings among ASEAN member countries and key international partners including AAHL, FAO, OIE and USDA in June and September 2009 with the expected outcomes of ensuring international standards are achieved with testing; biosecurity and biosafety procedures associated with sample collection, shipment and testing; sharing of materials and information between laboratories and international bodies such as OIE and GLEWS; and sustainable capacity and activity in these laboratories. A programme of regional team visits, including staff from the international (AAHL) and regional (VRI Malaysia) reference laboratories with the FAO technical specialist, has commenced. These visits will foster network team building and look at technical issues such as laboratory biosecurity, Quality Assurance and proficiency testing, test troubleshooting, and facilitate provision of reference reagents and in-country training.

ECTAD-RAP has promoted and facilitated sharing of virus isolates with international reference laboratories and OFFLU to enhance molecular epidemiological analysis, and to provide information for a better understanding of virus persistence and spread over time. This analysis also assists in determining if the currently used diagnostic reagents and vaccines are appropriate for the viruses circulating in the region.

HPAI in wildlife species in Asia

ECTAD Rome has an overarching programme in wildlife influenza surveillance, involving 30 countries globally. This includes both migration and disease ecology studies.

In the Asia region, there are ongoing activities in China, Mongolia, Myanmar, Vietnam, Cambodia, Korea, Philippines, Indonesia, Thailand, Bangladesh and India largely funded by country projects. The regional programme has a vision to build more generic wildlife knowledge and skills capacity to support regional capacity building, including understanding of the role of bats in the ecology of Hendra, Nipah and Ebola Reston, and the socioeconomics of wildlife trade issues in the region.

Recognising the importance of the human-livestock-wildlife interactions with respect to H5N1 HPAI and other recently emerging infectious disease, ECTAD has a stated policy of integrating wildlife issues into prevention, control and response to transboundary animal diseases. Since 2003, with the death of the large number of wild birds and extensive geographic expansion of H5N1 HPAI, there has been major interest in investigating the role of wild birds in persistence and spread of this infection. FAO has been a major partner in establishing collaboration and networks to promote, coordinate, finance, technically support and implement activities to address this question.

Activities conducted include training and capacity building for over 1,000 people from over 100 countries in wild bird biology, ecology and monitoring and surveillance techniques, disease epidemiology, sample collection and preservation. A number of technical manuals to support this training have been produced in 12 languages. Wild bird avian influenza surveillance is conducted in over 30 countries worldwide, including 8 countries in the Asian region (China/Hong Kong, India, Korea, Myanmar, Indonesia, Japan, Kazakhstan and Mongolia). Wild bird migration and disease ecology projects along major migratory flyways in China, India, Kazakhstan and Mongolia are using satellite telemetry, other spatial and temporal analysis tools, as well as molecular epidemiology to study the relationship between wild bird habitat use, movements and HPAI disease outbreaks.

FAO has been a major partner in the establishment of the Scientific Task Force on Avian Influenza and Wild Birds and is a supporting partner in existing wild life networks and collaborated on multi-lateral environment agreements relating to wildlife and disease emergence. A regional wildlife coordinator post has been established at ECTAD-RAP since 2007 to coordinate wild life activities in the region and this position provides support to country level wild life surveillance, participates in regional wild bird surveillance activities, supports training for wild life surveillance and facilitates and participates in partnerships with NGO's and Universities conducting wild life studies in the region.

Advocating and communicating for HPAI prevention and control

The communication unit of ECTAD in Rome was established in 2007 and less than a year later a regional capacity was set up in Bangkok. Good communications are an essential component of regional disease control initiatives. This unit is responsible for coordinating ECTAD communications activities in the region, liaising with and harmonising activities with HQ ECTAD Communications Unit and providing support, guidance and backstopping to the different countries of the region, helping to develop communications packages, and drawing on the different experiences in the region and beyond. The unit has activities in capacity building, coordination, partnership development and advocacy. They aim to take a multisectoral, multidisciplinary, regional-cluster approach to communication and use monitoring and evaluation of communication activities to review and revise communication messages.

The evaluation team was informed of the valuable guidance provided by this unit in the development of communication activities in Cambodia and Indonesia. It also noted that the unit is small and has very limited resources. This has resulted in limited involvement in communications activities with the private sector and some other regional projects (cross-border projects, PPP, Biosecurity/Decontamination and Capacity Leadership projects). In its meeting with the evaluation team the Communications adviser outlined a very full programme of activities at ECTAD-RAP along the lines of the Regional Strategic Framework for Communication, but there was no indication that resources for full implementation were readily available.

Enhancing Public-Private Partnerships

The inter-regional Public Private Partnership (PPP) project (OSRO/INT/805/USA) operates in Egypt, Indonesia and Bangladesh; activities in the last two countries are regionally coordinated from Bangkok. The RTE team met with FAO staff engaged in this project in both Egypt and Bangladesh, and made a detailed assessment of PPP activities in those countries in the relevant country reports. The objective of the project is “the formation of a functional efficient and reliable animal health system led by official veterinary services and based on a strategic/integrated partnership”. It is a short lived project, which also receives support from ECTAD Rome, which hopes to define (and strengthen) the roles of public and private stakeholders, build capacity, understand where there are duplications of responsibility, and enhance communication. It is a very broad and by all means relevant project, but while FAO is probably a good choice to facilitate such a process, it clearly has an uphill battle to overcome some of the traditional barriers between public and private sectors in livestock production and health.

Surveillance for novel influenza A subtype H1N1 viruses in pig and poultry populations

At the request of ASEAN, a new project (TCP/RAS/3211(E)) has been established within ECTAD Bangkok to provide emergency assistance for surveillance of novel influenza A subtype H1N1 viruses in pigs and poultry production sectors in high risk Southeast Asian countries. The goal is to promote better understanding of animal influenzas in the region and their significances at the human-animal health interface, to inform policy, to strengthen laboratory and epidemiology networks in the field of influenza viruses, and to strengthen emergency response capacities. An inception workshop for this project was held in September 2009. This is a small initiative that marks the broadening in scope of ECTAD Bangkok to other TADs, and building on infrastructures which have been provided by other existing and pre-existing HPAI projects in the region.

In carrying out the above activities ECTAD-RAP has devoted substantial time and efforts to coordinating its work with regional partners (see section below). With regards to activities at country level, ECTAD-RAP has reportedly assisted in the following:

Preparation of proposals and mobilization of resources:

Although ECTAD-RAP has contributed to (and lately revised and cleared) virtually every project proposal prepared in the region⁴, its more tangible results have been in the form of raising funds for cross-border activities (e.g. project OSRO.RAS/701/USA) and for countries

⁴ In 2009 this included 4 concept notes, 17 proposals for national projects, 4 for regional projects and 4 TCPs.

without national projects (such as Myanmar, Mongolia, China, DPR Korea, Sri Lanka, India, Bhutan and till recently Timor Leste and Bangladesh).

The case of Myanmar is a good example of how country-level activities conducted by ECTAD-RAP (through projects OSRO/RAS/602/JPN, OSRO/RAS/604/USA and OSRO/RAS/701/USA) were instrumental to develop a portfolio of national projects (OSRO/MYA/702/USA, OSRO/MYA/601/AUS, OSRO/MYA/801/WBK) to support the country response to avian influenza infection. The particular conditions of the country also favoured the development of an integrated avian influenza programme, with the above national projects directly contributing to components of the country's National Strategic Plan.

Project Title	OSRO/MYA/702/USA	OSRO/MYA/801/WBK	OSRO/MYA/601/AUS
Start Date	1st phase June 2006; 2nd phase February 2008; 3 rd phase January 2009	April 2008	1st phase: July 2006 2nd phase: April 2009
Finish Date	December 2009	March 2011	March 2011
Budget USD	750,000 (1,750,000 for three phases)	1,315,353	650,000 (975,000 for two phases)
Component			
1	Strengthened cross-sectoral coordination at the national level	Strengthened surveillance capacity and systems, including improved mobility and capacity in the field	Surveillance, extension, outbreak investigation, rapid response
2	Strengthened capacity in HPAI disease surveillance and response in the field	HPAI Diagnostic Capacity is enhanced	Laboratory Support
3	Strengthened capacity in HPAI laboratory diagnosis	HPAI Outbreak Containment in Animals is improved	Strategy analysis and development
4	Enhanced risk management measures including biosecurity improvement among the high risk poultry population and selected live bird markets	Biosecurity among High Risk Poultry Populations Including Ducks and Quail is improved	Project Management and Coordination
5		Veterinary services are strengthened	

The resources mobilized have mainly been translated into personnel and procurement expenditures. As of October 2009 eight countries in the region had more than 10 staff members working for the HPAI programme, with Indonesia (81) and Vietnam (81) on the top. Procurement in the region has also increased from US\$ 100,000 in 2006 to US\$ 6.7m in 2009.

ECTAD-RAP is well positioned to continue mobilizing resources in partnership with recipient countries and regional organizations (such as ASEAN and SAARC). At the time of the evaluation team visit there were projects worth US\$ 14 m in the pipeline (including US\$ 11.2 m from the EU for a regional project with OIE, ASEAN and SAARC and US\$ 3.6 m from the World Bank for projects in Cambodia, Bangladesh and Mongolia). ECTAD-RAP

has identified a number of funding opportunities for longer term financial sustainability of the programme. The key among these are from the recently launched USAID Emerging Pandemic Threats Programme, the forthcoming International Ministerial Conference on Avian and Pandemic Influenza in Viet Nam, the EU programme on Highly Pathogenic Emerging Infectious Disease Programme and the AusAID programme on EIDs.

Provision of technical and operational backstopping:

As indicated earlier every regional and country level project executed in the region has a responsible technical and operational officer in Bangkok (Kathmandu in the case of Bangladesh, Nepal, Sri Lanka and India). Although ECTAD-RAP has always maintained good communications with countries, they have not received the same level of support. Countries like Vietnam (with more than 20 visits by ECTAD-RAP technical staff between 2006-08⁵), Indonesia (15) and Myanmar (13) were visited more than Laos (10) or Cambodia (8). In the case of Vietnam and Indonesia, the greater attention was largely justified in view of the complexity of the disease situation. In the case of Myanmar, ECTAD-RAP was leading the provision of inputs to the Government as well as conducting fundraising with local donors, which justified the relatively high number of visits made. The evaluation team was informed that the limited number of staff at ECTAD-RAP, particularly in 2006/early 07 and more recently between late 2008 and early 2009, coupled with priority being rightly given to the most affected countries, had in some cases resulted in staff being less available to support countries such as Cambodia and Laos. The evaluation team noted that this shortcoming was particularly true at the initial stages of the country-level response, and that since then it has largely been remedied following the establishment of stronger country teams.

Operational backstopping was on the other hand stronger in countries without an experienced or full time operations officer (such as Laos, Bangladesh, Myanmar, etc.). The limited relevance (and usefulness) of ECTAD-RAP for countries with experienced operations officers led some FAO staff to complain about the additional bureaucratic layer created since ECTAD-RAP was branded as the first “port of call” for technical and operational issues in the region although it has no real responsibility or decision making authority over national project budgets (FBAs) which were and are still approved in Rome.

Promotion of inter-country coordination:

ECTAD-RAP has promoted inter-country coordination mainly through regional meetings in south Asia, Southeast Asia, including the Indo-Gangetic plains and the Great Mekong sub-region. The holding of these meetings has been instrumental in facilitating discussion of cross-border issues; and will lead to the signing of MoUs for enhancing official cooperation among countries.

A related issue highlighted to the team is that although countries seem to have increased dialogue and communication through FAO sponsored regional and inter-country activities, the FAO country programmes have not taken enough advantage of potential cross-fertilization resulting from exchanging views with staff from other FAO programmes on successes and lessons learnt within the region. Reasons for this include the sometimes major socio economic differences among countries; and particularly among those considered endemic (Indonesia,

⁵ As per the BTORs made available to the Second RTE team.

China, Vietnam and Bangladesh), the different epidemiological situations and risk factors found in each country.

IV. PARTNERSHIPS

There are a number of global, regional and national organizations working on avian influenza in the region. The list includes UN specialized agencies (such as UNSIC, FAO, UNICEF and WHO), regional trade blocks and specialized organizations (such as ASEAN, SAARC, APEC and SPC), international financing institutions (such as the World Bank and the Asian Development Bank), donor countries (such as JICA, AusAID and USAID) and national veterinary services. All of them have stakes and a specific mandate or interest in preventing further spread of HPAI. Most of these organizations and countries have developed their own strategies and institutional arrangements using reportedly as a basis the 2005 FAO/OIE Global Strategy for the Progressive Control of Highly Pathogenic Avian Influenza.

ECTAD-RAP has been very proactive in developing partnerships with most of these organizations. In particular it has developed strong relationships with regional blocks (such as ASEAN and SAARC), donors (ADB, USAID and the EU) and more recently with research organizations such as CIRAD and ILRI. It has supported the development of a Strategic Framework for ASEAN countries and the conduct of USAID Partnership meetings. The positive role played by FAO in strategy development has given the organization a prominent position with donors both at regional and country level with respect to avian influenza response. As of October 2009⁶, the main donor for the region was USAID (US\$ 88.6 m or 58% of the total) followed by AusAID (US\$ 15.3 m or 10%), Japan (US\$ 13.7 m or 8%) and the Asian Development Bank (US\$ 7.9 m or 5%).

ECTAD-RAP relations with OIE have also been strong. However, the evaluation team was informed of duplications regarding the assistance provided by ECTAD-RAP and OIE for strengthening diagnostic capacity and establishing regional networks. The latter was particularly highlighted during the visit to Cambodia, where equipment donated by OIE was not being used (whereas FAO's equipment was up and running). A similar situation was reported in Laos. The issue of regional networks is not new, and will be addressed after the launch of the EU-funded project on Highly Pathogenic and Emerging and Re-emerging Diseases (HPED) in Asia that will establish a "Regional Support Unit" (RSU) in Bangkok, which will associate ECTAD-RAP and the OIE team to promote regional cooperation in the area of HPED control in Animal and Human Health. This RSU will include joint activities of OIE, WHO and FAO in epidemiology and diagnostic training, risk analysis and improvement of live bird and food markets. This program will be coordinated through the Regional Steering Committee of GF-TAD for Asia (the Secretary of the Committee is the OIE Regional Representative for Asia and the Pacific).

Also of relevance for future collaboration by ECTAD-RAP is the regional network on influenzas supported by the Wellcome Trust and involving Thailand, Viet Nam and Indonesia. It is coordinated through the Tropical Diseases Unit in Ho Chi Minh City, Viet Nam, and has an office in Bangkok.

V. CONTRIBUTION TO NATIONAL AND REGIONAL INITIATIVES

The ECTAD-RAP has made substantial contributions to regional activities, and provides a very sound interface with other organisations operating in the region. Key developments in this regard include the engagement with the UN system (chiefly with UNSIC and WHO) and

⁶ HPAI GLOBAL PROGRAMME: Operational Briefing Note, October 2009

regional blocks (ASEAN and SAARC), the implementation with OIE of the new EU-funded programme on HPEID and the linkages established with programmes sponsored by IFIs such as the ADB programme on Food safety and security and the World Bank programme on Capacity Building.

The ECTAD-RAP unit has also made solid contributions to many of the national programmes, providing specific technical support to them generally in a timely fashion. The unit provides overall operational support for the regional projects, but most national programmes have their own operations staff now which has raised the question of what added value ECTAD-RAP operational support brings to these countries. ECTAD-RAP has also provided inputs to the development of strategic documents including the One World, One Health Initiative and is at the forefront in the implementation of the new Food Chain Crisis Management Framework in the region. ECTAD-RAP has also supported CMC-AH missions when requested including HPAI, rabies, Ebola Reston, FMD and brucellosis.

As noted in the country reports, capacity for avian influenza prevention and control in the region has been enhanced (for example grass root surveillance has been established in several countries; outbreak investigation capacity has been harmonized; FETPV programme is ongoing and has great demand; laboratories are now better equipped and manned; there is greater awareness of HPAI in the region and countries). Many players have been involved in addressing the HPAI crisis in the region. While there have been significant improvements in the broad capacity to control HPAI accompanied by a decrease in disease incidence over time, it is not possible to attribute specific impact to any one player.

VI. SYNTHESIS AND DISCUSSIONS OF REGIONAL ECTAD'S CONTRIBUTIONS

Co-ordination of regional and country activities;

Countries visited indicated that they generally had effective communication and feedback from ECTAD-RAP, and they were satisfied with the coordination of regional and country activities in most instances. ECTAD-RAP has provided advice and expertise for the planning and development stages of national projects and assisted or actively sought funding for these projects, as well as providing technical and operational backstopping for country projects. Only in very few occasions FAO staff mentioned missions that were not as timely as they would have wished. Those cases were mainly linked to departure of backstopping staff or unavailability in the periods initially requested. Overall, the co-ordination role played by ECTAD-RAP was very supportive by in-country ECTAD staff.

The evaluation team noted that there is a need for some consistency in information on HPAI disease and its ecology and epidemiology, biosecurity and other control strategies, including vaccination, and the approaches taken in disease control or other projects throughout the region. The vetting and approval of project proposals, communications documents, other publications and other administrative matters is generally managed through ECTAD-RAP; however some matters have to be referred to ECTAD Rome for approval, and this can result in delays in approval of projects or publications at a National ECTAD level. This can end up giving the impression of inefficiencies at the country level. At the technical level, the situation has reportedly changed with responsibilities being recently delegated to the ECTAD-RAP Regional Manager, but with senior technical specialists and senior operations officers based in ECTAD-RAP, the evaluation team was concerned at the apparent duplication of administrative effort.

In reviewing some technical material, it is important to consider sources of expertise should it not exist at ECTAD-RAP. An example presented to the team was the biosecurity guidelines for small-scale and backyard poultry enterprises. Neither national nor ECTAD-RAP staff had identified the impracticality of certain recommendations, which would have benefited from input from poultry production experts. There is indeed inadequate poultry industry experience in both ECTAD-RAP and in the national ECTAD offices visited, which either requires positions established or the outsourcing of expertise when required.

With the diversity of poultry production systems, socio-economic factors, political factors and governance, and variations in the H5N1 disease ecology and epidemiology between country or sub-regions, the evaluation team considers that FAO requires more efficient linkages to, and understanding of, individual country ECTAD programmes if it is to be effective in the region. To undertake this, ECTAD-RAP requires a combination of a core of experienced technical specialists to service relevant country projects, staff with time to develop substantive strategic science-based approaches to their programmes and projects, making a clear effort to network with the multiple international research and development organisations in the region and beyond.

At present the current system of assigning technical responsibility for projects results in staff being spread too thinly and with no guidance or time to reflect on and promote cross-fertilization among national programmes. In addition, the evaluation team was concerned that there may not be the required technical expertise at ECTAD-RAP, nor enough manpower, in some key areas, particularly market value chain analysis, poultry production systems, poultry industries in the region, and quantitative epidemiology.

Another issue related to the molecular biology project initiated from ECTAD-RAP. There is a wealth of information on the genetic and antigenic characteristics of H5N1 avian influenza viruses within government and university laboratories within the Asian region (Hong Kong, China, Japan, Republic of Korea, India, etc.) and it should be an important part of this project to facilitate and establish links between these laboratories and share information and viruses to give the best return on this investment.

Formulation and implementation of regional programmes/projects;

ECTAD-RAP has been actively involved in setting up regional projects in various thematic areas such as epidemiology, laboratory diagnosis, cross-border market value chain studies and public-private partnership projects. This has involved planning and development of projects and sourcing funding for their conduct and then providing technical and operational support for these regional projects. From observations of the evaluation team and some feedback from country FAO staff, it is expected that the regional projects in cross-border market value chain studies, communications/advocacy, private-public partnerships, epidemiology, wildlife studies will provide useful information in future, but as they are mostly in an early phase, the practical benefits at the country level are not yet evident.

With respect to establishment of public-private partnerships in the region, the PPP project is seeking to develop models that may be applicable in the region. There will probably need to be several different models developed eventually for the large-scale commercial sectors and for the small scale village farm systems, among others. Other areas that also need to be addressed include biosecurity, compensation and vaccination. Innovative approaches are

needed to engage these parties and facilitate meaningful cooperation on specific matters that can improve control of HPAI or other Emerging Infectious Diseases.

Promotion and coordination of regional networks;

ECTAD-RAP has supported and allocated resources to develop and establish the Southeast Asia Regional HPAI Surveillance and Laboratory Network project which includes 8 ASEAN Countries (Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand and Vietnam), 3 SAARC countries (Bangladesh, Nepal, India) and China.

In support of the development of stronger epidemiology and laboratory networks ECTAD-RAP has been utilizing regional resources combined with other external resources in order to promote disease prevention and control. These networks also promote data gathering and generate useful regional epidemiological information. ECTAD-RAP provides some operational support to countries and is providing regional training including the TADinfo system and twinning arrangements among laboratories. The laboratory and epidemiology networks initiated in 2004 appear to have an active and useful programme but it is not possible at this stage to assess how effective and sustainable they will be.

Advocacy and fund-raising for HPAI and Transboundary Animal Diseases (TADs) interventions;

Under the emergency phase of HPAI response, large amounts of funding were made available from the donor community following fund-raising efforts by FAO/OIE/WHO. As seen in the table below, funding received in the past few years for activities dealing with other TADs (US\$ 11.7 m) has been much less than funding for HPAI.

Table 2: Ongoing FAO and donor funded projects on TADs control and prevention

Project code	Project title	Budget (US\$ million)
GTFS/INT/907/ITA	Controlling TADs in central Asian countries	4.9
TCP/MON/3101	Strengthening early warning of transboundary animal disease diagnosis	0.387
GCP/CMB/028/EC	Support to smallholder livestock production in Cambodia	1.8
GCP/PHI/049/AUL	Eradication of FMD in the Philippines	0.8
TCP/DRK/3104	Emergency assistance for early detection, response and control of FMD outbreaks	0.4
GCP/RAS/206/ASB	FAO-ADB project on the control of TADs in the Greater Mekong subregion	1.0
GCP/RAS/233/ASB	TAD control for poverty reduction in the Greater Mekong subregion	0.4
GCP/RAS/244/ITA	Subregional environmental animal health management initiative for enhanced smallholder production in SEA	1.4
OSRO/BGD/701/CHA	Emergency control of the spread of FMD	0.3
TCP/VIE/3104	Emergency assistance for early detection, response and control of PRRS	0.4
Total		11.78

Source: FAO (2009) Global and Regional Emergency Issues: Transboundary Animal Diseases in the Asia Pacific Region and Looking at the Environmental Factors Affecting their Occurrence.

The long term control of HPAI in a number of endemic countries is highly dependent on improved veterinary surveillance systems and more risk management approaches to disease control; that still incorporates the rapid emergency response skills developed to date, but also better use of epidemiological analysis and risk management skills to control the disease.

ECTAD-RAP has been successful in raising funds to support development of laboratories, laboratory networks, field epidemiology training and epidemiology networks. The challenge is now to obtain funding to secure sustainable field surveillance and laboratory services that support diagnostic testing for other TADs as well as HPAI. It was indicated by various donors (USAID, AUSAID, ADB and WB) that they were more receptive now to project proposals that have a broader accent than just HPAI and that will build on gains made in surveillance and diagnostic skills as a result of HPAI.

The institutional and financial sustainability of the regional ECTAD

The strong technical and fundraising capacity of ECTAD-RAP and the now mature engagement with key partners are a good basis and requirement to achieve institutional and financial sustainability. There are some issues to resolve, such as the role of ECTAD and its relationships with FAO RAP in the ongoing transition from emergency to mid- and long-term programmes. There might also be operational issues resulting from ongoing reforms within FAO.

There is no doubt that HPAI work should be more integrated to FAO's other transboundary animal disease programmes/projects at regional (e.g. RAP Animal Health Unit) and country level (such as with the SLPP project in Cambodia). In the period 2006-08 there were cases of HPAI projects being treated as stand-alone projects, and thus separated from other livestock projects and country programmes. With the broadening of scope in the new regional initiatives FAO RAP and ECTAD-RAP should explore possibilities for an integrated approach to the management of animal health projects. Besides allowing for increased efficiencies, this approach will reinforce FAO credibility as an agency that works as "One FAO".

HPAI projects have so far been financially controlled by HQ and with few exceptions have not delegate budget holder (BH) responsibilities to regional or country offices. In some countries this arrangement was initially not well received; following the integration of national ECTAD units (particularly the operational and administrative aspects) within FAO country structures, this seems now to be less of an issue. The ongoing FAO reform that has given (as of 1st January 2010) higher responsibilities and decision making authority to FAO Regional offices over technical staff and operations in the region might revive this aspect, although at present the current reform package does not envisage the decentralization of BH responsibility for emergency operations.

The efficiency and adequacy of working arrangements within FAO (with HQ, regional and country offices)

As indicated earlier, working arrangements with FAO HQ have been fluid; relations with country offices have varied, being stronger in those countries that were given priority for assistance on technical and operational grounds. ECTAD-RAP also co-operates closely with

the sub-regional office for South Asia in Kathmandu, Nepal. The division of labour between these two ECTAD units is optimal and is largely based on geographic considerations.

VII. CONCLUSIONS AND RECOMMENDATIONS

The evaluation team concludes that the ECTAD-RAP is a very active and important regional centre for the coordination, management and mentoring of HPAI surveillance and response programmes within the Asia region. Furthermore, the team concludes that this importance will be sustained over the next few years as HPAI is progressively brought under control, as efforts expand to consider more fully other transboundary and emerging diseases of the region, and as funds focussed on national level responses become increasingly scant. On this basis, the evaluation team recommends FAO the following priority actions:

At regional level:

- Establish stronger linkages with the animal production and health group in RAP, particularly in view of the ongoing transition towards mid term initiatives beyond HPAI. In this regard, FAO senior management at HQ and RAP should promote greater integration of activities of these two units such as the formulation of regional initiatives and backstopping of national projects.
- Use the new Regional Strategy for HPAI and other EIDs to mobilize funds and serve as a platform for harmonizing activities conducted by other technical partners (such as OIE.), Regional Economic Consortia (ASEAN and SAARC) and the proposed RSUs.
- Give greater emphasis to the collection of data and indicators that will help measure the impacts of regional activities in controlling HPAI and other diseases, after taking into due consideration the M&E Manual for HPAI activities in southeast Asia developed by MEASURE, as well as ECTAD-RAP proposal on the roles and frameworks for monitoring progress.
- Consider further strengthening the human resource base of the ECTAD unit with dedicated staff in the following areas: market value chain analysis, poultry production systems, poultry industries in the region, and quantitative epidemiology. In selecting new staff, due consideration should be given to expertise from the region, but not at the expense of technical expertise and leadership qualities.
- Reinforce cross-fertilization and learning among countries in the region, with a focus on sharing information on innovative tools and technologies developed by FAO or other partners for HPAI prevention and control.
- Clarify operational responsibilities of ECTAD-RAP and assess, in the spirit of the ongoing FAO reform, which areas under the control of ECTAD Rome could eventually be further decentralized to ECTAD-RAP.

At national level:

- Following the attainment of a stronger working relationship with RAP, ECTAD-RAP should advocate for, and propose the development of, an integrated programme structure (not just one donor or subject) in countries with regional and national projects.
- Following the strengthening of the human resource base, ECTAD-RAP should reinforce backstopping arrangements in close consultation with the RAP animal production and health unit with a view of providing timely support to all countries in the region, not just on HPAI but in a broader set of TADs and EIDs.

ANNEX 1. List of People Met

FAO

He Changchui, Assistant Director General and Regional Representative,
Subhash Morzaria, Regional Manager, ECTAD RAP,
Rajendra Aryal, Senior Regional Emergency Coordinator,
Mostafa Nosseir, Senior Operations Officer,
Wantanee Kalpravidh, Regional Project Coordinator,
Carolyn Benigno, Animal Health Officer,
David Castellan, Regional Veterinary Epidemiologist,
Tippawon Prarakamawongsa, Programme Advisor for International FETPV,
Bryce Fieldhouse, Operations Officer,
Linda Muangsombut, National Operations Officer,
Rattanaporn (Tum) Tangthanaseth, National Operations Officer,
Pawin Padungtod, Regional Project Coordinator (Lab/Epi Network),
Kachen Wongsathapornchai, Regional Project Director, Epidemiologist,
Narit Puttekulangkura, Regional Value Chain Expert,
Acty George, Regional Coordinator for Wildlife Avian Influenza,
Loganathan Periathamby, Regional Project Coordinator (PPP),
Anthony Burnett, Advocacy & Communications Coordinator,
Ginna Geal, Information and Reporting Officer,

UN AGENCIES

Annu Lehtinen, Regional Avian & Human Influenza Coordinator UNSIC
John Stratton, Program Coordinator, OIE/AusAid Program on Veterinary Services in South East Asia.

GOVERNMENT

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Prasit Chaitaweesub, Director, International Animal Health Affairs, DLD.

EMBASSIES

Robert T. Tanaka, Senior Attaché for Asia, Avian Influenza Programme Coordinator,
Darunee Tuntasuvan, Poultry Health Specialist, both U.S. Embassy in Thailand.

INTERNATIONAL AID AGENCIES

John R. MacArthur, Infectious Diseases Team Leader, USAID,
Royce Escolar, Regional Program Manager/EIDs, AusAID.

Others

Iain A. Wright, Regional Representative, Asia, ILRI, New Delhi, India.
Jeffrey Gilbert, Project Coordinator, Zoonotic Emerging Infectious Diseases, ILRI, Laos,
Denise Johnson, Technical Director, MEASURE (audio-conference from Cambodia)

In addition, the evaluation team also interacted with representatives of partner organizations from the region such as ASEAN, ADB, OIE, AED, etc. in the Regional Stakeholders Workshop held in Bangkok (see proceedings of the workshop for the full list of participants).

ANNEX 2. Documentation Reviewed

ADB (2005) Avian Influenza and the Risk of an Influenza Pandemic
ASEAN Regional Strategy for HPAI 2008-10
ECTAD Functions, structure and instruments (2008)
ECTAD-RAP Avian influenza framework for Asian Development Bank (May 2006)
ECTAD-RAP organigram and list of staff
FAO Regional Coordination Role in HPAI Control in Asia (September 2008)
Outcomes from Workshop “Observations on Regional Issues” (September 2008)
The Inception Meeting for the OIE/Japan Trust Fund Programme for Strengthening Highly Pathogenic Avian Influenza Control in Asia (April 2008)
USAID Asia Fact Sheet (2009)

Reports and documentation of 26 regional meetings organized or supported by ECTAD-RAP, 10 End of Mission Reports of former staff, 20 BTOR of current staff, 15 weekly meetings minutes of the regional team; reports and documentation of projects funded by USAID, Japan, Germany, EC, Australia, and ADB in Bangladesh, Bhutan, Cambodia, China, DPR Korea, India, Indonesia, Laos and Vietnam.

ANNEX 3. List of projects operated by ECTAD-RAP in Asia as of October 2009

Project	EOD	NTE	Budget	Allocation (FBA)	Expenditures under Allocation
Regional - (OSRO/RAS/601/ASB)	28/04/2006	31/08/2010	8,768,496	1,305,750	1,150,206
National (GCP /CMB/027/GER)	01/12/07	31/03/09	3,506,892	305,674	303,255
National (GCP /LAO/014/GER)	01/04/06	31/05/09	3,210,033	267,383	263,961
National (OSRO/TIM/701/AUL)	01/06/07	30/06/10	3,731,614	80,222	81,338
National (OSRO/VIE/701/UNJ)	01/01/07	31/12/10	1,968,203	107,660	107,659
Regional – (OSRO/RAS/704/SWE baby02)	27/11/2007	31/12/2009	1,680,849	206,331	208,058
Global (OSRO(GLO/604/UK child)	29/03/07	31/03/10	5,388,655	47,538	40,705
OSRO/INT/602/USA	12/10/06	30/09/13	3,523,484	77,215	47,725
Regional - (TCP/RAS/3014)	10/03/2005	31/12/2007	289,738	71,581	66,898
Regional - (TCP/RAS/3008)	13/08/2004	31/07/2006	278,809	15,159	14,167
Regional - (TCP/RAS/3006)	29/03/2004	28/02/2006	320,156	158,778	158,778
Regional - (TCP/RAS/3010)	20/04/2004	30/09/2005	362,013	49,460	49,460
Regional - (OSRO/RAS/604/USA BABY05)	01/06/2006	30/09/2010	4,145,500	1,882,744	1,303,358
Regional - (OSRO/INT/602/USA)	12/10/2006	30/09/2013	2,383,637	77,215	47,725
Regional - (OSRO/RAS/505/USA)	25/09/2005	31/03/2007	6,000,000	397,061	377,152
Regional - (OSRO/RAS/604/USA BABY04)	01/06/2006	29/09/2009	805,000	24,564	23,491
Regional - (OSRO/RAS/604/USA BABY02)	01/06/2006	30/10/2010	2,800,000	215,595	215,593
Regional - (OSRO/RAS/604/USA BABY06)	01/06/2006	30/09/2010	8,400,000	553,428	551,653
Regional - (OSRO/RAS/604/USA BABY01)	01/06/2006	31/12/2010	4,050,000	547,913	538,372
Regional - (OSRO/RAS/604/USA BABY03)	01/06/2006	30/10/2010	3,984,990	256,991	256,089
Regional - (GCP /RAS/221/JPN)	30/08/2006	31/08/2011	658,658	255,546	147,905
Regional - (OSRO/RAS/401/JPN baby01)	29/03/2004	30/11/2005	334,068	29,898	94,903
Regional - (OSRO/RAS/602/JPN)	30/03/2006	31/12/2009	11,400,052	3,008,205	3,008,109
Regional - (TCP/RAS/3004)	09/02/2004	31/01/2006	362,331	9,573	9,573
Grand Total			78,353,178	9,951,484	9,066,133

Annex 4. List of Workshops and Events organized/supported by ECTAD-RAP

2007

1. FAO Asia Regional Technical Meeting (January 2007)
2. Avian Influenza Team Meeting (January 2007)
3. USAID Partners Meeting (April 2007)
4. Laboratory Workshop (July 2007)
5. OIE/FAO Regional Workshop on Trainers Training on HPAI Surveillance and Control (July 2007)
6. Avian Influenza and Wildlife Regional Surveillance and Research Priorities for Asia (September 2007)
7. USAID Partners Meeting (September 2007)
8. Training Workshop on Transboundary Animal Disease Information System (TADINFO) Level 2 (September 2007)
9. Poultry in the 21st Century (November 2007)
10. Regional Experience Sharing Workshop (November 2007)

2008

1. Team Meeting of the ECTAD-RAP Avian Influenza Control Programme for Asia (January 2008)
2. Research Activities on Avian Influenza and Other Transboundary Animal Diseases in South-East Asia Workshop (January 2008)
3. USAID Partners Meeting (March 2008)
4. Workshop to Establish vision and Core Competencies for FETPB (March 2008)
5. 2nd Workshop on the Sub-Regional Veterinary Laboratory Network for Southeast Asia (May 2008)
6. Workshop on Surveillance and Response Capacities (May 2008)
7. Workshop on Strategic and Legislative aspects (September 2008)
8. USAID Partners Meeting (October 2008)
9. Workshop on Avian Influenza Research Activities (October 2008)
10. FAO Regional Workshop on SOP Writing for Field Outbreak Investigation and Response (November 2008)
11. TADinfo Training Workshop - level 3 (December 2008)

2009

1. Annual Regional ECTAD Meeting (February 2009)
2. CAHWs workshop (February 2009)
3. Regional Gender Training (February 2009)
4. USAID Conference (March 2009)
5. Avian influenza-GMS Strategy Meeting (March 2009)

SECOND REAL TIME EVALUATION OF FAO'S WORK ON HIGHLY PATHOGENIC AVIAN INFLUENZA

COUNTRY REPORT: COTE D'IVOIRE

12-14 OCTOBER 2009

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- VI. SYNTHESIS AND DISCUSSION OF FAO'S CONTRIBUTIONS AND ROLES
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Acknowledgements

The evaluation team is very grateful to all the FAO staff and partners encountered, and particularly to the FAO Representative, Ms. Marie-Noëlle Koyara, the Emergency Unit Coordinator, Mr. Patrick Berner, and the FAO-ECTAD avian influenza consultant, Dr Monique N'Guessan, for their candid comments on the avian influenza programme and the logistical support provided throughout the mission.

I. INTRODUCTION

Dr Emmanuel Camus from CIRAD and Mr Carlos Tarazona from the FAO Office of Evaluation visited Côte d'Ivoire from 12 to 14 October 2009 as part of the Second Real Time Evaluation of FAO's Work on Highly Pathogenic Avian Influenza.

In line with the evaluation's terms of reference and the inception report, the focus of the visit was to evaluate the relevance, efficiency, effectiveness, sustainability and likely impacts of country level assistance provided by FAO through global, regional and national interventions in the past few years. The Emergency Coordination Unit of the FAO Representation prepared a programme of meetings (see annex 1) and made logistical arrangements for the mission in collaboration with the FAO's Regional Emergency Centre for Transboundary Animal Diseases (ECTAD) for West and Central Africa in Bamako, Mali.

Reasons for the selection of Côte d'Ivoire as country case study for the Second Real Time Evaluation of FAO's work on the Highly Pathogenic Avian Influenza are described in the evaluation's terms of reference. Côte d'Ivoire was also visited in late 2006 by a team of the First Real Time Evaluation that evaluated the French contribution to SFERA funding which was, at that time, the major financing source for in-country work.

The First RTE summarized the mission's findings as follows: *“FAO was extremely quick to respond, having released SFERA funds for initial action with 48 hours of the [first] outbreak... The funds were spent on expert missions to assist the response, purchase of various types of equipment and supplies, workshops and the purchase of 12 million doses of HPAI vaccine. The reaction by government was rapid, with culling of infected chickens (two infection sites) and closing of poultry markets, and the disease was brought under control within days. »* The First RTE also stated that *“Issues arose however with the use of the vaccine purchased with SFERA funds. As the HPAI scare subsided following successful control measures, government priorities turned elsewhere and funding for carrying out the vaccination campaign evaporated. The vaccines languished until near their expiry date, but FAO did not want to be drawn into funding the vaccination campaign... As this report was being written, a first round of vaccination had taken place, and another was planned.”*

The First RTE concluded that *“FAO was the first and only major funding agency for the country's initial reaction. Issues were raised later regarding the wisdom of advising (and providing for) a vaccination campaign in a country where most chickens are backyard birds, infrastructure is poor and the security situation was unstable, making results of an attempt at large-scale vaccination uncertain at best. The [first real time] evaluation did not take a position on this issue in view of the major uncertainties still surrounding the whole question of vaccination for HPAI”.*

The Second RTE team has followed-up on the findings of the first RTE by providing a more detailed assessment of the vaccination campaign, with an emphasis on lessons learned. In view of the short time of the visit, other aspects of avian influenza work in Côte d'Ivoire (e.g. surveillance, biosecurity, etc.) were not reviewed at the same level of detail.

II. POULTRY SECTOR AND AVIAN INFLUENZA STATUS

In spite of years of civil strife, the poultry sector in Côte d'Ivoire, a country seen as the economic powerhouse of Francophone West Africa, has seen remarkable growth as a result of poultry development programmes and the entrepreneurship of the private sector. The poultry population had increased from approximately 29.1 million in 2000 to 33.4 m in 2005¹, with the “modern” poultry sector being responsible for over 50% of this increase. This growth responded to a higher demand for poultry products, with local production estimated to supply only about 40%, the rest being sourced from neighbouring countries.

There are different estimates of the current composition and size of the poultry sector, due to the lack of reliable data on the poultry and livestock populations in general, but there is a consensus that it is mainly comprised of backyard producers (who hold around 70% of stocks) and the so-called “modern” poultry producers (equivalent to FAO's sector 2 and 3). The former can be found almost everywhere, while the “modern” sector is located in the south of the country, with the highest concentration of farms established around Abidjan and in Agnibilekrou near the border with Ghana.

Before avian influenza hit the country the poultry sector was contributing around 0.5% (circa 40 billion FCFA) of the annual gross domestic product² and growing. The appearance of the

¹ Annuaire provisoire 2007 de la Direction de la Programmation et de la Planification.

² FAO Revue du secteur avicole (2008)

disease caused a major economic shock with total losses estimated at 10 billion FCFA, or around 25% of the sector's annual output³.

The first outbreak of avian influenza was confirmed on 19 April 2006 in Abidjan, following the investigation of a suspected case reported on 30 March 2006. Soon afterwards two outbreaks were detected in San Pedro (June 2006) and Bingerville (November 2006). Between February and December 2006, the Central Laboratory for Animal Diseases (LCBV in French and part of LANADA) diagnosed twelve H5N1 positive cases out of 2,125 samples analyzed. This led scientists (including FAO and Government staff)⁴ to suggest that “an endemic situation of HPAI in Côte d’Ivoire” existed, taking into account that other countries in the region were also reporting HPAI outbreaks. Perhaps surprisingly, no new cases have been reported since then, but as different reports have suggested “[the country] remains at risk of re-infection due to the proximity of Nigeria where the virus circulation is unknown”⁵.

During the mission's visit in Côte d’Ivoire a suspect outbreak of HPAI occurred in ravens at the International French School in Abidjan. Samples analyzed at the national reference laboratory concluded that it was a new case of H5N1 avian influenza. This prompted the Minister of Livestock and Fisheries to issue a press release to reassure the public and poultry producers on the protective measures being taken by the Government⁶. The samples tested at the FAO/OIE avian influenza reference laboratory in Padova, however, were negative for H5N1 avian influenza. The reasons for the sudden death of the ravens are still unknown⁷. Nevertheless, witnessing the dynamics of handling a suspect case were a valuable opportunity for the team to observe *in situ* the framework and the role played by FAO in the response.

III. NATIONAL HPAI RESPONSE FRAMEWORK

Côte d’Ivoire has had a national plan for the prevention and control of HPAI since March 2006, which was elaborated with technical support from FAO, OIE and WHO. FAO also supported the preparation of an emergency work plan for the period April-July 2006 to implement control measures targeting the ongoing HPAI outbreaks. These two documents have been largely superseded by the Integrated National Action Plan (INAP) to prevent and control avian and human influenza. This plan, which was prepared in November 2008 with financial support from the World Bank, has now become the official “HPAI strategy for the country”⁸.

The INAP considers that the previous national plan did not include an appropriate communication plan, and was not properly tested⁹. Yet the major weaknesses of the original plan, which have been partially remedied in the INAP, were the absence of high-level co-ordination and the lack of funds for its operationalization¹⁰. The new framework for avian

³ « Impact socio-économique de l'épizootie de grippe aviaire sur la filière avicole en Côte d'Ivoire (2006) », CHIAPO Christophe Adassé, MIPARH (Mars 2007)

⁴ The First Specific Detection of a Highly Pathogenic Avian Influenza Virus (H5N1) in Côte d’Ivoire (December 2007) E. Couacy-Hymann¹, T. Danho¹, D. Keita¹, S. C. Bodjo, C. Kouakou¹, Y. M. Koffi¹, F. Beudje¹, A. Tripodi, P. de Benedictis and G. Cattoli.

⁵ Report Exercise on Highly Pathogenic Avian Influenza: FAO contribution to the UNSIC report (2008) page 55

⁶ Communiqué du Presse No. 1 du 13 Octobre 2009.

⁷ <http://worldpoultry.net/news/ivory-coast-ravens-did-not-die-from-h5n1-id4589.html>

⁸ Personal communication with the CVO, October 2009

⁹ See INAP Report (November 2008), page 12

¹⁰ Report Exercise on Highly Pathogenic Avian Influenza: FAO contribution to the UNSIC report (2008) page 55

influenza preparedness, prevention and control envisaged in the INAP is considered by many local stakeholders to be more comprehensive. It includes two animal health sub-components (strengthening of preparedness and prevention capacity for avian influenza and strengthening of response capacity for avian influenza) with seven associated activities that range from strengthening veterinary services to providing improved surveillance and support to the poultry sector. The evaluation team also found the document to be a major improvement, and commend the detailed analysis of the country's situation made during its preparation.

The Government's handling of the recent suspect case showed that a full adoption of the activities envisaged in the INAP is yet to occur. The team noted for example that disease containment and outbreak communication activities did not involve a crisis management group and were rather taken more on an *ad hoc* basis, apparently because the suspect outbreak was found in a highly sensitive place, the French International School, which is the preferred school of diplomats based in Abidjan. The major limitation to following the new strategy was however a lack of funds. Following the positive diagnostic by LCBV, the Department of Veterinary Services found itself better prepared for disinfection and containment activities but with no operational funds at its disposal even for small purchases such as buying petrol and paying for the delivery of samples to and from the laboratory. As in 2006, FAO had to cover these and other operational costs to allow quick delivery of samples for testing. The evaluation team was informed by FAO and the Government itself (represented by the CVO) that in the absence of money being provided by external sources such as FAO, action would not have been taken on time or even taken at all. This, after earlier multi-million FCFA losses in the recent past, is a matter of serious concern, particularly if the country were to face a wave of new outbreaks.

IV. DONOR AND TECHNICAL ASSISTANCE SUPPORT

The INAP (table 6, p 37) provides figures on donor and technical assistance support till 2008.

Table 1. Resources mobilized for Avian Influenza (2006-08)

Partner	Budget (USD)	Budget (FCFA)	Project/Activities
FAO	815.874		SFERA funds (OSRO/GLO/504/MUL and OSRO/GLO/601/SWE)
African Development Bank	300.000		
CDC/USAID	772.000		
European Union	734.533		Budget : 599.611 Euros ; project implemented by FAO
UNICEF	50.000		Communication materials
China P.R.	130.000		Equipment for 1.000.000 Yuans
Government		750.000.000	324 millions CFA executed in 2006 ; no data for 2007-08
TOTAL	2.902.407	750.000.000	

The team was informed that there have not been any major activities in 2009; largely because of the decreased attention given to HPAI by donors and that most assistance was of an emergency, short-term, nature. Some regional activities are still ongoing and they include the EU-funded AU-IBAR US\$ 30 million SP-INAP project which is expected to contribute

towards the implementation of the INAP¹¹. This project has earmarked around US\$ 1 million for Côte d'Ivoire out of which US\$ 300,000 has already been transferred to the country (although the funds have apparently not reached the Veterinary Services yet). The USAID-funded STOP Avian Influenza project is also still active and has held regional bio-security workshops together with ECTAD Bamako and USDA. UNDP also provided funds (about US\$ 30,000 in 2007) for communication and socio-economic studies on the impact of avian influenza.

A number of local organizations have also been involved in avian influenza preparedness activities, mostly in cooperation with FAO and/or the Government. They include the "Interprofession Avicole Ivoirienne" (IPRAVI), which is an umbrella organization for the "modern" poultry producers associations (UACI, ANAVICI and INTERAVI), PROVETO, and a number of entrepreneurs whose particulars are well documented in FAO's 2008 poultry sector review. Some of these organizations, such as IPRAVI, have seen a surge in membership, and are now strong advocates on matters of importance for the poultry sector.

V. ROLE AND ACTIVITIES OF FAO

As concluded by the First RTE, FAO at large has been an active player in support of Côte d'Ivoire's efforts to prevent and control the spread of avian influenza. Technical support was first provided by FAO HQ at the early stages (2006-07) through short-term missions, with ECTAD Bamako providing the technical leadership and most of the backstopping in 2008-09. The FAO Representation, through the Emergency Coordination Unit, has led project implementation since day one and has also provided day to day supervision, and in consultation as necessary with ECTAD Bamako and HQ, has given practical advice on matters related to animal disease control.

As of 2 October 2009, about US\$ 1 m (This figure reaches about US\$ 1.5 m when procurement carried out through FAO HQ is included) has been spent by ten different projects (one national and nine global/regional) to support in-country activities. A table summarizing expenditure per project can be found below. This will be followed by a detailed assessment of the main national (OSRO/IVC/603/EC) and regional/global projects (SFERA).

¹¹ http://www.au-ibar.org/ach_animhealth/spinap.htm

Table 2. Avian Influenza Projects implemented in Cote d'Ivoire as of October 2009

Project	EOD	NTE	Donor	Total Approved Project Budget	Total Expenditures under the project	Budget Allocated for Cote d'Ivoire through FBA	Expenditures and Commitments under FBA for Cote d'Ivoire
National - (OSRO/IVC/603/EC)	01-Jul-06	30-Apr-08	EC	734,537	660,625	495,499	441,897
Total National Projects:				734,537	660,625	495,499	441,897
Global - (OSRO/GLO/604/UK) child	29-Mar-07	31-Mar-10	UK	5,388,655	4,439,887	12,962	11,734
Global - (OSRO/GLO/601/SWE BABY02)	28-Apr-06	31-Dec-09	Sweden	3,418,047	3,408,386	80,000	81,849
Global - (OSRO/GLO/504/MUL BABY04)	01-Jan-06	30-Apr-07	France	5,930,420	5,869,949	259,635	234,505
Global - (OSRO/GLO/702/CAN CHILD)	14-Mar-07	13-Apr-10	Canada	7,827,361	5,197,944	8,000	7,920
Regional - (OSRO/RAF/612/USA BABY03)	01-Jun-07	30-Mar-09	USA	225,001	208,471	8,337	3,084
Regional - (OSRO/RAF/722/SWE)	28-Nov-07	31-Dec-09	Sweden	6,738,646	4,657,185	78,400	20,828
Regional - (OSRO/RAF/704/WBK CHILD)	29-Jan-07	30-Jun-09	WBK	2,754,858	2,206,992	5,000	4,650
Regional - (OSRO/RAF/717/USA)	01-Mar-08	31-Mar-10	USA	1,432,000	823,140	16,800	15,680
Regional - (OSRO/INT/604/USA BABY02)	17-Jan-07	30-Apr-14	USA	1,000,000	687,670	67,575	59,015
Total Global/Regional Projects:				34,714,988	27,499,624	536,709	439,265
Grand Total:				35,449,525	28,160,249	1,032,208	881,162

SFERA Projects in Côte d'Ivoire (OSRO/GLO/504/MUL & OSRO/GLO/601/SWE)

At the time of writing this report, about US\$ 900,000 from SFERA funds have been spent in Cote d'Ivoire (over US\$ 340,000 for direct in country activities and over US\$ 530,000 at FAO HQ and Bamako for procurement and the fielding of expert missions). As shown in table 3, the bulk (around US\$ 800,000) was spent in 2006-07 in support of the vaccination campaign.

OSRO/GLO/504/MUL was evaluated in late 2006 as part of the First RTE. The Côte d'Ivoire share was funded out of the French and Norwegian contributions. The project concept note included as the main objective "to limit the spread of avian influenza outbreaks in Abidjan through the strengthening of control measures and provision of equipment and materials for the laboratory and the veterinary services". The project was also expected to support the implementation of the vaccination campaign and the formulation of new project proposals for disease prevention and surveillance. A study, followed by a workshop held jointly with USDA/APHIS, on biosecurity in live bird markets, was also conducted with the involvement of the veterinary services of Abidjan District.

Table 3. Activities funded by SFERA in Côte d'Ivoire in 2006-07

Activity	Budget (US\$)	Description
Emergency fund at the disposal of the FAOR	45 000	Used in the preparatory phase for training and advocacy purposes, and purchase equipments
Procurement from HQ	30 000	Video projector and laptop
Emergency procurement at local level	64 500	Diagnostic kits and other laboratory materials
Emergency procurement at local level	235 500	Laboratory supplies and various equipments for the Vaccination campaign
Purchase of 12.1 million doses of vaccine	412 000	393 851 to the producer (Merial) plus custom taxes
Expert missions	28 874	Fielding 5 short term missions by international consultants and the hiring of a long-term national consultant
Total	815 874	

Source: SFERA report (http://www.fao.org/docs/eims/upload//217280/rep_hpai_sfera_en.pdf)

The First RTE found that the "SFERA funds made available through this project were key to FAO for providing a timely support to the Government and allowed for the refinement of the emergency control plan and resource mobilization" (e.g. formulation of project OSRO/IVC/603/EC). The second RTE team shares this view, but also notes that project funds were subsequently diverted to support the vaccination campaign in view of the lack of earmarked funds for this activity (see discussion below regarding project OSRO/IVC/603/EC)

Funds from project OSRO/GLO/601/SWE were on the other hand used mainly to fill in technical assistance gaps and conduct specific follow-up activities. The evaluation team did not receive a concept note for this project, but was informed that the missions and activities

conducted (e.g. expert missions in 2006¹² and 2007¹³ to support and assess the local laboratory capacity as well as improving biosecurity levels of selected live bird markets in Abidjan) were conducted as a follow-up to the previous SFERA project, and/or complementary to those undertaken by the EC-funded project and other ongoing regional initiatives (such as that on laboratory networks).

The evaluation team visited the laboratory in Bingerville as well as a few live bird markets in Abidjan to observe and gather views from the beneficiaries on the services provided by FAO. The feedback received from the laboratory was very positive, albeit there are still outstanding issues such as a lack of reagents and the need for an incinerator to properly dispose of expired vaccines. These issues have already been highlighted by FAO in 2007 (see Seck and Dauphin report) but remain unresolved. Following the incorrect diagnosis of the suspect H5N1 case, the team believes that there is also a need for refresher training on H5N1 diagnosis and a proficiency test to find out the origin of the mistake and take corrective action. There is also a need to strengthen the surveillance as it is not undertaken on a regular basis (only 400 laboratory analysis performed every year) and is not carried out following a comprehensive risk based sampling (e.g. including the role of wild birds).

Feedback from the visit to the live bird markets and the discussions held with the veterinary services of the Abidjan district was also positive regarding the assistance provided. The team indeed noted a high level of avian influenza awareness among the sellers met and a genuine desire to improve their facilities as a result of the training on biosecurity provided with FAO support. The team was informed that the district veterinary authorities were following up this activity mainly through the provision of disinfectants and periodic visits, but at the same time it was made clear that without any economic incentive to improve their facilities, most sellers will not change some of the riskiest practices still being widely undertaken, such as separation of birds from humans and safe slaughtering of birds.

OSRO/IVC/603/EC “Emergency intervention for the prevention, early detection and fight against avian influenza in Côte d’Ivoire”

This project had a budget of Euro 599,611 (US\$ 734,537). It operated from June 2006 to April 2008. The project was originally intended to focus on preparedness and prevention, strengthening of the laboratory diagnostic capacity, awareness raising and surveillance activities country-wide, but in view of the changing situation (i.e. three official outbreaks between April to November 2006) it was amended to mainly support surveillance and vaccination activities in areas considered to be at high risk of infection (Abidjan and border areas). The project’s refocus was the product of a long negotiation process between the donor, the Government (represented by the Department of Veterinary Services, DSV and the National Laboratory for Agricultural Research, LANADA) and FAO, as the new activities were of a longer term nature (whereas funds were earmarked for emergency work); this is reflected in the successive extensions to the project’s duration (from June 2007 to December 2007 to April 2008).

The project was implemented by FAO’s Emergency Co-ordination Unit (ECU) in Abidjan with technical support and backstopping from ECTAD Bamako and ECTAD HQ. The original project design called for a greater role of the Government in project implementation,

¹² Rapport de mission en Côte d’Ivoire (July-August 2006, B. Seck)

¹³ Evaluation of the LANADA Laboratory in Bingerville, Côte d’Ivoire (March 2007, G. Dauphin and B. Seck)

but following a change in Government priorities (emphasis on toxic waste disposal) emergency funding allocated to DSV and LANADA for avian influenza disappeared¹⁴. ECU had to step in and play a greater implementation role than expected. Funds were also allocated to DSV to carry out surveillance and epidemiological activities; a memorandum of understanding was signed with LANADA to carry out sero-surveillance of vaccination and provide training on the use of rapid test kits and sampling; IPRAVI was hired to undertake awareness raising campaigns on avian influenza and vaccination among its members; and a number of private veterinarians were hired to conduct the vaccination campaign against avian influenza as well as to undertake a geo-referenced survey on bio-security at farm level.

In 2006, the decision to vaccinate was taken jointly by the Government, FAO and private industrial breeders, at a time when the efficacy of vaccination was not well documented, there was no previous experience in large scale vaccination of backyard poultry, and in the context that major outbreaks in and around Abidjan, a big city surrounded by commercial and backyard farms, would have had potential negative health and socio-economic consequences. The vaccine strategy designed by the national CVO and FAO had 3 main pillars:

- Provision of information to poultry breeders and the population at large by the national Veterinary Services, FAO, private veterinarians and IPRAVI.
- Vaccination focused on highly productive zones (South and East) and on borders with Ghana and Burkina Faso, to be carried out by private veterinarians, but monitored and controlled by the Veterinary Services and FAO. Farms with less than 1,000 birds were to be vaccinated free of charge by private veterinarians and their assistants, while larger farms were to be vaccinated at a cost of 10 FCFA per bird.
- Sero-monitoring of vaccinated poultry to be carried out by LANADA.

The evaluation team reviewed the criteria used in designing the above strategy with local stakeholders (DVS, LANADA, IPRAVI and FAO) and found it to be justified on technical grounds. As the campaign progressed, however, certain operational issues that were not adequately taken into account at the design stage ended up affecting the campaign's success. The project terminal report lists some of these issues and the overall results achieved:

- The decision to vaccinate was taken very early in the process (May 2006); SFERA funds were used to purchase 12 millions doses of vaccine H5N9 from Merial with the objective to vaccinate the backyard sector around Abidjan and the entire industrial sector which is concentrated in the South. Then the strategy was changed and extended to backyard poultry along the border with Ghana and Burkina Faso where outbreaks were occurring, and there were private veterinarians available to conduct the campaign.
- Vaccination started in June 2006 and ended in February 2008 at the date of expiry of the vaccine. Around 3 million doses were used, mainly in southern regions, but also in northern and eastern regions in small farms. In the large farms, about 200,000 grand parent and 3.5 million layers were vaccinated, mainly in the South. In total only about 7 million doses were used, with the remainder being kept at LANADA.
- The main constraints affecting the vaccination were the limited human and financial resources available at DSV and LANADA to conduct the campaign. This was then coupled by the lack of collaboration from the industrial breeders who first strongly lobbied for the vaccination, then vaccinated but without feed back and eventually refused

¹⁴ The mission was informed that the national emergency funds that were expected to be used for the campaign were at the last minute allocated to other more pressing activities (such as mobilization of IDPs) by the Ministry of Finance. This resulted in further delays (that are partially responsible for the expiration of the vaccines) and long discussions with the donor to reallocate project funds to conduct the campaign in a shoestring.

to vaccinate¹⁵. FAO had to respond to these difficulties, and eventually had to run the campaign on its own.

- In spite of FAO's efforts, the lack of monitoring by DVS/LANADA and the lack of reliable data on the poultry populations by regions and sub-sectors resulted in an inability to estimate the vaccine coverage and the efficiency of the vaccination. Similarly, the sero-surveillance survey conducted by LANADA, with the objective of determining vaccine efficacy, was incomplete and the partial results obtained could not be interpreted.

The evaluation team, when asked in retrospect “whether it was necessary to vaccinate”, is of the view that in a country where outbreaks appeared around a big city, threatening not just animal but also human health, with the frightening example of the earlier spread of the disease in South East Asia, the proposed pilot vaccination campaign was a challenging, but given the circumstances, reasonable technical option. The main limitation observed by the team was not the “why” but “how” it was done. The project, and the vaccination campaign at large, suffered from a number of problems, and as it is often the case with pilot projects, operational and logistical risks and constraints were underestimated, which overall affected the final outcome.

Positive aspects of the vaccination were indeed mostly indirect, by reassuring consumers and farmers and by getting better data on poultry farms. The project also achieved positive results through its awareness raising activities, which addressed people's fear of eating local chicken and informed around 800,000 poultry breeders on safe poultry practices. DVS and LANADA (particularly LCBV) were also given equipment and training, without which it would have been difficult for them to identify, diagnose and respond in a timely way to disease outbreaks. IPRAVI, the Veterinary Services of Abidjan district, the Veterinary Services of the Army, and a number of private veterinarians were also trained by the project on avian influenza preparedness and, as noted earlier, some of the activities conducted (such as biosecurity in live bird markets) are being followed-up several years after they took place.

At the second question “was it necessary to continue vaccination when it became obvious (March 2007) that there was no operational or logistical support from the Government and the private sector?” the team is of the view that given the substantive investments already made on the vaccine stocks and FAO interest in determining the “effectiveness of vaccination”¹⁶, FAO had no choice but to follow-up and continue supporting the vaccination campaign. After the expiration date of the vaccine stocks in February 2008, with less than one third being used, the evaluation team considers that FAO did well in stopping its support to the campaign.

A major lesson for Côte d'Ivoire, and for other countries still debating whether or not to vaccinate, is that the country, and FAO itself, should not embark on or promote vaccine use in the absence of secure funding and long-term commitment; and perhaps more importantly, before ascertaining local capacities and the epidemiological situation of the disease.

Regional projects:

Côte d'Ivoire has participated in a number of FAO regional/inter-regional initiatives as follows:

¹⁵ These issues were already highlighted by FAO in the Assessment of the Vaccination Strategy (March 2007); including that part of the problem with the private sector was the fact that other countries such as Ghana (near Agnibilekrou) did not allow import of vaccinated chicken, as their HPAI control strategy excluded vaccination.

¹⁶ Report of the First Real Time Evaluation of FAO's work on HPAI (2007)

- TCP/RAF/3016 – Emergency Assistance for Early detection and Prevention of Avian Influenza in Western Africa.
- OSRO/GLO/706/FRA – Appui au système d’alerte précoce mondial et aux initiatives des réseaux régionaux pour la prévention et le contrôle de l’Influenza aviaire en Afrique centrale et de l’ouest.
- OSRO/RAF/612/USA Baby 03 – Support FAO’s Global Avian Influenza and Eradication programme for regional activities in West Africa.
- OSRO/RAF/717/USA – HPAI Early Warning Early Response and Preparedness Strategy Support in Western and Central Africa.
- OSRO/INT/604/USA Baby 02 – Support for FAO/OIE/WHO collaboration on HPAI rapid response and containment.

The team noted that some of these projects (TCP/RAF/3016 and OSRO/RAF/612/USA) have co-funded key backstopping missions (on laboratory capacity) and in-country activities such as the closure workshop of OSRO/IVC/603/EC. Others have funded regional laboratory networks (OSRO/RAF/717/USA) and global exercises such as the INAP. The team considers that most of these regional/global activities have brought an added value to the country, particularly in terms of complementing national activities and allowing some networking with regional peers.

VI. SYNTHESIS AND DISCUSSIONS OF FAO’S CONTRIBUTIONS AND ROLES

Relevance and Appropriateness of FAO’s Strategy and Programme at country level:

As noted earlier, numerous projects and experts were mobilized in Côte d’Ivoire to support the country’s response. These were proportionally more than in neighbouring countries (Nigeria and Togo), likely because of the weak veterinary services and laboratory capacity following a civil war, vis-à-vis those of their regional peers.

The mission noted that FAO’s support was discussed, organized and set up in close consultation with the Government. The INAP prepared in late 2008 jointly by the Veterinary Services, FAO, OIE, AU-IBAR, WHO and ALIVE after a large consultation involving many stakeholders including the poultry industry, is an example of this. Today, but particularly following the recent suspect case, HPAI is still considered a priority by the Veterinary Services but certainly more advocacy needs to be done at higher (and different) levels of Government to secure adequate resources for disease prevention and control.

The activities carried out have been largely in line with the FAO/OIE’s global strategy to prevent and respond to the disease. The initial response to the avian influenza outbreaks was a combination of focal culling and compensation, disinfection and closure of markets and eventually vaccination. The priority was to protect human health through animal disease control. At the same time, and with a longer term view, training and information were provided to local livestock actors and to the public at large; capacity building activities were conducted to enhance laboratory diagnosis and the overall capacity of the Veterinary Services as well as to improve bio-security in weak parts of the chain (such as live bird markets). The vaccination campaign was “a gamble” but it was probably a necessary one to make. Also, the emergency response was in general suitable for the 2006-07 scenario, but the lack of long-term funding for avian influenza preparedness and response has affected the effectiveness of activities that by their very nature (e.g. increasing laboratory capacity; conducting disease

surveillance, carrying out studies on the epidemiology of the disease, the role of wild birds and cross-border informal trade in disease introduction, etc.) requires longer term financial and technical support.

The evaluation team noted good linkages and communication between the FAO Representation (particularly its Emergency Coordination Unit) and ECTAD Bamako, which have facilitated the provision of support not just for emergency work but in general for any sort of technical advice on animal health. This has however not been translated into the mobilization of long term funding, in part because of the relatively limited availability of ODA for livestock development activities in Cote d'Ivoire but also due to the limited fundraising capacity available at country or regional level for non-emergency work (when compared with the capacity developed for emergency activities at HQ and at the country office).

Efficiency of FAO's Field Support

FAO responded immediately to the official request for assistance and the first experts were sent very rapidly, even if it was at a difficult time with political and social instability, as recognized by the CVO. During the recent suspect outbreak, the support provided by the FAO expert in Côte d'Ivoire was very timely, with ECTAD Bamako and ECTAD Rome expressing also their readiness to help.

Even though FAO's response was in general adequate in terms of expertise, funds and internal coordination, major handicaps to efficient implementation have been the limited human capacity of the Veterinary Services and the Laboratory as well as the relatively low engagement from the private sector. Considering the billions of FCFA in losses due to the 2006 HPAI crisis, it is difficult to understand why the public veterinary systems remained so under-resourced (see PVS report for further details). By the same token, the relatively minor expenses incurred by FAO and the donors to prevent and control avian influenza outbreaks can be considered to have been cost-effective.

Effectiveness of the national programme

The evaluation team considers that there is not enough evidence to show that the measures taken with FAO support have led to the reduction and eventual disappearance of the disease. Part of this responds to a lack of knowledge and understanding of the drivers behind the wave of infections that affected the country in 2006-07 and the absence of outbreaks in the whole region for the past few months. The team was told by several stakeholders (including the Government, IPRAVI, private sellers and district veterinarians) that the vaccination and other response measures implemented with FAO support (such as improving bio-security in markets around Abidjan and increasing awareness of producers and public at large on health risks associated with avian influenza) have very likely contributed to the absence of new outbreaks in some high risk areas and may have had a positive effect in re-gaining the trust of consumers and producers of poultry. The team was also informed that the communication activities and the surveillance and diagnostic systems set up during the peak of the outbreaks did play a role in raising awareness and temporarily changing some risky practices. These preventive measures have reportedly now virtually collapsed, with the exception of the ongoing biosecurity work in markets, due to lack of funding. Laboratory capacity was also said to be decreasing with no funds allocated to procure HPAI reagents or to undertake refresher training of staff.

In the absence of additional Government funding, at least in the short term, the evaluation team was informed that hopes for re-establishing longer term capacity rest with expectations that donors will contribute to the follow-up of the INAP process. The INAP does indeed propose a number of sensible measures that need to be followed up in order to restore local capacity and increase the understanding of avian influenza dynamics in the country. For example, despite the production of a comprehensive review of the poultry sector, the data collected has not been used in any risk analyses that would in turn had fed into the design of surveillance activities or into the design of a strategic plan for the improvement of the poultry sector. On the other hand, the avian influenza crisis has provided lessons to the Veterinary Services, which can be applied to improve avian influenza control. Nevertheless, to fully take into account such lessons, human and financial resources do and will remain a key constraint.

Effectiveness of global/regional programmes at country level

Several HQ-based mechanisms, such as the Crisis Management Centre (CMC) – Animal Health, OFFLU and GLEWS, have had some involvement in the early response and the design of follow-up interventions. ECTAD, and particularly CMC, staff were heavily involved in the initial response, particularly in the design of the vaccination strategy, and were reportedly available to field a mission, in co-ordination with ECTAD Bamako, to help with the suspect outbreak. GLEWS expertise has apparently not been directly used in Côte d’Ivoire. The team believes that, in co-ordination with ECTAD Bamako, GLEWS could play an important role in understanding HPAI epidemiology and risk factors in the country, but for that it would need reliable poultry disease and production data which at the moment is lacking. OFFLU expertise was reportedly used for laboratory diagnosis but on a small scale. The main source of assistance for this was indeed ECTAD Bamako through the RESOLAB network.

As documented in the regional ECTAD Bamako report, regional networks have played a key role in building capacity and increasing information sharing and transparency in a cost-effective manner. It remains to be seen if countries such as Côte d’Ivoire and regional organizations such as UEMOA are ready to champion and take ownership of the networking concept, particularly in the absence of external funds.

Perhaps the weakest aspect identified by the team has been the limited research and focus on the role of migratory birds in the spread of HPAI in Côte d’Ivoire, particularly since wild birds (mainly sparrow hawks) were considered to be involved in the initial outbreaks in 2006 and were again singled out as a potential source of infection in the suspect H5N1 outbreak of October 2009. A better knowledge and understanding of the role played by wildlife, and also on domestic poultry movement, would have definitely helped the country to review their surveillance and detection mechanism, and would have also allowed this team to provide a better judgment on the appropriateness of the measures taken.

Sustainability and Impact

The evaluation team considers that FAO’s work has contributed to the development of individual capacities through the numerous and necessary trainings provided to civil servants, private veterinarians, poultry producers and sellers. The impact on the institutions and organizations is far less evident. In fact, in order to properly document and assess the effects of capacity building and other activities, clear priority areas with milestones to be attained

should be identified before hand in the form of a strategic framework. Such a framework for FAO operations should clearly lay out the organization's contribution to avian influenza preparedness and response in the country within the national agenda. This would also then have to be complemented with an outcome-oriented monitoring system that identifies and reports on the achievements and shortcomings of the institutions building process.

As discussed earlier, activities supported by FAO such as disease surveillance, rapid diagnosis, effective culling and compensation, vaccination, and the bio-security improvements in some live birds markets have probably all played a role in the apparent control of the disease. It remains difficult to say, however, which has been the key factor behind the decrease in the number of outbreaks, and even more difficult to ascertain what would have happened without these measures.

Several reports (INAP, FAO, OIE) do also continue to highlight that the overall capacity of the Government's Veterinary Services remains seriously weak, and while it may be able to respond effectively to minor outbreaks (such as the suspect case witnessed by the mission), it will likely face serious problems to contain multiple outbreaks. To this end the team considers that the OIE's PVS evaluation has made very sensible suggestions for a sustainable strengthening of the DVS, and agrees with their finding that the lack of a strong chain of command system for HPAI control that involves local public and private vets is probably one of the main constraints for an effective response.

Overall, the team considers that the FAO programme has contributed to limiting the spread of the disease, and to a certain extent also the panic associated with it, and by doing so, it has supported the recovery in poultry consumption and production, knowing that poultry is an important source of proteins and income for several thousands of people in the country.

It is worth noting here that although FAO has played, and continues to play, a prominent role, it was not the only international organization involved. Several other donors (USAID/CDC, China, Asian Development Bank, France, etc), UN agencies (UNICEF, UNDP), the Government and the private sector itself were all contributing resources to enable the participation of experts, organizing the emergency response, providing reagents and equipment for the laboratory as well as vaccines and Standard Operation Procedures, etc. The evaluation team was informed that FAO's role of coordinating closely with the Government and partners was key to avoid duplications. Some partners met by the evaluation team went on to say that "no other agency would have been able to do so many things, with such a range of expertise and so rapidly at the country level".

Although there were some early successes during the emergency response, the evidence now suggests that the country is far from being well prepared to control a major wave of HPAI H5N1 outbreaks. There is a long to-do list that includes all aspects of disease preparedness, prevention and control. For a start FAO should continue to follow-up the country situation very closely so that it can strategically support the INAP process and provide immediate assistance should a new case occur. SP-INAP funds have already been provided by AU-IBAR for avian influenza activities, but due to administrative requirements from the Ministry of Finance, the funds cannot be directly accessed by the Veterinary Services. The team believes that without strong FAO advocacy and follow-up with the Government, the private sector and donors to keep their interest on avian influenza and livestock issues high in the agenda, the limited capacity gained will inexorably fade till the next crisis strikes.

VII. CONCLUSIONS AND RECOMMENDATIONS

Côte d'Ivoire's response to avian influenza outbreaks has been a combination of vaccination, focal culling, disinfection and closure of markets, with the active support of FAO and the private sector. FAO played a key role during and since the outbreaks of HPAI in 2006, by mobilising donors, expertise and the international community at large to support the country's prevention and response measures.

Three years after the first outbreaks, a comprehensive strategy (INAP) has just been officially approved by the Government, but the surveillance is still weak or absent; the coverage and efficacy of vaccination could not be evaluated for lack of data, the bio-security has improved in some live bird markets around Abidjan but still is far from being enough, a risk analysis remains to be made on the risk of new introduction for which a number of studies needs to be carried out. A suspect outbreak in Abidjan during our stay showed however that the preparedness of the Veterinary Services was fair but again with close and strong support from FAO.

The team thus concludes that the role of FAO has overall been positive in supporting the country to handle the crisis and helping to set up tools to prevent others and that some negative aspects affecting the effectiveness of the measures taken were beyond its control. Specifically, the evaluation team considers that the immediate emergency type of assistance provided by FAO HQ and Bamako, which was followed up by activities at country level, was very positive. The vaccination campaign had a mixture of positive and negative results but probably played a positive role in stabilizing the poultry market. The current state of affairs looks negative but is mainly a reflection of the limited sustainability of the [mainly] emergency work conducted, the poor capacity of the Government and the lack of long-term sources of funding to support the surveillance and the conduct of studies, most of these factors external to FAO.

The evaluation team considers that there is a major gap between the strong role and assistance provided by FAO and others, particularly during the 2006 outbreak, and the critical present situation of the country, and in this line makes some recommendations, chiefly among them that the INAP, which was prepared following a large consultation involving many stakeholders including the private sector, should now serve as the framework for future assistance on avian influenza. In conducting new country activities, FAO also needs to take into account lessons from past experience such as:

Box 1. Lessons Learned in Côte d'Ivoire

- Advocate for prevention/response measures that are going to be sustainable, avoiding programmes that are largely designed, implemented and monitored by external actors;
- Availability of external funds are key to operationalizing the INAP but yet donors were not consulted throughout the process but only at the end; if more exercises of this nature will be conducted (such as the OIE PVS GAP exercise), FAO should advocate for a better co-ordination, involvement and identification of possible funding sources as early in the process as possible. Nevertheless, the INAP and the PVS are critical tools that could be more used and the gaps observed more taken into consideration before starting a project.
- Veterinary Services governance: nothing (or few things) can be done without a real involvement of DVS all along the process from the National Strategic Plan to the final report but particularly on the operational aspects. Even with a very strong and proactive

support of permanent FAO experts, any activity not totally endorsed by DVS will be only partly implemented and the vaccination is one example.

- There is a need for a national co-ordinator, s/he doesn't necessarily have to be the CVO who is often taken by his other duties, but ideally a senior officer who can work with higher levels of Government;
- Surveillance activities both active and passive are very weak, and have almost vanished together with the disappearance of HPAI. One of the best ways to sustain it is to broaden the spectrum of diseases surveyed to other key transboundary diseases.
- The outbreaks of 2006 were not analysed epidemiologically and specifically the role of wild birds was not clarified despite the fact that the first case was diagnosed on a falcon
- Trace back and analysis of outbreaks is a very difficult but essential exercise to better understand the epidemiology of HPAI and to better control it.
- The communication system can be improved as observed during our stay when the false positive case was officially communicated by the Ministry before confirmation by the Reference Laboratory of Padova.
- Laboratory needs not only equipment, reagents and trainings but also good reactivity and motivation to be really involved from the design of samples to the report of results which was lacking is the monitoring of vaccination. Networking is also a very effective backstopping mean particularly at regional level.
- Vaccination requires a strategy that can be adapted when the circumstances need it, good contracts with private veterinarians but also a confident public-private partnership and mutual trust. In view of the team the first two aspects were met but not the third one. A good monitoring needs a real involvement of DVS and LANADA, the most difficult phase being the final sampling.
- Poultry sector is far better known in Côte d'Ivoire but that knowledge still has to be used and applied at policy and technical level.
- Several poultry associations emerged from the crisis and are very useful to diffuse messages on bio-security and other aspects of disease prevention and control.

Based on the above, the evaluation team recommends the following priority actions for FAO:

- Use the INAP and other related assessments (such as the PVS) to mobilize resources to fill in the gaps already identified with the Ministry of Livestock and Fisheries (particularly DVS and LANADA) in the leading role. In this context, FAO could organize with the Government and donors a round table to continue activities on Preparedness and Control of HPAI and other Transboundary animal diseases with potential impacts on human health and livelihood.
- The experience of the suspect case clearly shows the need for further support to laboratory capacity development and the revision of Standard Operating Procedures for disease investigation which will allow for a better understanding of the origin and extension of outbreaks. This support should include the strengthening of critical areas (e.g. outbreak communication, laboratory diagnosis, etc.) through short term missions coordinated through and with heavy inputs from ECTAD Bamako.
- The studies and research started in the 2006-07 period have not been fully used nor finalized to date; In this regard, FAO should:
 - Promote the linking of the poultry sector review and other socio-economic studies with farm census data already gathered to improve disease risk assessment and surveillance.

- Consider supporting the preparation and implementation of a comprehensive epidemiological survey on virus circulation in wild and domestic birds, in and around Abidjan. This will require FAO to pursue collaborative work with different sections of the Ministry of Livestock and Fisheries and reach out other actors such as the Ministry of Environment for wild life surveillance.
- Complement the poultry sector review with more detailed value chain analyses.

With not the same sense of urgency, but equally important, FAO should support:

- The reinforcement of passive and active surveillance and to enlarge the focus of diseases surveyed to key animal diseases like Newcastle disease, CBPP and Rift Valley Fever.
- The organization of training and forums with the participation of public and private sector to improve collaboration and mutual trust.
- The nomination of a National Coordinator from Higher levels of Government to facilitate work with units outside DLS and LANADA.

Annex 1. List of People Met

Ministry of Livestock and Fisheries (MIPARH in French)

Veterinary Services Department (DSV in French)

Dr Kanga, Director/CVO

Dr Bleu, Coordinator, Emergency HPAI programme

Dr Kallo, Chief, Veterinary Services (Abidjan District)

National Laboratory to Support Agricultural Development (LANADA in French)

Dr Ahova, SDQRE

Dr Dea, SDEM

Dr Konoin, SIDTS

Central Veterinary Laboratory (LCVB in French)

Dr M'Betiegue, head LCVB

Dr Danho, chief, viral diagnosis unit

Dr Toure, chief, parasitological unit

Dr Nisng, chief, research and diagnostic unit

FAO Representation in Côte d'Ivoire

Mrs MN Koyara, FAO representative

Mr Patrick Berner, Coordinator, Emergency Unit (UCU)

Dr Monique Nguessan, Consultant, UCU

FAO Donors and Partners

Mr Gounel, Counsellor for cooperation, French Embassy

Dr N Guetta, Director, PROVETO

Mr Ackah, President, IPRAVI

Mr Yelassigne, Economist, IPRAVI

Mr Dihie, President, UACI

Mr Aboubakar, Monitoring Committee, UACI

Annex 2. Documentation Reviewed

Government Documents:

Côte d'Ivoire's National Plan to prevent and fight Avian Influenza (March 2006)
Côte d'Ivoire's Emergency Work Plan against Avian influenza (June-November 2006)
Côte d'Ivoire's Integrated National Action Programme for the prevention and control of human and avian influenza¹⁷ (2008)
MIPARH (2009) Communiqué du Presse No. 1 du 13 Octobre 2009.
MIPARH (2007) Annuaire provisoire de la Direction de la Programmation et de la Planification
MIPARH (Mars 2007) Impact socio-economique de l'épizootie de grippe aviaire sur la filière avicole en Côte d'Ivoire in 2006

FAO Documents and other reports:

FAO's Quantitative and qualitative technical assessment of Côte d'Ivoire's veterinary services capacity (2009)
FAO's Côte d'Ivoire Poultry Sector Review (2008)
FAO/OIE HPAI Global Strategy (2008, 2007 and 2005)
FAO's HPAI Global Programme (February 2008)
FAO Global Programme Progress Report #1 (2007) and # 2 (2008)
First Real Time Evaluation of FAO's Work on HPAI (2007)
Management Response (2007) and Follow-up Report to the First RTE (2009)
Report Exercise on Highly Pathogenic Avian Influenza: FAO contribution to the UNSIC report (2008)
OIE PVS report¹⁸ (2007)
E. Couacy-Hymann¹ et al (December 2007) The First Specific Detection of a Highly Pathogenic Avian Influenza Virus (H5N1) in Côte d'Ivoire,

Plus over thirty reports (including back to office, consultancies, scientific articles, project documents, workshops and terminal/final/progress reports) given to the team in Côte d'Ivoire related to FAO's HPAI activities in the country from 2006-09.

¹⁷ Albeit the INAP was formulated with support from FAO/OIE/AU-IBAR/WHO/World Bank, the Government has full ownership of the report.

¹⁸ Same as above.

SECOND REAL TIME EVALUATION OF FAO'S WORK ON HIGHLY PATHOGENIC AVIAN INFLUENZA

COUNTRY REPORT: NIGERIA

12-16 OCTOBER 2009

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Acknowledgements

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I. INTRODUCTION

Prof. Brian Perry, Dr Humphrey Mbugua and Mr Robert Moore visited Nigeria from 12 to 16 October as part of the Second Real Time Evaluation of FAO's Work on Highly Pathogenic Avian Influenza. In line with the evaluation's terms of reference, the focus of the visit was to determine the relevance, efficiency, effectiveness, sustainability and likely impact of country level assistance provided by FAO through regional and national interventions in the past few years. The ECTAD Country team attached to the FAO Representation prepared a programme of meetings (see annex 1) and made logistical arrangements for the mission.

Nigeria was the first African country to report H5N1 in early 2006. The First Real Time Evaluation (RTE) noted that "*the FAO response was noticeably stronger (than that of Egypt)*" but "*the implementation of projects to carry out active surveillance has been delayed by the bureaucratic processes within FAO as well as the institutional difficulties in Nigeria*". Some of the documented constraints were "*the lack of a direct line of command within the veterinary services*" and the need "*to strengthen the capacity of the [FAO] national office (e.g. by establishing a country level ECTAD team) and to ensure that management systems are in place to facilitate response activities.*"

The Second RTE team has followed-up on the findings of the first RTE and made an attempt to summarize the role of FAO in the preparedness and control of avian influenza in the

following sections. Clearly the outbreak of HPAI in Nigeria as the apparent index country in Africa was of considerable concern globally, given the perceived weaknesses of institutions to respond, the vulnerability of many African societies with their high levels of poverty, and the concern that avian influenza would add yet another disease burden to the human population. Almost four years later, while that concern has not disappeared, the disease has at least for the moment been brought under control, and the efforts made to achieve this have had very positive impacts in Nigeria both on raising awareness of the roles of livestock in processes of sustainable growth, and on the value of effective veterinary services.

II. HPAI STATUS AND EVOLUTION

Nigeria is a poor country, ranked 160th (out of 177) in GDP *per capita*¹. About 60% of the population lives below the poverty line², with most of the Nigerians residing in rural areas and being engaged in agricultural practices. In spite of its declining contribution to the nation's foreign exchange earnings, the agricultural sector continues to play a very important role in the socio-economic development of the country, constituting some 35% of the GDP³.

Traditional livestock production in Nigeria is varied and complex, consisting of farming and marketing of cattle, sheep, goats, poultry and pigs. The estimated poultry population is approximately 140 - 160 million and is estimated to contribute some 10% of agricultural GDP⁴. Taking local production as an indicator of consumption, poultry makes a significant contribution to household food security, being a major source of protein and emergency cash. Based on estimates from the National Bureau of Statistics (NBS) in Nigeria, since 2000, the poultry sub-sector in Nigeria grew at 5.9 percent per year, reaching a population of 150 million in 2005 until the appearance of HPAI in 2006⁵. Since then, a significant reduction in the poultry trading activities (imports and exports) has been observed in (Uzochukwu Obi et al. 2008⁶).

There are considered to be four main groupings of poultry producers, corresponding roughly to the FAO poultry classification of sectors 1–4. Backyard indigenous growers focus on indigenous breeds (chicken, duck, guinea fowl, pigeon, and local turkey) for their own consumption, gifts, and some sales. Their birds roam and scavenge freely, exposed to migratory wild birds that could carry the HPAI virus. Because these producers take few biosecurity measures, their birds are in constant danger of contracting HPAI. Backyard commercial producers derive most of their livelihoods from poultry-related activities but also generate income from other sources. Although they take more hygiene and biosecurity measures than the indigenous growers, their birds also are susceptible to HPAI infection and face an additional risk of contracting the virus through toll-milled feed. Medium-to-large-scale commercial producers are better organized in terms of on-farm hygiene and biosecurity, but may have unfenced premises, free access for unauthorized personnel, allowing

¹ UNDP, Human Development Index, 2005

² Socio-Economic Impact of Avian Influenza in Nigeria, UNDP, 2006

³ Adene D.F. and Oguntade A.E., The structure and importance of the commercial and village based poultry industry in Nigeria, October 2006

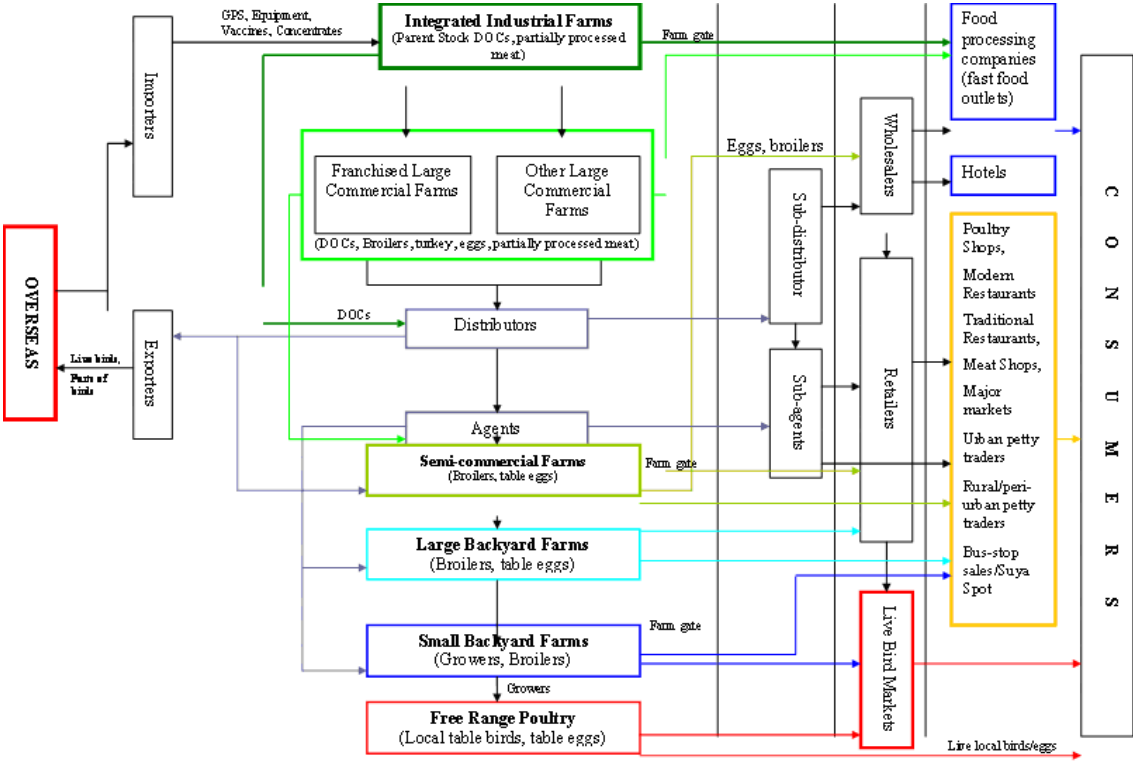
⁴ FDLPCS, 2006. HPAI in Nigeria: Strategies for Prevention of Introduction, Disease Surveillance Networking and Contingency plan for a disease emergency, pp 10.

⁵ Nigeria, National Bureau of Statistics (NBS). 2006. Economic performance review April/July 2006. Federal Republic of Nigeria, Abuja, Nigeria

⁶ Uzochukwu-Obi, T., A. Olubukola, and G. A. Maina. 2008. *Pro-poor HPAI risk reduction strategies in Nigeria —Background Paper*, Africa/Indonesia Team Working Paper No. 5, IFPRI. <<http://www.hpai-research.net/index.html>>

indiscriminate access to poultry pens. The experiences of some of their colleagues whose farms were decimated in the 2006–07 HPAI outbreaks forced them to pay closer attention to biosecurity. Industrial farms have the highest levels of biosecurity; their risk of spreading HPAI is minimal because integration is vertical rather than horizontal. The diagram below shows the complexity of poultry trade flows in Nigeria (see reference in footnote 5).

Figure 1. Poultry Trade Flows in Nigeria



Intensively managed commercial and semi-commercial poultry farms - mostly located in urban and peri-urban areas - constitute about 25% and 15% of the poultry population respectively⁷.

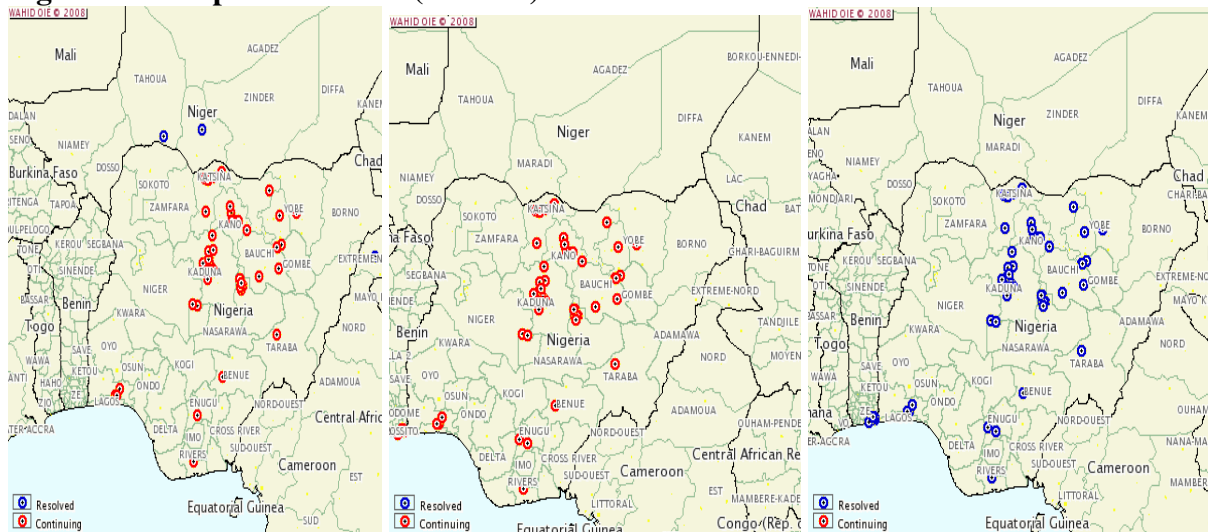
Nigeria was the first country in Africa affected by the H5N1 virus, with HPAI outbreaks first reported in the Kaduna State and confirmed by the Minister of Agriculture and Rural Development on February 8th, 2006. The disease then spread rapidly to 97 Local Government Areas in a total of 25 States and the Federal Capital Territory⁸, with some 440,000 birds culled in the first two months⁹.

Nigeria suffered waves of HPAI outbreaks that peaked twice in February 2006 and February 2007. The outbreaks affected 3057 farms/farmers causing 1.3 million of the country’s 160 million birds to be destroyed at the cost of US\$ 5.4 m paid in compensation by the government of Nigeria (FLD, 2008).

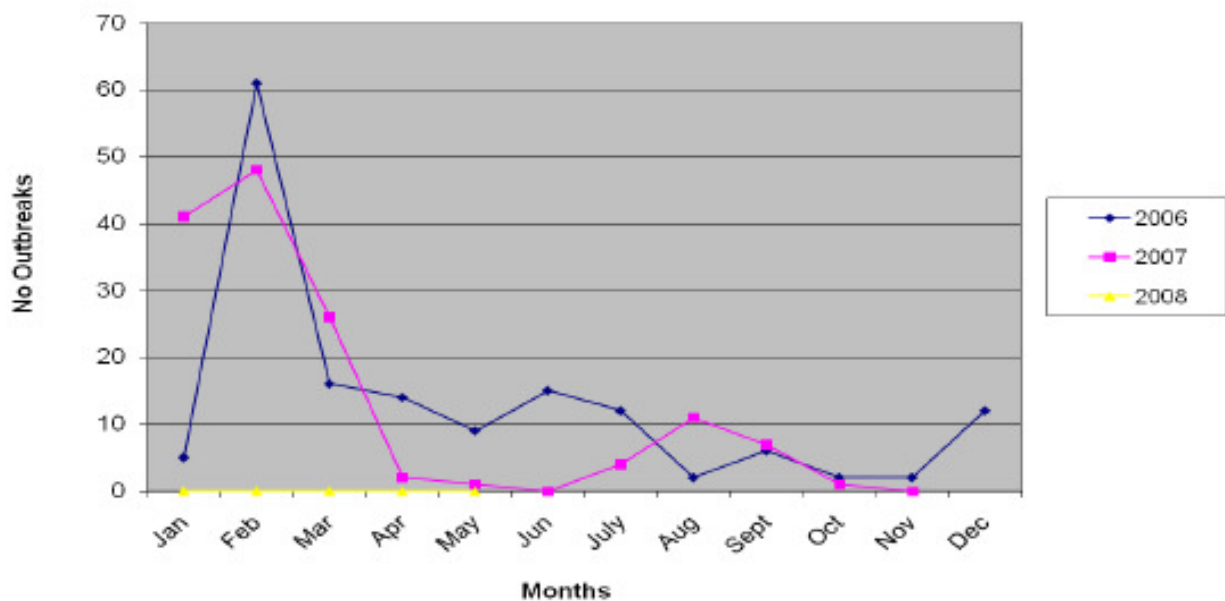
⁷ FAO (2008) Poultry Sector Country Review
⁸ AICP Project website, 2008
⁹ A. Riviere-Cinnamond, Compensation Strategy Nigeria, April 2006

The last outbreak of the first wave of disease was recorded in the Anambra State in October 2007. The disease was again reported in July 2008 in Kano and Katsina States, and was quickly brought under control.

Figure 2. The spread of virus (2006-08)



Source: World Animal Health Information Database (WAHID), OIE (2008)



The figure above shows the monthly incidence of HPAI in 2006, 2007 and 2008.

One documented human case of disease infection occurred in January 2007, associated with a live bird market in Lagos. Although the situation is now under control, a recent study by the AICP¹⁰ documented that the “live bird markets as presently operated are too far from being bio-secure and that the operators are not really mindful of the compelling need for their bio-safety and those of their customer clients”.

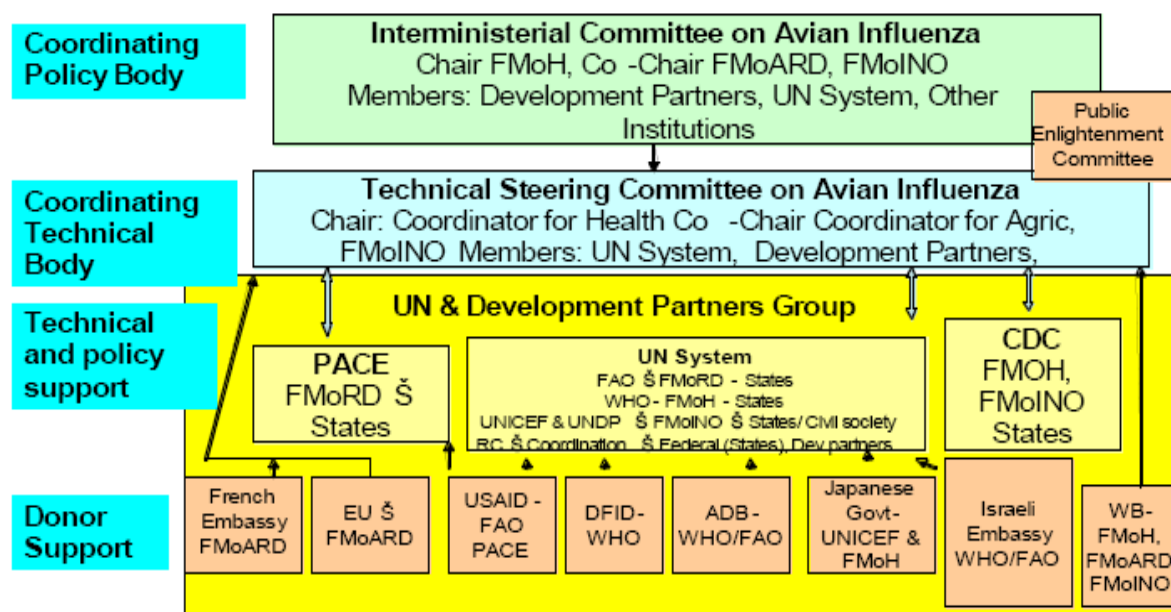
¹⁰ Avian Influenza Control and Human Pandemic Preparedness and Response Project, The development of live bird markets in Nigeria, March 2008

III. NATIONAL HPAI RESPONSE FRAMEWORK

National institutions and agencies responsible for the overall regulation and monitoring of human and animal health, information and waste management standards in Nigeria include: i) the Federal Ministry of Health; ii) the Federal Ministry of Agriculture and Rural Development; iii) the Federal Ministry of Environment and Urban Development; iv) the Federal Ministry of Information.

In this context, direct responsibility to trace and monitor the movements of livestock through registrations, licenses and permits lies within the Federal Department of Livestock and Pest Control Services (FDLPCS hereinafter, inside the Ministry of Agriculture and Rural Development). The effective prevention, detection and control of animal epidemics are the responsibilities of the National Veterinary Services (NVS) and the Nigerian Veterinary Quarantine Services (NVQS).

With the outbreak of HPAI in February 2006, an Inter-ministerial Committee on HPAI - comprising the Federal Ministries of Agriculture, Health, Information and National Orientation, together with representatives of the international and donor community (WHO, FAO, EU, DfID and USAID) - was set up to ensure proper coordination of information and activities on the prevention, management and eradication of the disease in the country. The Inter-Ministerial Committee was also charged of the supervision of a newly created AI Crisis Management Centre. The budget of NVS was also increased in 2007 as a “result of the provision for HPAI activities”.¹¹ The structure of the avian influenza response bodies are illustrated in the figure below (source Obi et al., 2009¹²).



The control of the diseases of all animals in Nigeria is still regulated by the Animal Disease Control Act (No. 10/88), which sets the rule for the import/export of animal products, surveillance and notification of diseases, compensation policies, etc. According to a WB

¹¹ Report Exercise on Highly Pathogenic Avian Influenza: FAO contribution to the UNSIC report (2008)

¹² Uzochukwu-Obi, T., A. Olubukola, and G. A. Maina. 2008. *Pro-poor HPAI risk reduction strategies in Nigeria —Background Paper*, Africa/Indonesia Team Working Paper No. 5, IFPRI. <<http://www.hpai-research.net/index.html>>

financed study, most of the core areas covered by the Act have now lapsed, including the number (250) of poultry and hatcheries to be registered, the size of penalty set in case of contraventions, and the list (context and specificity) of poultry diseases.¹³

Emergency plan and policies

When the global alert on the HPAI virus erupted in 2004, the Government asked a team of subject specialists of the University of Ibadan to draft a preliminary proposal for action as part of the pre-epidemic activities. Soon after, in 2005, two inter-ministerial Committees (on Health and Agricultural issues) worked on a National Emergency Preparedness and Contingency Plan, where operational, logistical and material requirements needed for a potential HPAI outbreak were considered.

When the first outbreak was confirmed in February 2006, the Government proclaimed a slaughter and eradication policy (without vaccination) for the stamping-out of the epidemic. At the same time, an “Integrated National Avian and Pandemic Influenza Response Plan” for the biennium 2007-09 was issued. The plan addressed avian influenza prevention and control, pandemic influenza containment, mitigation and recovery, as well as the wider non-health consequences of a human influenza pandemic. The overall approach aimed to ensure proper coordination at federal and state level, with all stakeholders working together. In particular, the plan proposed an Incident Command and Control System (ICCS) to ensure a unified management of the many multi-sectoral actors involved in the response to HPAI by strengthening the AI Crisis Management Centre at state level.

Key elements of Nigeria’s response package

World Bank funding

Following the first outbreaks of HPAI in Nigeria in early 2006, the Government requested assistance from the World Bank. A US \$50 million project, entitled the *Nigeria Avian Influenza Control and Pandemic Preparedness and Human Response Project (AICP)* was activated as an emergency operation under the GPAI initiative in June 2006. The project addresses both the animal and human sides of avian influenza and has four components: Animal Health, Human Health, Communication & Public Awareness, and Project Management. The project was restructured in April 2008 and extended to July 2011. The AICP Animal Health Component has 4 sub-components: (i) strengthening laboratory services, (ii) expanding national disease surveillance, (iii) strengthening biosecurity in the poultry market chain, and, (iv) workshops and strategic studies.

A programme of compensation

Compensation is seen by many as an effective mechanism to encourage disease reporting, when properly managed. Nigeria has run a very well thought out and well managed programme of compensation for poultry culled under Government control programmes. The Federal Ministry of Agriculture and Water Resources has paid approximately US\$ 5.43 million to farmers whose birds were culled due to avian influenza. The money was paid to more than 3,037 beneficiaries; more than 1.26 million birds were depopulated over the period 2006 - present. FAO played a role in providing consulting services to Nigeria in the

¹³ Avian Influenza Control and Human Pandemic Preparedness and Response Project, National Baseline Survey, December 2007

development of the compensation package¹⁴, which was seen to be transparent, fast and effective. In 2008/09 ECTAD Nigeria sponsored a study by Amogu¹⁵. The results of the study concluded that the package provided by the GoN was appropriate and well implemented. During the outbreak phase, the rates of compensation were revised based on a process of stakeholder consultation.

For a farmer to be eligible for compensation, s/he has to report any disease to the nearest veterinary authority, who will subsequently take immediate steps to manage the outbreak and take samples and inventory of the birds on the farm. This is followed by appropriate documentation by the authorities in the presence of other witnesses, which includes representatives of the Federal, State, LGA, traditional authority and the state security agents. The farmer is only compensated for birds that are culled by the authorities, not for all dead birds.

Table 1: Initial and Revised Rates of Compensation Per Bird in Naira (N) To Owners of Poultry

Species	Initial compensation	*Range of Revised Compensation
Chickens (commercial)	250	350 to 1,500
Eggs (commercial)		15
Chickens (free-ranging, rural)	250	100 to 750
Guinea fowl	250	100 to 500
Pigeons (fully grown)	250	250
Ducks and geese	1,000	100 to 700
Turkeys (local)	2,500	300 to 1,600
Emus		10,000
Ostriches	20,000	15,000 to 100,000
Ostrich eggs		4,000

*Rates dependent on rate of growth status of the bird.

Source: AICP, 2007.

The consideration of vaccination

Nigeria made an active decision not to use vaccination in its inventory of measures to control HPAI, and maintains that this is one of the reasons for the success it appears to have had in bringing the disease under control. The former CVO was concerned about the capacity to undertake and maintain a programme of vaccination in the country, in particular in the indigenous poultry sector, the capacity to achieve adequate levels of population immunity, the cost of vaccination, and the need for a clear exit strategy.

Vaccines were imported into Nigeria from China as a donation, and eventually expired. Avian flu vaccination is presently forbidden, in line with FAO recommendations that non-infected countries or countries without repeated outbreaks, should not vaccinate. There are unofficial reports of illegal vaccination among the commercial producers, and many in the commercial poultry industry have requested the Veterinary Services to allow vaccination.

¹⁴ A. Riviere-Cinnamond, Compensation Strategy Nigeria, April 2006

¹⁵ Amogu, 2009. FAO Consultancy on the Review of Compensation Policy for the Control of HPAI in Nigeria

Laboratory support

At present, the only laboratory statutorily charged with livestock disease diagnosis is the NVRI, Vom. With the emergence of HPAI, efforts were intensified to upgrade the capacity and capability of the institute for H5N1 diagnosis. Laboratory equipment and reagents were provided and specialized training in diagnostic techniques were carried out principally with the support of the FAO and other support agencies, and the World Bank credit facilities. Some delays occurred in equipping the laboratory (it reputedly took one year and three months for the safety cabinet to arrive).

The laboratory has improved storage capacity of samples (seen by the evaluation team), with enhanced molecular diagnostic capacity, a PCR platform and associated reagents. Notably, the turnaround time for diagnosis has improved from over 48 hours down to 12 hours, or even less. The transport of samples to the laboratory depends on the State concerned, but innovative partnerships with organisations such as the Road Transport Workers Association have reportedly helped. There is an epidemiology unit at Vom, but it is still in the early stages of capacity development.

In 2008 when the ECTAD unit conducted surveillance in the north eastern State of Gombe, some nine months after the last HPAI report in Nigeria, a H5N1 virus belonging to sub-lineage III was isolated from healthy domestic ducks . This virus had only previously been detected in domestic and wild birds in certain parts of the Middle East, Europe and Asia. The origin of the virus, and the reason this was the only isolation, remain a mystery,

The NVRI is now designated by the FAO coordinated Laboratory Network (RESOLAB) as a regional laboratory for the diagnosis of HPAI and other TADs for West and Central Africa. The Government is making efforts to upgrade the diagnostic capacity of five Veterinary Teaching Hospitals in Zaria, Ibadan, Nsukka, Maiduguri and Sokoto Universities for certain diagnostic tools for HPAI.

Epidemiology and the legacy of the PACE programme

Nigeria had developed a system of surveillance under the PACE programme which it used as a base for the development of HPAI surveillance. This included a centrally-based epidemiology unit, and an information system, originally developed under the ARIS system of the AU-IBAR. With a dialogue established with the FAO's TADinfo system, Nigeria embarked on the development of its own information system, designated the National Animal Disease Information System (NADIS).

IV. DONOR AND TECHNICAL ASSISTANCE SUPPORT

Since the outbreak of HPAI, the international community has supported the Nigerian Government with both technical and material resources - such as Standard Operating Procedures, Personal Protective Equipments, laboratory tools – as well as capacity building activities and financial resources.

As seen in the table below, beside FAO a number of other donors and multilateral agencies have assisted FDLPCS in its efforts to control and prevent any future outbreak of HPAI.

Figure 3: Types of Assistance to the Government of Nigeria

Donor/Dev. Partners	Technical	Material	Financial	Capacity Building
ADB			xxx	
AU-IBAR	xxx			
CDC	xxx			
China		xxx		
DfID		xxx		
EU		xxx	xxx	Xxx
Israel		xxx		
FAO	xxx	xxx		Xxx
France	xxx			Xxx
OIE	xxx			
Republic of Korea		xxx		
UNDP			xxx	
UNICEF	xxx			
USAID		xxx	xxx	Xxx
USDA-APHIS	xxx	xxx		Xxx
World Bank			xxx	

Source: FAO and the Federal Government of Nigeria, The National Medium Term Priority Plan for Highly Pathogenic Avian Influenza Control in Nigeria (2008-2010), page 11

In this context, FAO, AU-IBAR and OIE (through the Regional Animal Health Centre in Bamako), the EU, and the World Bank emerged as significant providers of both technical and financial assistance. The key projects are outlined below:

- The national “Avian Influenza Control and Human Pandemic Preparedness and Response” project (2006-09) from the World Bank was funded at US\$ 50 million. The project development objective was to sustain and promote poultry production, increase the income of producers through the surveillance and containment of HPAI.
- The EU (and AfDB) financed the Pan African Program for the Control of Epizootics (PACE, 1998-2007), which is managed by the AU-IBAR. The PACE project in Nigeria, as in 31 other African countries, was aimed at establishing a sustainable epidemio-surveillance network to eradicate Rinderpest and other animal diseases as well as promote the strengthening of veterinary services. A National Animal Disease Information & Surveillance network (NADIS) was put in place, with 170 surveillance points initially established and manned by trained surveillance agents who had to identify specific diseases, collect samples and take first sanitary measures (this number has been increased to 295, with plans to expand to 600). Through two EC-funded projects in the biennium 2006-2007, FAO contributed to this network by providing technical and capacity development assistance. In addition, the PACE programme conducted workshops and training activities targeted at national veterinarians and livestock farmers.

In reality, apart from the major funding by the World Bank, there has been only limited substantive financial support from other funding agencies. Encouragingly, in discussions with the World Bank in Abuja, it was understood that there is some interest in new funding for

Government under the One World One Health umbrella, bringing together the Ministries of Health, Agriculture and Communications in an Integrated Animal and Human Health Platform, intended to move on from the fire-fighting phase and building on the new confidence and capacity in livestock services emerging from the HPAI funding.

V. ROLE AND ACTIVITIES OF FAO

Since the first outbreak of HPAI, FAO has supported Nigeria in many ways. This support has involved both strategic inputs in the form of policy advice and studies and the undertaking of some pilots in the field. FAO was said to have played a particular strong role in setting up and managing national surveillance studies with EC and USAID funding, the results of which helped form a base for subsequent live bird market intervention programmes. The report of the First RTE list some of the activities conducted up to 2007. In general, however, the initial response was characterised by short-term consultancies mainly from FAO headquarters since there was no national ECTAD unit established.

In the past two years, activities have become much more focused and aligned to the National Medium Term Priority Framework for Animal Health (NMPTF-AI), which was signed by FAO and the Government of Nigeria in March 2008. FAO recent and ongoing activities fall under the agreed priority areas of surveillance, biosecurity, communication and wildlife research. A national ECTAD unit is also operational and led by an experienced CTA.

The bulk of FAO support has come through three activities, two of which are completed (with EC and USAID funding) and one presently on-going (with funding from SFERA Sweden, Canada and UNDP). In addition, various missions have been financed from other global HPAI-related projects, funded by Canada, France, Switzerland, UK and USA.

Table 2. Avian Influenza Projects implemented in Nigeria as of October 2009

Project	EOD	NTE	Donor	Total Approved Project Budget	Total Expenditures under the project	Budget Allocated for Nigeria through FBA	Expenditures and Commitments under FBA for Nigeria
OSRO/NIR/602/EC	01/08/2006	31/12/2007	EC	USD 953,274	USD 931,568	USD 611,453	USD 619,865
OSRO/NIR/601/MUL BABY01	06/11/2006	31/01/2009	USA	USD 1,635,520	USD 1,573,054	USD 747,735	USD 679,413
OSRO/NIR/601/MUL BABY02	06/11/2006	31/01/2009	UNDP	USD 90,000	USD 84,935	USD 77,187	USD 69,345
OSRO/GLO/504/MUL BABY01	01/12/2005	30/04/2007	Norway	USD 3,506,326	USD 3,352,712	USD 293,000	USD 182,955
OSRO/GLO/604/UK child	29/03/ 2007	31/03/2010	UK	USD 5,388,655	USD 4,439,887	USD 53,640	USD 47,129
OSRO/INT/604/USA BABY02	17/01/2007	29/09/2009	USA	USD 1,000,000	USD 687,670	USD 4,000	USD 4,000
OSRO/RAF/722/SWE	28/11/ 2007	31/12/2009	Sweden	USD 6,738,646	USD 4,657,185	USD 688,108	USD 458,557
NIR/08/002/01/12	03/04/ 2009	02/04/2010	UNDP	USD 311,000	USD 24,997	0	0
OSRO/GLO/702/CAN child	14/03/ 2007	13/04/2010	Canada	USD 7,827,361	USD 5,197,944	USD 82,026	USD 31,842
<u>Total</u>				<u>USD 27,450,782</u>	<u>USD 20,949,952</u>	<u>USD 2,557,149</u>	<u>USD 2,093,106</u>

Initial Activities in Nigeria

When HPAI first received attention as a global issue, Nigeria was an observer country in TCP/RAF/3016 “Emergency assistance for early detection and prevention of avian influenza in Eastern and Southern Africa”. After the virus was first discovered in the country, FAO assisted the Government with technical advice and some equipment, through the global projects. In April 2006, FAO assisted in fine-tuning the existing compensation strategy and (along with OIE and AU-IBAR) developed an information kit on HPAI that was eventually disseminated to all African countries.

Major Activities: Active Avian Influenza Surveillance Study in Nigeria (OSRO/NIR/602/EC) and Technical Assistance to the Government of Nigeria for Control and Eradication of HPAI (OSRO/NIR/601/MUL)

The EC project had a budget equivalent to USD 953,274 and operated from August 2006-December 2007. The MUL project had a total budget of USD 1,725,250, of which USD 1,000,000 was provided at the outset from USAID. It operated from November 2006, after a considerable delay in start-up, and was closed in January 2009. The projects, which were run largely in an integrated manner, built on the PACE (Pan-African Control of Epizootics) project in Nigeria. PACE had established a National Animal Disease Information and Surveillance Network, with 170 surveillance points initially established and staffed by trained agents, to identify specific diseases, collect samples and undertake initial sanitary measures if needed.

The new projects aimed at obtaining reliable data on the status of HPAI in the country. Most of the surveillance work focused on live bird markets (LBM) as these were thought to be a prime source for spread of HPAI. Some 26 States were selected that had a previous HPAI outbreak. In each State, four markets were chosen for study with three interventions each at two-week intervals. In each market, 29 trachea and cloacal swabs, and blood samples as well as 4 purchased live birds were taken per intervention, on a voluntary basis. H5 N1 was isolated in five markets during the study, but traceback of the origin of the infected birds proved to be impossible, due to absence of records in the markets relating to the origin of the birds.

The project also did similar studies in 11 States where the virus had not been previously reported, using the same methodology. Virus isolates were found in two States as a result of this study.

Besides these activities, the projects carried out considerable capacity development work, including training of staff at various levels and provision of equipment and supplies, particularly for the National Veterinary Research Institute in Vom.

Other Completed Activities

With USAID funding, FAO sent a three-person team to support assessment and communication activities subsequent to the confirmed death of a young woman from HPAI in January 2007. With the national committee and WHO, investigations were carried out to establish the source of the case and human risk exposure factors in markets. FAO carried out a study at Dagona Waterfowl Sanctuary in NE Nigeria (near Lake Chad) on resident (non-

migratory) birds, to assess potential risk for disease spread. It also conducted a seminar on advanced laboratory diagnostics for senior researchers at Vom.

The ECTAD country team and a HQ mission assisted the Government in 2008 in the formulation of a three-year National Medium-Term Priority Plan for HPAI Control. The main focus areas of the Plan are: strengthened passive surveillance system; epidemiological risk analysis to identify critical control points; improved understanding of poultry production, poultry movements and improved quarantine services; better understanding of the role of wild birds as potential carriers or reservoirs of HPAI; assess socio-economic impact of control and risk analysis; improved communication strategies. The team could not get information about the follow-up to this process.

The Operations side of the Nigeria ECTAD team was until recently run by periodic short term consultancies from Rome. A full time operations person based in Nigeria has now been appointed.

On-going biosecurity and communications activities

Much of the work of the ECTAD country unit, supported by the HQ ECTAD Communications and by the Biosecurity Unit, is focused on two projects. The biosecurity activity, which has a budget of about USD 750,000, is funded by Sweden, Canada and UNDP, with USD 500,000 from Sweden that must be disbursed by December 2009. The project is a pilot activity, which using participatory methods will develop practices and messages to improve biosecurity that are technically sound, but built on indigenous solutions. Similar projects are being implemented in Indonesia and Egypt. In Nigeria, the project works in three States (Ondo, Katsina, Anambra), with three Local Government Authorities (LGA) in each State and in three communities within each LGA. Selection criteria were applied to Zonal selection.

The activity is at an early stage in Nigeria, but reported to be more advanced there than in the other two countries. Inception workshops were held in September at State and local level, and also in Abuja. State-level training was being carried out just before and after the mission's visit. The activity is due to end in June 2010.

Because the activity has just started and two-thirds of the funding must be disbursed by the end of 2009, there is a rush to get as much in place as possible in a short period of time. UNDP and CIDA funds will be used to carry the activities in 2010.

FAO is also engaged in a project, supported by Canada, working with ten media specialists to document the human face of HPAI. Proposals from applicants were screened by an Advisory Committee. The project is assisted by a national communications specialist, who is also working on the biosecurity project.

Regional Activities

There have been a number of FAO regional/inter-regional initiatives, summarized below.

- TCP/RAF/3016 – Emergency Assistance for Early detection and Prevention of Avian Influenza in Western Africa.

- OSRO/GLO/706/FRA – Appui au système d’alerte précoce mondial et aux initiatives des réseaux régionaux pour la prévention et le contrôle de l’Influenza aviaire en Afrique centrale et de l’ouest.
- OSRO/RAF/612/USA Baby 03 – Support FAO’s Global Avian Influenza and Eradication programme for regional activities in West Africa.
- OSRO/RAF/717/USA – HPAI Early Warning Early Response and Preparedness Strategy Support in Western and Central Africa.
- OSRO/INT/604/USA Baby 02 – Support for FAO/OIE/WHO collaboration on HPAI rapid response and containment.

In view of the relatively large programme in Nigeria and the small size of the regional interventions, they have not been very relevant in the Nigeria context.

VI. SYNTHESIS AND DISCUSSIONS OF FAO’s CONTRIBUTIONS AND ROLES

The evaluation team has reviewed the contributions and roles of FAO and has summarized their assessment to the extent possible following the headings presented in the TORs of the evaluation, and the RTE Inception Report.

Relevance and Appropriateness of FAO’s Strategy and Programme at country level:

With the major funding of HPAI intervention activities coming from a World Bank credit to the Government of Nigeria, the veterinary department has chosen to lead from the front. The FAO country level Strategy and Programme is understood to be focussed on certain very specific subject areas where the Government considers that FAO can play a strategic role. This means that there are only certain components of the National Programme to which the FAO contributes, and these are, or have been:

- a) a national cross-sectional prevalence study,
- b) an active surveillance project in live bird markets,
- c) a project on biosecurity and biosecurity communication,
- d) a media fellowship programme, and
- e) capacity building in all of the above, and in diagnostics and broader laboratory response mechanisms.

These areas are all deemed to be relevant and appropriate. The evaluation team noted that such a focused approach was largely a result of the agreed NMTPF-HPAI. In the particular context of Nigeria, a NMTPF for avian influenza activities was indeed found to be a valuable planning tool. Looking into the future, of particular importance for the FAO would be to further articulate the interface between its contributions to avian influenza preparedness and response, and to broader long-term capacity development contributions by FAO to disease surveillance and response to a wider range of livestock health priorities to the West African region.

Overall, FAO’s interventions have been highly appropriate in the context of the provision of strategic technical support to national interventions. As indicated earlier, the HPAI preparedness and response in Nigeria was very much led by Government, who had built on the infrastructures and capacity building in surveillance put in place by the PACE programme. With the outbreak of HPAI in Asia, the Nigerian Government initiated the development of a

preparedness plan, bringing in strategic support from FAO headquarters to help with the development of SOPs. The evaluation team was impressed by both the resolve, but also the leadership and management of the department in handling the crisis. FAO was then asked to assist with specific studies within the agreed NMTPF-HPAI, such as the national infection prevalence study, and this was the first step in a series of constructive, demand led and strategic interventions by FAO which helped secure the credibility of the Nigerian response.

Efficiency

FAO's initial responses have generally been timely, although follow-up assistance particularly through projects has been affected by delays from both sides. Compared to other affected countries, FAO has played a much smaller and more strategic role in Nigeria, with a relatively small budget. However, as mentioned above, the evaluation team expressed particular concern over the biosecurity activity, which has a budget of about USD 750,000, is funded by Sweden, Canada and UNDP, with USD 500,000 from Sweden that had to be disbursed by December 2009.

This project is a pilot activity, which using participatory methods will develop practices and messages to improve biosecurity that are technically sound, but built on indigenous solutions. The activity, which was first conceived in late 2008, is due to end in June 2010. Because the activity has just started and two-thirds of the funding must be disbursed by the end of 2009, there is a rush to get as much in place as possible in a short period of time. A request for an extension of this project until June 2010 has been submitted to Sweden. UNDP and CIDA funds will be used to carry the activities in 2010.

The evaluation team is concerned that the time available for this project is insufficient to monitor the process and, based on the results, draw lessons for further replication or modification of existing strategies and processes. This is very much an experimental project, the outcomes of which cannot be predicted but only hoped. The evaluation feels that, unless there is continued monitoring of the pilot experience over a period of at least two years, the impact of the project on behavioural change, if any, is likely never to be known. Behavioural change does not happen overnight and it would be necessary in any case to see if it is sustained. The evaluation sees an extremely high risk that this will be a failed experiment as it will never be possible to draw lessons from it.

On the operational and administrative side, support was from 2007 until recently provided by a short-term consultancy from Rome. There is now a full time operations person in Abuja. Operationally the Nigeria ECTAD is not linked to the Regional ECTAD in Bamako (nor in reporting responsibilities). This has affected the timeliness of certain activities; there are still 3 inception workshops at the State level to be carried out, and with the short amount of time left before funds must be spent, there is inadequate time to build on experiences gained in each workshop.

There has been excellent support from the FAO Representation, particularly in recent times. The FAOR coincidentally has a veterinary background, and as a previous Minister of Agriculture in an African country, understands well the machinery of government, which when combined with his strong interpersonal communications with senior Government officers, has been most effective in promoting an effective partnership with FAO.

Effectiveness of individual country programmes

FAO has played an important, and recognised, role at country level. Technical advice for revising the national preparedness plan was found particularly useful. The national cross sectional study, supported by FAO, while it gave largely predictable results, it was a necessary process which is seen as an important milestone in establishing Nigeria's response credibility. Furthermore the active surveillance project has played an important role in emphasising the significance of live bird markets in disease spread.

These improvements were led by Nigeria, with support from FAO and several other players. The area of FAO's contributions that have the greatest impact on broader surveillance of other transboundary disease has been in laboratory strengthening, particularly at the National Veterinary Research Institute, Vom (where equipment has also been provided by Japan and other donors), and in the training of laboratory staff and desk officers in different States. Nigeria has been exemplary in sharing information on the viruses isolated in the country, following confirmatory analyses carried out in Italy.

There is a small but relatively strong epidemiology group in Abuja. Surprisingly, however, there is little refinement and use of epidemiological data to provide a greater understanding of risk of infection, and the use of such analysis to feed into risk-based surveillance and risk-based strategic response mechanisms, given the limited resources available. There is still no official statement on the source of introduction of HPAI into Nigeria. Part of the dissection of risk is the understanding of market value chains. The FAO has provided some strategic input into value chain understanding in Nigeria¹⁶, but little use appears to have been made of this very broad level consultancy study in building up a risk framework. Other agencies, in collaboration with Government, have also made extensive inroads into Nigerian poultry value chain understanding, notably the IFPRI/ILRI DFID funded set of projects, in particular recent work by Akinwumi et al, 2009¹⁷. The question is how well has FAO taken advantage of such studies led by other partners, and built on them in support of the Government's pursuit of risk based strategies.

Effectiveness of global/regional programmes at country level

As indicated earlier several experts from FAO HQ and from the regional ECTAD unit in Bamako have visited Nigeria in the past few years.

Technical backstopping has come principally from HQ. A CMC-AH mission was deployed to Nigeria to provide investigative support following the first (and only) human case of H1N1, near Lagos¹⁸. In addition the OFFLU staff in HQ facilitated a 5-month scholarship for the head of virology (based at NVRI in Vom) to IZSVE to sequence viruses and perform phylogenetic analysis on H5N1 viruses. OFFLU also assisted in the shipping of samples to Padova, coordinated a LoA with IZSVE under which 352 samples were received and 80 viruses were sequenced (LoA report, December 2008). Furthermore, 31 accession numbers of

¹⁶ Pagani, P., Abimiku, J.E.Y., Emeka-Okoli, W. 2008. Assessment of Nigerian Poultry Market Chain to Improve Biosecurity. FAO, Rome, 58 pp.

¹⁷ Akinwumi, J., Okike, Iheanacho, Bett, B., Randolph, T., Rich, K.M. 2009. Analyses of the poultry value chain and its linkages and interactions with HPAI risk factors in Nigeria. Africa Indonesia Team Working Paper, in press.

¹⁸ FAO, 2007. Mission Report, RDT. Rapid assessment for prevention and control of HPAI, Nigeria 3 – 12 February,

the submitted sequences (NCBI) and a proficiency panel for AI/ND were submitted to Vom (and to 25 other countries as well).

There have also been specific activities led or backstopped by the wildlife group in Rome (FAO and Wetlands International have undertaken collaborative studies with the NVRI on active surveillance of waterfowl in certain wetland states of Nigeria) and by the Communication and the Biosecurity group (UNDP, Canada and Sweden funded projects). Another important contribution from FAO headquarters has been the input from the Pro-Poor Livestock Policy Initiative (PPLPI), which in a partnership project with IFPRI and ILRI, and supported by DFID, has provided a series of papers and research briefs on different aspects of HPAI impacts in Nigeria. Of particular relevance is a detailed assessment of poultry value chains in Nigeria, and of disease risks, mentioned above.

There have been several regional activities that have involved Nigeria, most notably involving laboratory capacity, wild bird dynamics and surveillance. From the sustainability point of view, there is clearly a need for much greater regional communication and cooperation in the effective surveillance and control of HPAI and other transboundary diseases in West Africa, given the highly porous borders, and the critical importance of poultry enterprises to livelihoods and the growing regional economies.

While a regional ECTAD unit has been established in Bamako (see separate report on the regional ECTAD unit in Bamako), this is not viewed by all in Nigeria as the optimal coordination, facilitation and sustainability mechanism. An argument was presented for a greater role of regional economic consortia (RECs) in providing sustainable mechanisms for international cooperation in transboundary disease preparedness and control, such as ECOWAS, recognising that while this organisation has strong and valuable political leverage, it has very limited capacity in animal health matters.

Sustainability and Impacts

The evaluation team noted that as a result of the HPAI outbreak, and of the apparent effectiveness to date of the response, livestock is very much back on the development agenda for Nigeria, and the animal health service has a new level of motivation and confidence; this is seen by some observers as an important element in the “re-branding of Nigeria”. Some of the successes include the positive role of the compensation programme, both in policy but also in the logistics of implementation under difficult circumstances. FAO played an important supportive role in the policy aspects. The avoidance of a vaccination programme is seen in Nigeria as a positive achievement; there was a lack of confidence in the feasibility and efficacy, and a concern over how an effective exit strategy could be developed.

The evaluation team found that FAO played a key role as a facilitator and a convenor of partners in Nigeria, and provided certain specific capacity building elements to Nigeria. But there have been also a multitude of players, and prominent among these the growing experience, expertise and confidence of Nigerian scientists in State and university roles. Unlike some of the other countries visited, the role of FAO as an overall leader in providing technical support is restricted to need based strategic contributions in agreement with the Government. The major leadership provided by the Nigerians have without doubt made activities surrounding HPAI prevention and control more sustainable and effective than if they were promoted or executed by external parties.

VII. CONCLUSIONS AND RECOMMENDATIONS

The evaluation team has made an assessment of the strengths and weakness of the FAO programme in Nigeria as follows:

Strengths	Weaknesses
FAO provided support to the development of a preparedness plan in advance of HPAI introduction requested by Government, and subsequent contributions to updating after HPAI occurrence	While understanding the complexities of veterinary services in a federal system, and the convenience for FAO of dealing with centrally-located federal players, inadequate programme resources are directed at the State level where implementation responsibilities lie
Current activities are aligned with priority areas agreed between FAO and the Government of Nigeria in the NMTPF-HPAI	There is a disconnect between the biosecurity messages being targeted at live bird markets, and the practices undertaken in markets. This requires sustained and innovative approaches targeted at behavioural change, coupled with market and slaughter infrastructure developments.
Good relationships between FAO Office and ECTAD team with Government authorities, who are capable and seem committed	Present work on biosafety unlikely to spread beyond pilot areas due to short duration of activity - even in pilot areas sustainability unlikely
Good coordination among UN agencies	No traceback for disease outbreaks and limited traceability mechanisms for birds in markets.
Good compensation system developed and implemented quite rapidly and transparently	Little use of risk-based surveillance, and proactive development of risk-based response capacities
Considerable strengthening of diagnostic capacity under strong national leadership capacity	Little engagement and involvement of the private poultry sectors, particularly the sectors 3 and 4
International transparency and sharing of emerging virus sequence data	Lack of planned desk top and field simulation exercises
Following the completion of the USAID and EC projects, FAO funds have been used mostly for filling gaps; most funds from other sources and programme led strongly by Government.	No clear long-term vision by FAO of the role it should play, now that HPAI outbreaks seem to have waned
Regional collaboration by offering diagnostic services (Chad, Niger, Cameroon), training and supply of equipment (Niger) and hosting of the international consultative conference on HPAI within the ECOWAS facilities	

There are also some lessons learned in the past few years, such as:

- The continued difficulty in being able to specify the mode of introduction of HPAI, and the numbers of introductions. Implications of this on current strategic surveillance rather than risk-based surveillance, and the lack of sound risk-based response strategy.
- Live bird markets. Evidence from Nigeria and elsewhere as to the importance of these, the presence of projects to address the live bird market, but a substantial gap observed

between stated outcomes of interventions to address this and observations by the evaluation team on the ground in Abuja and Jos.

- Policy level activities. Challenges at Federal level. Previous high level coordination mechanisms have reportedly been negatively influenced by changes in senior personnel at ministerial level, and this has affected the former high levels of government commitment. This has reportedly had a knock-on effect on the technical group. The pandemic preparedness plan was started in 2007, and is still in the process of development.
- Inadequacy of an effective trace back system and the corresponding establishment of risk based assessments for surveillance and for interventions.
- With the decentralised political system in Nigeria, consideration should be given to greater direct engagement with key strategic support at the State level.

Based on the above, the evaluation team concludes that FAO has played an effective strategic supportive role to the Government of Nigeria in its efforts to tackle HPAI. The team also concludes that, building on the current NMTPF-HPAI, the FAO would merit from a much clearer strategic framework that demonstrates the linkages between emergency responses to HPAI and longer term contributions to health and food security in Nigeria.

Based on the above, the evaluation team recommends FAO as priority actions to:

- Develop, in partnership with government, public and private sector stakeholders, a clearer strategic framework of FAO's short and medium term contributions to HPAI prevention and control, and the interface with broader development targets of health and food security, paying particular attention to new initiatives of the World Bank and others. This should ideally be considered as part of any future revision process of the NMTPF-HPAI.
- Build on the growing epidemiology capacity, the sound laboratory infrastructures at Vom, and the broad level value chain studies carried out by other partners, and support Government in the establishment of an evidence-based risk assessment and risk management system targeted at HPAI, but with the capacity to be used for surveillance and response to other avian diseases, and indeed to other livestock diseases.
- Engage with the government veterinary services to explore potential mechanisms for multidisciplinary surveillance and preparedness mechanisms to be strengthened at the State level, identifying the specific roles that FAO could play in this process.
- Explore with government and the World Bank the more active engagement of FAO in future One World One Health umbrella initiatives currently under development, bringing together the Ministries of Health, Agriculture and Communications and with active support of FAO and WHO, in an Integrated Animal and Human Health Platform, moving from the fire-fighting phase, and building on the new confidence and capacity in livestock services emerging from the HPAI funding.
- Consider mechanisms for strengthening the links between ECTAD Bamako and ECTAD Abuja. While an independent ECTAD is probably justified in Nigeria, given its size and complexity, Nigeria is also situated centrally in West Africa and has been seen as the source of HPAI to other countries; there is a clear need for stronger communication between these institutions.
- Consider the future role of ECOWAS in the coordination and information exchange for HPAI, and indeed for stronger engagement in tackling other animal health priorities for the region.

Annex 1. List of People Met

- **Main contact** Tesfai Tseggai, Team Leader & Chief Technical Advisor
- **FAO-REPRESENTATIVE-NIGERIA**-Mr. Helder Muteia
- **ECTAD TEAM**
 1. Dr. Junaidu Kabir-Biosecurity & Livelihoods National Project Coordinator
 2. Dr. Ogu S. Enemaku- National Communication & Social Mobilisation Specialist
 3. Mr. Tafida Ahmed- Livelihood Specialist
 4. Mr. Moses Obikpe- Operations Officer
 5. Jeevanandhan Duraisamy- Emergency Operations Officer (on mission from FAO HQ)
- **FEDERAL MINISTRY OF AGRICULTURE AND WATER RESOURCES**
 1. Dr Joseph Njager-Chief Veterinary Officer and Acting Director of Veterinary Services-Department of Livestock & Pest Control Services
 2. Dr I. Gashash Ahmed-Epidemiology Unit& National Animal Disease Information & Surveillance (NADIS)
 3. Dr Demola Majasan-Planning & Logistics Officer
 4. Dr M.D. Sai'du- Component Co-ordinator AICP –Animal Health Unit
 5. Dr Junaidu Maina (retired first week of October 2009-Former Director of Veterinary Services)
- **DIRECTOR OF VETERINARY SERVICES , Plateau State- Dr.S. J. Akpa**
- **DIAGNOSTIC SERVICES- NATIONAL VETERINARY RESEARCH INSTITUTE- VOM, JOS, PLATEAU STATE**
 1. Dr (Mrs) Lami H. Lombin *MFR* –Executive Director
 2. Dr Tony Joannis-Virologist, Viral Research Department
- **WORLD BANK**
 1. Dr. Lucas Akapa-Senior Operations Officer
 2. Dr. Bola Adudi- Senior Agriculture Specialist
- **EUROPEAN UNION-** Ms Kate Kanebi – Food Security Desk, and Martin Mbonu, and Dr. Myriam soon to be in charge of HPAI , but currently responsible for Rural Development
- **UNITED NATIONS SYSTEMS IN NIGERIA**-Dr. Joyce Njoro- Avian Influenza Co-ordinator
- **USAID**-Mr. AbulKadir Gudugi-Team Leader for Agriculture; Dr. Ron Greenberg, director of agricultural development
- **POULTRY ASSOCIATION OF NIGERIA**
 1. Mr S.O. Akpa- Federal Director General
 2. Dr. Oletudu Agbato-Diagnostics & Service Provider Representative(Phone Interview)
- **LIVE BIRDS MARKET FIELD VISITS**
 1. **ABUJA GARKI MODEL MARKET** - accompanied by the ECTAD Team & CTA/Team Leader
Abuja Chicken Sellers Association of Nigeria (Director: Yusufu Dan Massani)
Saukin Chicken Centre (Secretary: Hasan Abdulmumini)
 2. **YARKAJI MARKET, Sarkin Mangu Street, Jos** -accompanied by the AICP Desk Officer-Jos
- **DEBRIEFING MEETING** for *FAO representative , CTA & ECTAD Team (Deputy Representative –Administration Ms E. Yeye-made a brief courtesy call)*

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SECOND REAL TIME EVALUATION OF FAO'S WORK ON HIGHLY PATHOGENIC AVIAN INFLUENZA

COUNTRY REPORT: EGYPT

17-22 OCTOBER 2009

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Acknowledgements

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I. INTRODUCTION

Prof. Brian Perry, Dr Humphrey Mbugua, Dr. Emmanuel Camus and Mr. Carlos Tarazona visited Egypt from 17 to 22 October 2009 as part of the Second Real Time Evaluation of FAO's Work on Highly Pathogenic Avian Influenza. In line with the evaluation's terms of reference, the focus of the visit was to evaluate the relevance, efficiency, effectiveness, sustainability and likely impact of country level assistance provided by FAO through regional and national interventions in the past few years. The FAO Representation, through the ECTAD Unit, prepared a programme of meetings (see annex 1) and made logistical arrangements for the mission.

The First Real Time Evaluation also visited Egypt in 2007, and found that "*FAO has been able to show little impact until recently, despite the gravity of the epidemic (the highest rate of human cases - and deaths - outside of Asia)*". Although "*some activities have generated well produced outputs that will add value to planning meaningful activities in the future (e.g. the socio-economic work on market chains and compensation), internal institutional issues (e.g., leadership of the national efforts by the Ministry of Health) and lack of clear initiative and responsibility on the part of FAO staff in the country - in spite of the presence of the FAO Regional Office for the Near East in Cairo - meant that FAO's response was inadequate in the face of the rapid diffusion of the disease*". "As a result", the First RTE concluded, "*response was considered slow by stakeholders and not proactive enough to help the Egyptian authorities raise funding to implement control measures.*"

As elsewhere, the second RTE team has followed up on the findings of the first RTE and other relevant assessments (e.g. PVS, internal reviews, etc.). In view of the protracted disease situation, the second RTE has sought to assess FAO's past work with a focus on lessons learnt that could guide and improve the next stages of the response.

II. POULTRY SECTOR AND HPAI SITUATION

Poultry sector: dimension, characteristics, role in the economy, role on livelihoods

According to the National Agricultural Income figures by the Ministry of Agriculture and Land Reclamation (MoALR), poultry and eggs represent one quarter of the value of animal production. Poultry flocks comprise different species, with chickens being the most important in terms of the number of households keeping them (98%), followed in importance by ducks (83%), geese (64%), pigeons (53%), and turkeys (15%). About 80-85% of the poultry population is concentrated in North Cairo.

The Egyptian poultry sector is a combination of modern poultry rearing and a well-developed traditional (household) sub-sector. With the common FAO classification of poultry farming systems into four sectors being – according to many experts - of limited value in Egypt, it is important to distinguish two main types of chicken:

- *Traditional Balady*: local and/or domestic breeds which, despite having a longer production cycle and producing less, are preferred in rural and peri-urban areas. This preference is attributed to the belief that such species are more nutritious and tastier, as well as less sensitive to weather, diet, and the need for treatments. Balady hatchers receive eggs from egg production units or small scale producers, breed them according to old techniques using special incubating lamps, and finally sell the chicks when they are three weeks old;
- *Broiler breeds*: poultry that is bred under artificial circumstances (battery production systems) and are preferred in urban households and food industries.

Poultry farms provide about 90% of chickens produced in Egypt, with the remaining 10% provided by household (and roof top) poultry systems, abundant in village and cities. 40% of chickens are produced in medium sized farms (from 5,000 to 50,000 birds each), while small farms are the primary source of 70% of other poultry meats (principally ducks and turkeys). Chickens comprise 48%-52% of the total number of birds kept across households. Ducks represent 22%-25%, followed by pigeons, geese and turkeys.¹

¹ FAO/WFP Socio-economic Impact Assessment of HPAI in Egypt (2007)

Table 1: Poultry production in Egypt

Household Poultry (up to 100 birds)	<ul style="list-style-type: none"> • Serves as livelihood and asset base for millions of households • Present everywhere in village and cities • Lack veterinary services • Covering 10% of chicken production and 20% of turkeys and ducks
Small farms (from 100 to 5,000 birds)	<ul style="list-style-type: none"> • Concentrated in villages, but also present in towns and cities • Weak veterinary supervision done through independent veterinarians • Covering 15% of chicken production and 70% of ducks and turkeys' production
Medium sized farms (from 5,000 to 50,000 birds)	<ul style="list-style-type: none"> • Equipment varying from very low to very high level • Covering 40% of chicken production and 10% of turkeys and ducks
Larger sized farms (more than 50,000 birds)	<ul style="list-style-type: none"> • Most modern and well-equipped with closed systems • Covering 35% of chicken production

Poultry production in Egypt is heavily dependent on live bird markets (LBMs), due mainly to consumers' preferences and lack of slaughterhouse capacities. Before HPAI outbreaks occurred, some 80% of poultry were sold as live birds through transportation in open cages on cars to traditional markets and poultry shops. With the virus spread, and with a government decree to close LBMs, steps were taken to move towards selling frozen birds slaughtered in slaughterhouses. However, the poor capacity and location of slaughterhouses, together with the absence of other facilities such as refrigerators and a strong preference for fresh poultry meat, hampered the process. Most of the poultry farms have not introduced biosecure production systems either, with large numbers of live birds moving among communities in the Nile Valley, bought by traders and killed in local markets and/or kept in the households for slaughter. Although caging is now common and economically feasible, LBMs with poor biosecurity conditions continue to operate widely (and now underground because of the decrees).

The poultry sector has expanded substantially in the last 25 years. Low-cost poultry meat has become increasingly available to all, particularly the poor. Prior to the HPAI crisis, up to 2.2-2.5 million chickens were produced daily in Egypt by a national average of 45,000 licensed breeders. Traditional poultry production reportedly provides households with a net return representing a tangible part of the family's income (estimated to be 14%), with a household average return of 35 LE in 2000 and 72 LE in 2005. The commercial sector also provides many job opportunities, particularly among those lacking other skills. In the Balady hatcheries, the occupation is usually passed down from generation to generation, requiring rare traditional skills.

Income achieved from household poultry is reflected in the household nutritional situation, especially for children, with poultry rearing remaining largely a women's activity. Women are

the main caretakers of poultry, and birds and eggs are often the only way women in rural areas can generate income. The consumption of traditionally bred poultry meat forms the main, and sometimes the only, regular source of animal proteins (some 40% of the total) for a large portion of the Egyptian population. With agriculture limited by land and water availability, improving and intensifying household poultry rearing remains an important tool to reduce rural and peri-urban poverty.

HPAI situation in the country: outbreaks, spread of the disease, evolution

Egypt lies along the main migratory route between Asia, Europe and Africa for many migratory birds. The introduction of the disease into Egypt was said to have probably occurred some months before the simultaneous reporting of 18 positive cases in three governorates on 17 February 2006. Since the first cases of H5N1 viruses were reported, the virus was detected in 21 (out of 27) governorates. OIE² and FAO³ consider the disease “endemic”, with periodic outbreaks detected throughout the country.

The first case of HPAI in humans was reported in March 2006. Up to October 2009, there have been more than 3,000 suspected human cases (over 70% of which occurred in women) admitted to hospitals, of which 89 have been confirmed, with 27 fatalities. Egypt has one of the highest number of confirmed human cases in the world after Indonesia and Viet Nam. The age-specific infection and death profiles among confirmed human cases of influenza A (H5N1) infection in Egypt differ markedly from those recorded in other countries (Dudley, 2009⁴). The case fatality rate among human H5N1 cases in Egypt is 34%, versus an average of 66% in other countries. In Egypt, children younger than 10 years comprise 48% of reported cases, nearly twice the global average of approximately 25%, and no H5N1 fatalities have been confirmed among individuals in this age group as of 23 April 2009. Females outnumber males among confirmed H5N1 cases by a factor of nearly 2:1, and 90% of reported fatalities in Egypt have been females (Dudley, 2009).

Socio-economic impact of HPAI

The spread of the HPAI virus has had important socio-economic repercussions, resulting in a reduction in the consumption of poultry meat and eggs, especially by children. A study carried out by FAO in April 2006 estimated a 75% and 85% drop in egg and poultry meat consumption respectively. A subsequent FAO socio-economic impact assessment⁵ showed that the average number of chicken per family decreased from 38 to 2, and the number of ducks from 22 to 3. A sudden drop in prices as consumption declined affected poultry markets after the HPAI crisis. Chicken meat prices fell from 10 to 2 LE per bird, and those of ducks and turkeys from 50 and 80 LE respectively to 5 LE.

This trend became a vicious circle, as poultry producers increased the prices of most food items, in particular animal protein sources. Only households within the medium socioeconomic groups managed a modest increase in the consumption of fish and red meat compared to the pre-outbreak levels. These impacts on rural households came in an environment with limited alternatives option, especially for women, to poultry raising as a

² http://www.oie.int/wahis/public.php?page=disease_immediate_summary

³ Report Exercise on Highly Pathogenic Avian Influenza: FAO contribution to the UNSIC report (2008)

⁴ Dudley, J. 2009. Age-specific infection and death rates for human A (H5N1) avian influenza in Egypt. *Eurosurveillance*, 14, 1 – 2.

⁵ Conducted by Ellen Geerlings

source of livelihood. A study by FAO (2007) revealed that only 13% of households found alternative sources of income. The evaluation team was informed that the situation has not changed much since then.

III. NATIONAL HPAI RESPONSE FRAMEWORK

Institutional structure and capacity for animal health

Within the MoALR, the **General Organization for Veterinary Services (GOVS)** has the sole responsibility for the organization and implementation of veterinary services and all activities related to zoonotic diseases in Egypt. The GOVS was established by presidential decree (No. 187/1984). At HQ in Cairo, different technical departments and units (with some 600 vets employed) work on quarantine and inspection, slaughterhouses and public health, preventive medicine, animal care and treatment, extension and animal welfare development, epidemiology planning, etc. This structure is somehow replicated at the field level, with a representation in each of the 29 local governorates, but with evident problems of communications between central and governorate levels, and little authority of the central department over field staff.

The **Animal Health Research Institute⁶ (AHRI)**, which is an autonomous organization of MoALR, is engaged in conducting research and diagnosis on diseases of domestic animals, migratory and wild birds. The Institute is, among other things, charged with performing sero-surveys of endemic diseases, evaluating the efficacy of veterinary drugs, and establishing relevant national standards. Within this structure, after the HPAI outbreak in 2006, the Minister of Agriculture established the **National Laboratory for Veterinary Quality Control of Poultry Production (NLQP)** as the entity responsible for diagnostics and isolation of the Avian Influenza virus. The lab is in charge of the inspection of imported and locally produced fertile eggs and day-old chicks, the issuance of health certificates, regular inspection of poultry industry activities, etc. The lab reports positive cases to the GOVS, and local veterinary directorates, the Ministry of Health and Population, the Ministry of Environment, as well as the Technical Committee on confirmed HPAI in the MoALR.

After the disease reached Turkey, in October 2005 a **National Supreme Council to Combat Avian Flu** was convened to work on a detailed strategy in preparedness for a disease outbreak. With new members joining later, the Supreme Committee now includes - under a rotating chairmanship – representatives of different ministries, seven governors from the worst affected areas, members of GOVS, NLQP, staff of WHO, FAO, and NAMRU III. The Supreme Committee was initially led by the MoHP which reportedly caused a bias towards human health aspects of the disease during that era (see First RTE report). It appears that due in part to changes in leadership, and in part to the inadequate attention to poultry health aspects, other government entities have been taking decisions affecting influenza control without co-ordination and reference to responsible bodies (such as the decree banning LBM; the decree banning backyard poultry; the culling of the pig population, etc.).

Soon after the first outbreak occurred, a **Technical Committee** was also established within the MoALR, including 11 representatives of GOVS, NLQP, the Chairman of the Poultry Producers Union, and experts in poultry diseases and advisors to the MoALR. The Committee formed an internal task force that developed the draft strategy, monitored the developments of

⁶ <http://www.arc.sci.eg/InstsLabs/Default.aspx?OrgID=8&TabId=0&lang=en>

the disease and provided technical recommendations on how to control and eradicate the disease. FAO was consulted on an informal basis and has recently supported the drafting of new ToR for the Committee in consultation with GOVS.

At the same time, a multi-partner **AI Communication Committee** was formed to coordinate media and social communication interventions, with activities focused mainly on human health. The Communication Committee is chaired by the Ministry of Health and Population (MoHP) and includes representatives of WHO, World Bank, UNICEF, USAID, and Communication for Healthy Living (CHL). FAO was subsequently invited to join; recently the committee's activity has diminished.

A plethora of other national actors (governmental, semi-governmental, and NGOs) have been involved at different stages and with different roles in the prevention and control of HPAI in Egypt. Among them is the **Egyptian Poultry Association**, which: i) donated to the NLQP some equipment and kits for the diagnosis of AI (with a value of 7 million LE); ii) took part in the drafting of compensation schemes and in awareness campaigns; iii) was consulted during the implementation of a German-funded project (GCP/INT/010/GER). In addition, the **Organization for Reconstruction and Development of Egyptian Villages (ORDEV)** was similarly involved in training on data collection and awareness campaigns, under the OSRO/USA/701/EGY project umbrella. ORDEV - which operates within the Minister of Local Development, generally works on poverty alleviation (human, economic and infrastructure development) in rural areas through financing loans from the local development fund, with the advantage of having access to some 30,000 graduates trained in collecting data and employed in local development information centres. Finally, the **Central Laboratory for Evaluation of Veterinary Biologics (CLEVS)**, which is part of the MoALR's Veterinary Serum and Vaccine Research Institute (VSVRI), is recently playing a major role in the quality control of Avian Influenza vaccines currently in use in Egypt and takes part in FAO-NLQP implemented project (OSRO/USA/801/EGY).

Country Strategy/Planning/Documents for the prevention and control of the disease

In order to contain the disease spread, the first decision by the Government of Egypt was to undertake a **compulsory culling associated with compensation scheme**. It planned to include: i) the destruction of infected foci as well as farms in 1 to 3 km surrounding zones; ii) proper disposal of the destroyed carcasses, disinfection of the bedding and poultry houses; iii) vaccination in the next zone (3 to 7 km) using a homologous vaccine; iv) follow-up of the vaccinated flocks to assess the resulting immune response and monitoring of the sentinel birds for detection of active virus infection; v) nation wide surveillance. The evaluation team was informed that in practice, priority was given to vaccinating chicks from the large industrial production units, and to a lesser extent those of the small industrial production, with minimal attention to the traditional poultry sector in rural areas. Vaccine purchasing (mainly from China) and distribution began in March 2006 (some two months after the detection of the virus) with the delivery of 25 million doses (5 million of which were allocated to the traditional poultry sector, far less than the 300 million estimated to be required). In addition, in most rural areas, authorities only implemented culling in affected villages, or those within a 2 km distance from an affected farm. After the initial stages, culling processes took place on

the basis of clinical suspicion of the disease, without laboratory confirmation. Despite some resistance, the campaign continued⁷.

At the same time, existing health **communications** infrastructures in the MoHP and in the Ministry of Information prepared a full-scale response, with TV spots aired within hours of outbreaks. A communication strategy was prepared and focused on five issues: i) modes of transmission; ii) hygiene and safe preparation of poultry for consumption; iii) keeping children safe; iv) safe caging and household biosecurity; v) human symptoms and prompt health-seeking. It was almost exclusively focused on human, rather than animal health. The campaign was mainly channelled through TV/radio and printed materials (flyers, booklets, fact sheets, posters) distributed among clinics, community workers and NGOs, and pharmacies. A journalist workshop with media professionals was organized and a national hotline activated, as well as training and awareness initiatives organized in 21 highly-affected governorates, with more than 8,000 MOHP staff and 4000 school students/teachers involved. A website (birdflu.sis.gov.eg/html/index.htm) was also created⁸.

An **Integrated National Plan for Avian and Human Influenza** (2007-2008) was prepared in May 2007, with four overarching goals: i) increase resistance of poultry to HPAI, limit the spread of the virus in poultry through early detection and implement measures to contain the spread of the virus through vaccination; ii) minimize the likelihood of human exposure to infected poultry; iii) ensure early detection of human cases of AI and manage these cases effectively; iv) ensure preparations for an eventual pandemic through strong social mobilization via targeted information, education and communication strategies. The relative importance of the four planning sectors – animal health, human health, communication and inter-ministerial cooperation – is said to vary with the phasing of the pandemic, with the animal health sector considered as the most important component at the time the plan was issued (pandemic phase 3 – animal to animal with limited animal to human transmission).

The animal health component of the Integrated National Plan - the so-called **Animal Health and Livelihood Sustainability Plan** – is structured along three phases (2 years for control, 3 years for consolidation, and eradication to follow) and three objectives, with FAO acting as major partner:

- *Systems for HPAI regulation and monitoring* (surveillance, vaccination and vaccine production, condemnation and compensation, poultry farm census with appropriate numbering system, quarantine measures, regulatory legislative support). To overcome the above reported challenges and deficiencies which occurred previously, the Plan specifically envisages a blanket vaccination throughout the country (including backyard production), with campaigns being free of charge and repeated quarterly in each district by veterinary clinics. Vaccination was compulsory, but vaccinators did not have the right to vaccinate if the owners oppose it.⁹ Similarly, compensation is said to be soon re-established at current market prices for backyard birds in rural areas and at 75% of market prices for farms. The introduction of in-kind compensation is also envisaged, with the aim

⁷ As of December 2007, 21 companies had imported AI vaccines from 6 different countries (Italy, Mexico, Indonesia, USA, the Netherlands, and China), with a total of approximately 1.5 billion doses having entered the country.

⁸ FAO is not included in the “related sites” section of the website, while WHO is.

⁹ The Plan itself acknowledges the poor trust of some farmers in the value of vaccination, imputing this attitude to financial burdens and implemented surveillance that precede and follow vaccination. Other factors are said to hamper the success of the initiative and jeopardise the implementation of control measures, namely, poor motivations and financial incentives of vaccinators, little direct training on HPAI, as well as the lack of materials and facilities

of increasing disease reporting and to encourage trust between the public and veterinary services (see below the current initiative FAO is considering to support).

- *Systems to upgrade veterinary services* (capacity building of the veterinary services and laboratories. Here, support from FAO is explicitly requested to: i) develop detailed action plans and policies on vaccination and stamping out; ii) assess alternative measures for restructuring the poultry industry and estimate their costs implications on food security, and, iii) establish functional implementation modalities (including transportation).
- *Attention to vulnerability and socio-economic impact* (restructuring of poultry production industry, extend HPAI free compartments, extension and raising public awareness). Here, the focus is on setting up effective compensation schemes and strengthening the subsidy systems; Government is said to require external technical support and policy guidance for this.

HPAI is now endemic in poultry in Egypt and the country has been identified by WHO as a high-risk setting for human pandemic influenza. There is no conflict between experts and lay opinion on the level of risk and its perception. The Egyptian Health Communication Surveys (2006 and 2007) showed that the perceived severity of influenza infections among the Egyptians slightly increased from 66.4 to 68.9%, while the perceived susceptibility to H5N1 infection in turn diminished from 24.7% to 18.8% in the period considered.

IV. DONOR AND TECHNICAL ASSISTANCE SUPPORT

A number of donors and development partners have supported the national government and institutions on HPAI, with FAO undoubtedly playing a major role among them all. However, technical and financial support provided by the main donors (USAID, the European Union and the World Bank) has not been adequately coordinated, with poor information on respective field of expertise and areas of interventions circulated or discussed. In this context, USAID and FAO have recently attempted to use the SAIDR project (OSRO/EGY/701/USA) as a platform to promote co-ordination and harmonization of activities with some success.

At the beginning of the response, the Office for the Coordination of Humanitarian Affairs (OCHA) established a global Pandemic Influenza Contingency (PIC) to support efforts of the UN, national governments and the humanitarian community to be prepared to face an influenza pandemic. A regional coordinator for the Near East was appointed in Cairo, and national indicators developed to assess the UN system preparedness to face a prospective pandemic.¹⁰ A US\$ 75,000 UNDP project was approved early in 2007 to build on all the work undertaken at the national level and coordinate with all national and international stakeholders, in support of the UN Resident Coordinator Office.

HPAI activities are largely carried out by the Government with support from USAID (directly and through FAO), the European Union and the World Bank.

USAID has channelled around US\$ 7 m through FAO for avian influenza projects. It has also provided US\$ 3 m to the Government of Egypt (as counterpart of the SAIDR project) and is funding CHL and, more recently, STOP AI which are working on communication and biosecurity training in Egypt, respectively.

¹⁰ Please note, once more, that FAO is not listed among the “useful links” on the UN OCHA Near East web page, while WHO and OIE (among others) are.

Following the finalization of the National Integrated Plan for Avian and Human Influenza, a US\$ 7.14 million grant from the World Bank's **Avian and Human Influenza Facility** (AHIF) was approved with four envisaged components: i) improvement of disease management and surveillance; ii) review of regulatory and legal framework of veterinary services; iii) improvement of the Cairo laboratory service capacity; iv) project management. The project started a year later in April 2008 and has so far focussed only on laboratory strengthening through the provision of equipments and training, and on the provision of technical advice to support a compensation strategy.

The European Union (Directorate General for Trade and Health and Consumers) has organized training targeted at Egyptian laboratory technicians and has also provided € 2.5 million to the MoALR from the remaining funds of the Food Aid Counterpart Fund to carry out farm and home bird vaccination campaigns, purchase equipment and provide training to vaccination teams. Similarly, a reallocation from an ongoing WB Health Sector Reform Project in the amount of approximately US\$ 3.2 million to cover surveillance and laboratory diagnostics equipment was also approved in June 2007.

The work on communication was carried out through UNICEF and the USAID-funded Communication for Healthy Living (CHL) project.

In 2006, UNICEF together with the MOHP, the State Information Services (SIS), and CHL led the national efforts to put forth an avian influenza communication strategy with two distinct components: community mobilisation (led by MOHP and UNICEF) and mass media (undertaken by SIS and CHL with USAID funding). Since then, the role of UNICEF has so far been confined to the development of communication skills of health workers to be deployed in villages of 7 most affected Directorates; the CHL role has increased. UNICEF also undertook a national baseline survey in the late 2006 (and repeated it in 2007) to assess Knowledge, Attitudes, and Practices (KAP) and sponsored a national radio campaign echoing the messages disseminated at the community level. UNICEF funding for avian influenza has severely declined in the last couple of years. Its main field activity is now in the development of training materials for teachers in primary schools in rural areas.

Communication for Healthy Living (CHL), which is also funded by USAID and one of the implementing partner of the SAIDR Project, was involved on communication related to avian influenza (and other infectious diseases) from the early stages. Upon a request from the Minister of Health, CHL focused on the development of communication materials and media spots (to be released as soon as the first outbreaks occurred) and provided some technical advice on the national communication strategy on HPAI. The organization has worked mainly on human health-related issues (in support of the MoHP), in collaboration with UNICEF by using the same DHS sample frame to enter data.

On the laboratory side, the U.S. Naval Medical Research Unit No. 3 (NAMRU III) has worked on the isolation and identification of various influenza viruses (including the H5N1 strain) and on the confirmation of human cases. As one of the only two BL-4 labs on the African continent, NAMRU III has recently been confirmed as a reference lab for Egypt.

Finally, socio-economic studies have been jointly conducted by FAO, UNDP and WFP (as Chair of the UN Disaster Management Team in 2006). A partnership among the three actors was created to focus on reducing the negative impact of HPAI on the livelihoods of the poor and prepare an intervention strategy to better assist the most-affected vulnerable households.

V. ROLE AND ACTIVITIES OF FAO

FAO's main interlocutors are the Egyptian's GOVS and the National Laboratory for Veterinary Quality Control of Poultry Production. The USAID is the other main counterpart of FAO, and for several reasons (such as the high investments made, being the sole FAO country-specific donor and a degree of institutional mistrust given the little progress made to eradicate the disease) the local USAID office has reportedly tended to put pressure on FAO to deliver on the avian influenza programme. This has been a cause for conflict, and been directly linked to the early departure of previous CTAs and staff. As a result of the close engagement with this donor FAO activities are now reportedly aligned to the outcome of the USAID-led Strategic Review of HPAI situation in Egypt (the last one took place in June 2009 and focused on biosecurity, surveillance, outbreak investigation and management) which plan activities on a yearly basis. This also reflects the absence of a clear FAO vision and long-term strategy for how best support control of HPAI H5N1 in Egypt.

With regards to the Government, the evaluation team was informed that higher levels of Government attach great importance to HPAI. In the absence of a joint FAO-Egypt National Medium Term Priority Framework, however, it is difficult for the evaluation team to establish the actual importance these issues have in the broader development agenda. There is no doubt however that FAO's Work on HPAI in Egypt is very much appreciated by GOVS and NLQP staff and most partners, and by FAO Senior Management since it's the largest programme implemented in Egypt by the Cairo-based Regional Office for the Near East (RNE).

FAO Country Team

The FAO avian influenza programme started as early as November 2005, with a regional project intended to reinforce cooperation and strategies harmonization in the near east. As the ECTAD unit as a whole was set up only in June 2007 (upon arrival of an operations officer as team leader ad interim), most of the previous work on HPAI was managed (and later mostly supervised) by FAO HQs and – although with different responsibilities and with some quite abrupt interruptions – the FAO RNE office in Cairo. In 2006-early 07, two team leaders, an APO, an Animal Health Expert and a Field Disease Surveillance Manager were stationed in Cairo and collaborated with international and national consultants sent by Rome, with some emerging problems of coordination among them and with the former FAO Representative.

Since the deployment of an ECTAD unit in mid-2007 the programme has largely been managed by the country team under the overall supervision of the FAO representative (the main exceptions being the German-funded and other HQ based projects on biosecurity and public private partnerships which also report to the projects' leaders). Staffing levels in 2007 and early 2008 were very low compared to other FAO HPAI programmes in endemic countries (e.g. Vietnam, Indonesia, Bangladesh). Only in late 2008 the ECTAD unit was staffed by permanent technical experts, namely: a Team Leader, two Animal Disease Surveillance Experts, a National Project Coordinator for the German-funded project, an Operations Officer (working on regional projects as well) and a Monitoring and Evaluation Expert (plus two GS staff). The work of the Unit was complemented by the activities carried out by the Communication Expert, who initially was not considered a member of the ECTAD team, and eventual joint activities conducted with the FAO regional livestock officer for the near east.

In late 2009, mainly because of the new core team put in place, and the financial resources being made available by the main donor (USAID), the ECTAD unit increased its staffing to eighteen, including two senior (one technical and one operational) experts and one APO funded by Spain. These numbers might indicate that at last the required human resources are readily available, but in view of the evaluation team there are major deficiencies in the staffing profile (skill mix), expertise and seniority, particularly at the level of national staff. The RTE2 team was informed of past reticence from the Government in accepting longer-term international staff, but taking advantage of the new environment and relationships built by the new ECTAD team with the Government and the main donor, the shortcomings in expertise listed in this report will need to be addressed for the FAO-supported HPAI programme to be effective in the wide number of areas in which is now operating.

The table below lists the avian influenza projects implemented in Egypt as of October 2009. A detailed assessment of the main projects implemented in Egypt can be found in annex 3.

Table I. Avian Influenza Projects implemented in Egypt as of October 2009

Project	EOD	NTE	Donor	Total Approved Project Budget	Total Expenditures under the project	Budget Allocated for Egypt through FBA	Expenditures and Commitments under FBA for Egypt
National - (OSRO/EGY/801/USA)	09-Jun-08	29-Sep-10	USA	2,416,500	1,323,082	124,700	79,245
National - (OSRO/EGY/701/USA)	01-Oct-07	30-Sep-10	USA	9,000,000	4,576,213	3,209,550	1,688,553
Total National Projects:				11,416,500	5,899,295	3,334,250	1,767,798
Regional - (TCP/RAB/3006)	01-Nov-05	31-Oct-07	FAO	333,711	333,711	32,594	32,594
Regional - (TCP/RAB/3005)	01-Nov-05	31-Oct-07	FAO	310,230	310,230	4,688	4,688
Global - (OSRO/GLO/504/MUL BABY04)	01-Jan-06	30-Apr-07	France	5,930,420	5,869,949	49,264	49,264
Global - (OSRO/GLO/601/SWE BABY01)	30-Mar-06	31-Dec-09	Sweden	6,604,494	6,562,648	169,700	175,029
Global - (OSRO/GLO/604/UK) child	29-Mar-07	31-Mar-10	UK	5,388,655	4,439,887	10,700	9,259
Global - (OSRO/GLO/601/SWE BABY02)	28-Apr-06	31-Dec-09	Sweden	3,418,047	3,408,386	4,600	3,618
Global - (OSRO/GLO/504/MUL BABY06)	31-Jan-06	31-Jan-07	Saudi Arabia	1,000,000	959,843	31,661	29,155
Global - (GCP /INT/010/GER)	15-Aug-06	15-Nov-09	Germany	2,563,665	2,152,851	137,562	131,034
Regional - (OSRO/RAB/701/SWE)	28-Nov-07	31-Dec-09	Sweden	2,452,234	1,713,993	257,506	117,042
Global - (OSRO/INT/805/USA BABY03)	01-Jan-09	31-Jan-10	USA	312,000	86,331	245,036	27,304
Global - (OSRO/GLO/802/USA BABY01)	01-Jan-09	31-Jan-10	USA	575,000	213,592	549,000	204,409
Global - (OSRO/INT/603/USA Baby04)	01-Jul-06	30-Mar-09	USA	300,000	281,341	22,375	21,937
Global - OSRO/GLO/702/CAN	14-Mar-07	13-Apr-10	Canada	9,750,791	7,005,049	68,000	65,000 ¹¹
Total Global/Regional Projects:				29,188,456	26,332,762	1,514,686	805,333
Grand Total:				40,604,956	32,232,057	4,848,936	2,573,131

¹¹ Approximate figure awaiting the finalisation of the payments under this project

VI. SYNTHESIS AND DISCUSSIONS OF FAO'S CONTRIBUTIONS AND ROLES

We review the contributions and roles of FAO under the headings presented in the TORs of the evaluation, and the Inception Report.

Relevance and Appropriateness of FAO's Strategy and Programme at country level:

In assessing the relevance and appropriateness of FAO's strategy and programme in Egypt, it is important to understand the environment in which the FAO programme operates, most notably the complexities of the GOVS operations, the apparent divisions in responsibility and authority in the HPAI response between the GOVS and the Animal Health Research Institute (NLQP), the devolution of many powers and responsibilities to Governorate level, and the trend for national decrees that are not necessarily based on the advice of the CVO. Although all of these are problematic issues, the main areas that probably need clarification are the mandates of GOVS, NLQP and of the MoALR's Animal Production Department which FAO can and should endeavour to support.

A joint FAO/WHO/UNICEF assessment mission was fielded in December 2009, and looked particularly into strategic, management and governance issues surrounding avian influenza control. This joint assessment has provided the Government and the FAO programme with an opportunity to draw attention to policy level issues hampering effective HPAI control. At the time of writing this report the final recommendations of the joint assessment mission were still under preparation, but the evaluation team envisages that follow-up intervention from FAO, as well as from the other UN agencies involved will be needed to support the implementation of the measures proposed by this mission.

In the context of this environment, FAO has attempted to provide a strong coordinating role for the different funded initiatives for HPAI control channelled through them. This role has been complicated by some disagreements between former FAO technical experts and other FAO and collaborator stakeholders, which coupled with other factors resulted in the departure of successive CTAs (4 in the past three years) and periods with a major leadership vacuum. In addition, some important technical contributions by FAO have been provided as one-off consultancies, rather than longer-term in country activities with sustained backstopping. Nevertheless, the reputation of FAO has progressively improved particularly in the past year.

Most relevant and appropriate is the SAIDR (phase III) project, targeted at strengthening the central capacity of GOVS in the responses to HPAI. This project provides an excellent opportunity to introduce greater coordination of HPAI control in different affected Governorates, and through the development of epidemiology capacity, to progressively provide a stronger evidence base to both surveillance and response activities. The evaluation team was also informed that within the SAIDR phase III project; monthly co-ordination meetings were being held, led by GOVS, with responsible offices from all Governorates. This initiative was found very relevant, particularly since it was initially funded by FAO, but now is being led and paid for by the Government of Egypt (through the SAIDR component managed by GOVs). However, this forum may not be enough to break the divide and pervasive incentives that affect the effectiveness of control activities.

Finally, and although the FAO's approach to address HPAI issues in Egypt is largely in line with the FAO/OIE global strategy, the evaluation team was made aware of major inadequacies in the FAO country strategy. For example, given the endemic/entrenched status

of the disease, the national plan to which FAO has aligned its work has not been revised to take into account the present disease dynamics; as a result, the focus of FAO activities has also been largely on traditional disease emergency control, and basically at central level, whereas the persistence of H5N1 calls for greater consideration to constraints beyond animal health issues and an enhanced presence at sub-national levels.

- Coherence and integration of regional projects into country programmes/activities;

The FAO programme in Egypt has benefited from a few global/regional project activities, which have been in place since 2005. These are funded mainly by Sweden (SFERA funds). These funds have been crucial in paying for international long-term personnel as national projects till recently were not covering the CTA and operations officer's salaries, and in occasions have been used as bridge funding to continue with surveillance activities and conduct workshops and training. A new initiative also funded with SFERA funds is promoting the "Development of cost-effective and feasible biosecurity measures for resource limited circumstances". A pilot activity with the NGO Care has just started and will be completed by December 2009.

In addition, Egypt participates along with Bangladesh and Indonesia in the Cleaning and Decontamination project (OSRO/GLO/802/USA) and the Private Partnership initiative (OSRO/INT/805/USA). Through the latter ECTAD Egypt has organized discussions on compensation and is now discussing ways to improve biosecurity in commercial farms with the public and private sector. The linkages with the former project are less obvious as LBMs are officially banned in Egypt.

The flexibility provided by SFERA funds was key to cover funding gaps in the country and helped to maintain an integrated country programme; and particularly important to fund key staff positions.

- Appropriateness of FAO interventions in terms of:
 - Approach: comprehensiveness;
 - Duration: short term inputs versus long-term technical assistance; and,
 - Focus: HPAI versus other Transboundary Animal Diseases

FAO's interventions in Egypt have been quite comprehensive in terms of the range of issues covered, and sustained, in terms of their continued engagement for more than three years. Given the continued occurrence of human cases of H5N1, the programme has been largely focussed on HPAI. While Egypt does have other animal diseases of priority, such as foot and mouth disease, a continued focus of HPAI can be well justified.

Efficiency

As reported by the First RTE, FAO's responses have not always been timely. The second RTE noted an improvement in the past year following the fielding of a new leadership and the strengthening of the operations unit. The evaluation team was informed that at the beginning there was a long delay in developing an initial response, and that discussions on vaccination policy and strategy were very extended, and decisions took a long time to emerge. This was probably reflective of the complicated decision making environment in Egypt, as commented earlier, and not necessarily the fault of FAO.

Egypt has huge challenges in terms of HPAI surveillance and control. A large component of the challenges is translating some of the well understood principles of surveillance and control into action in the field. Much of FAO's contributions have been at central national level, and there is arguable a case for greater focus in the field in certain high risk Governorates. This is not easy both for political reasons (having FAO technical teams in the field), for operational reasons (recruiting quality staff for extended field work contracts), and financial reasons (clearly greater engagement in the field would be expensive, particularly if covering the several high-risk Governorates).

The evaluation team noted that FAO has financial constraints to supplement its central policy and strategy support, but is of the view that the organization might eventually have to consider strengthening its activities in high-risk Governorates to develop some of the institutional cohesions that are lacking and have demonstrated in other decentralized countries to be essential for better prevention, surveillance and response.

- Timeliness and adequacy of technical and operational support from FAO Headquarters (HQ) and decentralized offices (including ECTAD units and RAHCs) to country level activities, including:
 - quantity and quality of co-ordination and support from HQ, decentralized offices and Regional ECTAD/RAHCs (in terms of backstopping/supervision missions);
 - quantity and quality of country level work undertaken by the ECTAD national units and, where relevant, the FAO Representations

Similar to other countries, FAO was criticized by some stakeholders for sending in so many short-term consultants in the early stages of HPAI emergence without a formal request or demand (such as for the GOVS restructuring study). Some of these studies however have reportedly been valuable in policy debates (e.g. FAO proposal for disease surveillance, FAO value chain analysis, FAO/WFP economic impact study; etc.).

The new FAO Representative in Egypt is fully supportive of the HPAI programme, and ensures an effective facilitating with Government and other stakeholders. The FAO programme has very limited interface with the FAO/OIE regional offices in Tunis and Lebanon, which are *de facto* the regional animal health centres for Egypt. Working relations at technical level with the FAO Regional Office in Cairo (RNE) are also not very strong.

The FAO programme in Egypt has been very fortunate in having a very experienced Operations group, led by an International staff member in Cairo who is also supported by an experienced officer in Rome and a small team of national consultants based in RNE.

As far as technical support arranged through FAO headquarters, this has been provided in a number of areas, including disease surveillance, poultry value chains, socioeconomic impact assessment, among others. With a few exceptions (such as the missions to review and design a new disease surveillance system) these have been one-off consultancies, arguably without the follow-up and continuity required to ensure that they have specific relevance in Egypt, and that recommended actions are taken and appropriate funding secured.

Effectiveness of individual country programmes

- Achievements in terms of outputs and outcomes, including:

- development of effective national policies, preparedness measures, communication and public awareness campaigns, surveillance systems, laboratory capacities and contingency plans to deal with the disease;
- new or strengthened institutional frameworks, organizational structures and processes, as well as knowledge, skills and competences acquired resulting in improvements in the performance of public and private veterinary services; and,
- enhanced preparedness and response capacities of the poultry sector to deal with the risk of HPAI outbreaks, and of other animal diseases

Although the evaluation team was informed about several positive changes and outputs produced in the past few months (such as the ongoing revision of the compensation policy, the strengthening of the technical committee, all in the latest “transition period”), the overall effectiveness of FAO’s programmes in Egypt at individual, organizational and institutional levels is difficult to evaluate.

Part of the problem in measuring the effectiveness of FAO’s support lies in that the indicators used are not well defined (ie, some outcome indicators of the SAIDR project e.g. “number of veterinarian trained” correspond to outputs; while others are not possible to measure: “Number of LBM surveillance reports submitted according to GOVS Field Manual”) and even those that would be useful to know (e.g. “Proportion of poultry farm workers who are practicing key behaviours”) are not being effectively measured. The M&E component of the SAIDR project is a relatively new initiative in the right direction but it is more amenable to measure achievements at output, rather than outcome, level.

The team noted that some FAO partners, and particularly donors, tended to assess FAO activities against progress at impact (e.g. number of HPAI outbreaks) and strategic objective level (e.g. outbreaks detected by surveillance); the lack of data on FAO’s contribution or role on these areas often led interlocutors to make negative assessments about the organization’s performance. The FAO country programme has arguably made several contributions to increasing GOVS and NLQP capacity to detect and control the disease but to show its results it has to identify where its strengths and weaknesses lies, and then work out a strategy of its own that outlines its contribution to the Government overall strategy. The FAO strategy will need to include realistic objectives and identify areas of focus for FAO in the country (if at central and/or Governorate level). It would also have to invest in the setting up of a stronger monitoring system, possibly within the epidemiology unit, that gathers and analyze the results of prevention, surveillance and control interventions carried out with FAO support.

- Extent to which improvements in these areas have contributed to increasing national capacities to prevent and control future outbreaks of HPAI and of other transboundary and zoonotic animal diseases

Although there are several areas for synergies (e.g. surveillance for H1N1, etc.), the evaluation team was not made aware of any example of case in which activities introduced by the HPAI programme helped or were applied in the context of other TADs.

Effectiveness of global/regional programmes at country level, in particular the extent to which the:

- Crisis Management Centre – Animal Health has improved early response and the design of follow-up interventions.

The CMC has not worked in Egypt.

- GLEWS information, analysis and technical expertise have improved disease response and understanding of HPAI epidemiology

GLEWS receives periodic updates on the situation in Egypt, but although the reports were considered useful by FAO staff it was often a one-way communication from ECTAD Egypt to the GLEWS unit at HQ.

- OFFLU scientific data exchange and technical expertise have improved national capacity for laboratory diagnostic, vaccine efficacy and development

OFFLU has been very active in Egypt through the national project on vaccine efficacy (OSRO/EGY/801/USA). The project is backstopped by OFFLU staff in Rome and has so far made some progress in identifying circulating H5N1 virus isolates and evaluating the efficacy of the vaccines available. OFFLU support has also been instrumental for establishing working relationships between NLQP/CLEBV staff and several international reference laboratories (such as IVZS, ERASMUS, SEPRL and CEVA)

- Regional networks have contributed to national capacity building and information-sharing

Regional networks were established by the sub-regional ECTAD unit in Tunisia. Although the country requested to be a part of this and other initiatives coordinated from Tunis, the RTE2 team was informed that meetings and discussions held were considered to be by technical staff of GOVS of limited value to Egypt.

- Research and technical expertise on wildlife has improved countries' understanding of the role of migratory birds in the spread of HPAI

FAO through ECTAD HQs has conducted research on wildlife together with Wetlands International and NLQP in 2006 and 2008. ECTAD Egypt carries out some follow-up to gain a better understanding of the interface between poultry and wild birds, particularly in resting sites through a LoA with NLQP, but in view of the widespread nature of the disease the role of migratory birds has not received the same level of attention than in countries with sporadic or at high-risk of infection.

Sustainability and Impacts

- The *likely* effect of FAO's work on the institutional, organizational and human capacity of affected and at-risk countries beyond HPAI

In spite of the absence of data, the evaluation team considers that FAO's support has likely had a positive effect on individual capacity of Government personnel (mainly GOVS) at central and field level as well as on some farms and poultry producers that have benefited from biosecurity training and equipment provided by the organization. The effect on the organizational systems and institutions is less obvious. It is too early to assess the impact of the "second generation" of projects (SAIDR phase III, the Public-private partnership and the biosecurity project) but given their short-term funding (from six to twelve months) and pilot nature it is unclear how sustainable and widespread is going to be the capacity built.

- Sustainability of the strengthening taking place in public and private veterinary services

It is also too early to assess the sustainability of the strengthening taking place in public and private veterinary services. The evaluation team noted that it will depend on a number of factors: i) duration, ii) counterpart support, iii) degree of ownership. Activities conducted in the early days (2005-early 08) were a combination of short-term consultancies (mostly organized by HQ) and specific project activity (funded by Germany or SFERA). These were activities of short duration, with weak counterpart support and generally led by FAO. The phase III of the SAIDR project has a better chance to achieving a lasting strengthening of individual capacities and promoting organizational changes in GOVS (through the creation of an epidemiology unit, the use of TADinfo for disease reporting, and the enlargement of surveillance coverage through the CAHO system) but to achieve institutional reform it will require not only a longer timeframe but also the political backing that is necessary to promote changes to the organizational and legislative framework recommended in the PVS and other assessments.

- Extent to which disease surveillance and control interventions have likely contributed to reducing HPAI prevalence

FAO-supported disease surveillance (CAHO system) is relatively new and has so far detected only a few cases of HPAI. Given the complexity of the situation, with widespread under-reporting, lack of private sector collaboration and absence of compensation, the evaluation team considers that the new system being piloted (a light version of the Indonesia PDS model) will in the short term help increase HPAI reporting. However, control of the disease will remain a major bottleneck since it involves a wider spectrum of actors (e.g. police forces, district and village authorities, etc) and requires different incentives than for surveillance. Also, FAO has not been directly involved in control activities, which take place at field (Governorate and district) level. If FAO were to make greater contributions towards reducing HPAI prevalence it will have to develop stronger working relationships with the field than at present.

- Likely macro-economic, livelihoods and food security impact of FAO's strategy and response to HPAI

It is hard to measure the impacts of FAO's strategy and response to HPAI on macro-economic, livelihoods and food security issues. FAO has conducted some research, which have proved useful to understand the negative effects of the disease in the poultry sector and the economy at large. Inclusion of wider development issues in the current FAO strategy has been at best unclear; in fact, the overall field programme seems to have been more opportunistic than strategic since programme activities were developed with a focus on emergency disease control which were the areas for which extra-budgetary funding was readily available. The Government strategy, in which FAO's work is based, is outdated and overall very optimistic since it envisaged disease control by the end of 2009. There is a need to review both the Government and the associated FAO's strategy considering the changing disease situation and the whole development context.

Partnerships

- The clarity of FAO’s role, based on its comparative advantages and capacities, as well as the degree of complementarity, co-ordination and collaboration with regional and national partners, particularly:
 - Multilaterals: OIE, World Bank, Asian Development Bank, African Union’s Inter African Bureau for Animal Resources, ASEAN, WHO and UNICEF.
 - Major Bilateral/donor agencies

FAO has limited collaborative work with OIE, and less so with the World Bank. In contrast, FAO has had several meetings and discussions with WHO and UNICEF in matters regarding HPAI surveillance and communication, respectively. FAO maintains a close relationship with USAID. As the main donor to FAO avian influenza programme and the main donor to the country, USAID is a very strategic partner for FAO in Egypt. The good relationship and fluid communication between ECTAD Rome and USAID Washington has however not always been replicated in Egypt. Leadership vacuums on the part of FAO, misunderstanding of each other’s roles and organizational culture, and repetitive inquiries by USAID have together added up to a long standing source of friction at country level. The evaluation team noted that ECTAD Egypt was committed to improving this relationship but at the same time it noted that the heavy reliance on this particularly donor limited the scope for opening up to other funding and programme alternatives. ECTAD Egypt has now started a process of negotiation with the African Development Bank on future funding opportunities. The team should explore more possibilities like this and give due priority to mobilization of additional resources.

- FAO’s contribution to the preparation of partners’ HPAI regional and national strategies

FAO made substantial contributions to the 2007 integrated national plan, but more than two years later and under a more complex disease situation, this is a role which could undoubtedly be strengthened further.

In conclusion, the evaluation team have summarized the strengths and weaknesses of avian influenza programme in Egypt as follows:

Strength	Weakness
Strong commitment and support from FAO Representative and staff at HQ	FAO support has not prevented Egypt from remaining endemic; and be the most infected country in Africa, and with a high number of human cases
Dedicated team with good interface with Government partners	No clear and well articulated FAO strategy of detection and control based on global strategy guidelines
FAO national consultants engaged in competitive recruitment process	An apparent weakness of commitment to some of the principles of biosecurity, including among FAO field staff
FAO respected as leading organisation by majority of stakeholders	Limited participation of private sector in strategic decisions. The new PPP , project is trying to improve this situation and has so far developed a compensation strategy and a biosecurity guideline for sector 1 and 2 farms.
Solid diagnosis laboratory capacity; results within 6 hours, able to sequence virus isolates thanks to FAO and others support	Dependency of a single donor and on SFERA funds

CLEVB laboratory controlling the quality of vaccines	A higher staff turn over than desirable
SAIDR project groups most key aspects from detection to control	Governance of HPAI has to improve (there are 4 or 5 government bodies that can release decrees without much interaction among them)
PDS/CAHO pilot activities giving access to household outbreaks and information on bio-security	There is major concern regarding the capacity of GOVS and others to absorb new information and translate it into strategies. Examples of this are the limited influence of epidemiological analysis and awareness raising work.
FAO neutrality is a major asset.	A recent assessment study highlighted substantial weaknesses in the current immunisation programme and its lack of positive impact on the spread of infection or the maintenance of public health safety ¹² .
FAO international and national staff are seen as trusted partners	Prevention of human exposure at farm level is a concern, and needs attention; However the mandate for communication and behavioural change is not under the auspices of FAO. There is a need to include farms that are not registered in prevention and control activities. To this end all farms have to be geo-referenced and coded including those which are unregistered.
	Trace back has to be improved: poor information about sources of infection does not allow tackling the disease at high risk points.

The main recommendation of the evaluation team is that FAO needs to develop a long-term strategy in Egypt with a view of supporting the Government efforts to contain and control avian influenza in the next five to ten years. Donors and key Government partners would need to be part of its development to facilitate the alignment of short-term project funds and agreed activities. Actions that could be incorporated in the new strategy include the conduct of field work in selected high risk directorates (sub-national level implementation), the broadening of the current disease control approach to include other constraints to safe poultry production, the strengthening of prevention and control tools (including biosecurity, trace back, and the use of PDS/CAHO techniques).

FAO will also need to continue its efforts in diversifying its donor base, and be more proactive in partnering with multilateral (e.g. IFAD), IFIs (Islamic or African Development Bank) and country donors potentially interested in funding long-term livestock programmes

¹² Peyre et al., 2009. Avian influenza vaccination in Egypt; limitations of the current strategy. Journal of Molecular and Genetic Medicine, 3, 198 – 204.

in Egypt. In this regard, FAO can use the forthcoming GAP analysis exercise as an opportunity to promote reforms and engage with potential donors. FAO also has to continue with its efforts to increase collaboration between the public and private sectors, brokering and promoting joint activities and discussions on animal health issues.

Finally, FAO would have to strengthen its engagement with senior Government authorities to advocate for an update to the current policy and decision making mechanisms that guide avian influenza control in Egypt with a view of facilitating the revision and development of a national strategy that takes into account the endemic nature of avian influenza in Egypt.

Annex 1. List of People Met

Date	Time	Description	Arrangement Responsibility	Venue
Oct. 18	12:00	Briefing with Mr OuldAhmed Abdessalam, FAO-R, DRR- RNE	Yilma	FAO
	12:30	Lunch Break		
	13:30	Discussion on HPAI project activities in Egypt and in NE	Yilma/Toni/Gebril	FAO
	14:30	Meeting with ECTAD Project Coordinators and team members and discussion on HPAI project activities	Toni/Yilma/Gebril	FAO
	17:30	Review the schedule for subsequent days	Yilma/Toni/Gebril	FAO
Oct. 19	09:30	Meeting with Prof. Dr Hamed Samaha, Chairman of the General Organization for Veterinary Services, Egypt	Yilma/Ahmed	GOVS
	10:30	Meeting with Dr Amira Abd Elnabi, SAIDR Team and Epidemiology Unit	Yilma/Ahmed	GOVS
	11:30	Meeting with Dr Abd El Satar Arafa, Head of gene analysis unit and Dr Elham Fathy El Zoghby, Quality Manager of NLQP	Yilma/Abdullah	AHRI/NLQP
	13:00	Lunch Break		
	14:00	Group I: Meeting with General Hassan Hamida, Chairman of the AHI Supreme Council	Yilma/Toni	MoALR
	14:00	Group II. Meeting with Prof. Dr. Elham Ibiary, Director, CLEVB	Toni/Yilma	FAO
	15:30	Meeting with USAID Country Mission Team (Drs Holly Dempsey, Thomas Easley and George Sanad)	Yilma/Toni	STOP AI
Oct. 20	7:00	Group I. Field Visit to Kalubiya and Gharbia Governorates (Lower Egypt)	Ihab/Ahmed/Zahra	Field
		Group II. Field Visit to Fayoum Governorate (Upper Egypt)	Elsa/Safaa/Ihab	Field
	15:00	Group I. Meeting with Dr Chadia Wannous, UNSIC/UNRC Regional Coordinator.	Yilma	teleconference
		Group II. Visit to MoH (Dr Samir Refaey, MOH/ESU)	Yilma	MoH
Oct. 21	09:00	Meeting with Prof Dr Hassan Aidaros (former CVO and OIE Representative in Egypt)	Yilma/Toni	USAID
	10:00	Meeting with Dr Farid Hosny, Team Leader, STOP AI, Egypt	Yilma/Toni	FAO
	11:30	Meeting with Dr Ahmed Abdul Latif, WHO Representative in Egypt	Yilma/Toni	WHO
		Lunch Break		
	14:00	Group I. Meeting with the USDA-APHIS Team (Drs Eloisa Johns and Mamoud Orabi)	Yilma	American Embassy
		Group II. Meeting with Mr. Ron Hess (CHL)	Yilma/Aseel	CHL
	16:00	Discussion with ECTAD Team	Yilma/Toni/Gebril	FAO
Oct. 22	9:30	Group I: Visit to Wadi Holdings (Drs Maher El Azab)	Yilma/Toni	FAO
	9:30	Group II: Meeting with IFT Corporation (Dr Ahmed Nahrawy and Dr Mahmud Refaat)		
	11:30	Briefing FAO-R and O-i-C RNE		
	14:00	Wrap-up Discussion with ECTAD Team	Yilma	FAO

Annex 2. Documentation Reviewed

Aide Memoire, Joint United Nations Assessment of Government of Egypt H5N1 Control Efforts (December 2009)

Dudley, J. 2009. Age-specific infection and death rates for human A (H5N1) avian influenza in Egypt.

FAO/WFP 2007 Socio-economic Impact Assessment of HPAI in Egypt

Ghonem, M. 2007 Rapid Appraisal Assignment on Identifying Partners

Interventions for Improving Bio-security of small scale poultry producers in Egypt by Pagani, 2007 and Kilany

OIE's PVS Report (2006 and 2009)

Outcome of the Strategic Review of HPAI Situation in Egypt, June 2009

Peyre et al., 2009. Avian influenza vaccination in Egypt; limitations of the current strategy.

Journal of Molecular and Genetic Medicine

Rapid Assessment of Country Preparedness (Prevention and Control Capability) by Dr. Mohamed A. Shalaby

Report Exercise on Highly Pathogenic Avian Influenza: FAO contribution to the UNSIC report (2008)

Annex 3. Assessment of FAO Avian Influenza Projects in Egypt

Project Activities implemented from SFERA funds (OSRO/GLO/601/SWE, OSRO/GLO/504/MUL, OSRO/GLO/604/MUL, OSRO/RAB/701/SWE, OSRO/GLO/702/CAN)

SFERA funds have been systematically used in Egypt in view of funding uncertainties. ECTAD HQ fielded a first mission to **Cairo in February 2006**, a couple of days after the first HPAI outbreak occurred, followed by another assessment from HQs some six weeks after. However, the then recent appointment of the Ministry of Agriculture (January 2006) and the lack of earmarked funds for Egypt limited considerably the support FAO was able to provide.

In the first year since the first HPAI outbreak occurred, much of the work FAO carried out was on preparedness and control, by providing technical assistance and advice to national authorities on strategies and structure to deal with HPAI. Support by FAO in 2006-07 could be indeed broadly split up into three main components: i) institutional reforms and restructuring of national veterinary services to deal with the emergency in the long term; ii) studies and policies for a better understanding of the poultry sector and related biosecurity challenges; iii) field (surveillance) activities (when Swedish SFERA funds came in).

A first “**Rapid Assessment of country preparedness in Egypt**” was commissioned to a national consultant (under the OSRO/GLO/504 MUL BABY 06 project umbrella) in April 2006, followed by a four month-mission by an epidemiology expert with the purpose of reviewing, assessing and making recommendations on strategies to prevent and control HPAI in the country.¹³

Around US\$ 315,000¹⁴ were allocated to Egypt in 2006 to carry out a number of activities, namely:

- A compensation study on reimbursement strategies of backyards and industrial poultry producers after the outbreak (*Dr. Shalaby, October 2006*);
- Another “Rapid Assessment of HPAI procedures for Reimbursement of Backyard and Industrial Poultry Producers after the HPAI outbreak” (*Magda Ghonem, November 2006*);
- A study on the “Structure and importance of the commercial and village-based poultry systems in Egypt” (*Farid Hosny, November 2006*)¹⁵;
- A study on “Market impacts of HPAI outbreaks: a rapid appraisal process in Egypt” (*Dr. Ali Ahmed Ibrahim., L. Albrechtsen (FAO RNE), J. Rushton (FAO HQs) et al, November 2006*);
- An analysis of the structure and role of the Egyptian Academy of Sciences to assess its potential role in HPAI research (*Dr. Shalaby, January 2007*);
- A study on the impact of HPAI markets regulations on poultry sectors 3 and 4 (*Farid Hosny, May 2007*);
- A report on Comprehensive Compensation Policy for the Avian Influenza Disease in Egypt (*May 2007*);

¹⁴ 46% were used for equipments (central offices, computers, phones, and field transport); 44% to pay consultants and travel; 15% for training on TADInfo; and a remaining 2% for the organization of a workshop

¹⁵ This informed the following Poultry Sector Review developed by ECTAD HQ (AGAP)

- A rapid appraisal of partners for future collaboration, including those organizations that at the time had little impact on decision making but could be encouraged to play a greater role in the future (*Magda Ghonem, August 2007*);
- A rapid assessment of the industrial layer sector in Egypt - Development of poultry value chains and review of duck production - (*Ali Ahmed Ibrahim*);
- A study on poultry companies, where data about chickens' movement and trade/market practices were collected (*Salem Sallam, November 2007*).

SFERA funds were also used to fill in “field-level work gaps” too, by financing a number of missions to work closely with the Ministry of Agriculture and the FAO Representation in Egypt on different capacity building initiatives.

- **Technical support to field surveillance** was carried out by the Field Disease Manager. Although his ToR expected him to focus on strengthening reporting and surveillance at local level (with pilot initiatives carried out in Tanta), priority was instead given to a rapid assessment of the implementation of the newly conceived vaccination campaign, due to the high priority given by GOVS to this activity and a subsequent request of the team leader to focalise on it. In addition, in December 2006, the Field Disease Manager visited different governorates in Upper and Lower Egypt to identify affordable interventions for improving biosecurity of small-scale poultry producers. Together with two studies produced¹⁶, a field survey was set up with the purpose of obtaining a quantitative data baseline that would contribute to improve the knowledge on rearing practices in the small holder poultry sector. As recommended by the mission, an outline for training and extension of farmers was proposed. In collaboration with the Regional Communication Officer of FAO RNE, the ToR for the recruitment of a national communication and extension expert was drafted, although no further work was accomplished on the extension message technical report.
- At the same time, starting from December 2006, a three-month inception mission by Ian Douglas went to Cairo to assist with the **restructuring of the animal health sector** “in order to reduce the chances of a disease introduction and make Egypt more capable to respond to TADs”. This was followed by an additional backstop mission from HQs (M. Nosseir, February 2007) at the end of Dr. Douglas' assignment and by a national consultant (Bayoumi Awad) hired to continue with the work after the consultant's departure. A final follow-up mission was organized in June 2007 to progress earlier activities in regard to the agreed restructuring of the animal health sector.
- In addition to the above consultancy, the work plan for the first year envisaged the use of three international consultants to provide inputs into: i) the quarantine policy; ii) emergency management training and further development of TADInfo ; iii) Brucellosis program development as a pilot initiative of the new structure. No specific record of the three above mentioned activities was found during the country visit, although evidence from FPMIS shows the deployment of two related missions (by Vincent Martin and Lorenzo De Simone, in January and March 2007) in the framework of the FAO-GLEWS work plan of activities for disease analysis and risk

¹⁶ P. Pagani and W.H.Kilany, Interventions for improving biosecurity of small scale poultry producers in Egypt and P. Pagani, Strengthening the animal health system at local and central levels to prevent, control, and eradicate HPAI H5N1 in Egypt.

assessment. The missions' main objective was to **assist** the Epidemiology Unit of GOVS and the Central Laboratory **in processing animal health data collected** through passive and active surveillance, with the ultimate goal of making information and risk assessment outcomes available to decision makers. **Training** of three epidemiologists **in the use of TADinfo in FAO HQs and deployment of TADInfo in Egypt** followed, as well as a statistic analysis of data collected to identify disease emergency and diffusion risks. In August 2007 – as part of a mission to Cairo by an FAO consultant (W. Taylor) to assess the resources and elaborate a **phased development plan for the Government Epidemiological Unit** - a training session on data collection was organized with the aim of seeking information and feedback on how HPAI was handled at field level by the animal health personnel.

FAO also held a **focus group meeting with female veterinarians** in October 2007 organized by the German Project coordinator (Dr. Zahra Saleh Ahmed) on the use of Personal Protective Equipments. The workshop was meant **to explain the importance and use of PPEs**, getting at the same time a feedback on the degree of acceptance, real use and practicality. The occasion was also used to provide some 80,000 PPE kits to the MoALR (see USAID 701 project below).

In October 2007, an FAO Consultant (Nick Taylor) was sent on mission to: i) work with local State veterinary staff to introduce ideas about **value chains** in poultry production systems and identify places in these chains that carry risk of disease introduction and/or spread; ii) gather information on Egyptian duck production systems; iii) provide guidance on value chain and risk analysis to assist disease control.

Since then, most of the activities on HPAI have been accomplished within a specific national project framework (as described in the following sections) with a few exceptions such as:

- The **Media Fellowship project**, which is a relatively new activity funded by CIDA Canada. It was originated in the ECTAD HQ Communication Unit and will be implemented, starting from November 2008, by the national team with backstopping from the HQ units. This project expects to award 10 journalists/people working in media a fellowship to attend training on how to do communication on avian influenza. Final results of the project were expected by the end of 2009.
- The **Development of cost-effective and feasible biosecurity measures for resource limited circumstances project**, which is a new initiative aimed at supporting the adoption of sustainable biosecurity measures by poultry keepers and others in the poultry production and marketing chain. The NGO Care has just been hired to tailor and test sets of locally sustainable biosecurity measures with producers and vendors in el Fayoum and Qalioubia.
- The Joint WHO-UNICEF-FAO Mission to Assess the Performance of the Egyptian National Control Measures for HPAI; participation of FAO representatives was covered by a regional project funded by Sweden.

GCP/INT/010/GER project “Promoting strategies for prevention and control of HPAI that focus on smallholder livelihoods and biodiversity”

The USD 348,775 Animal Health Breed Livelihoods (AHBL) project addressed “the growing problem of TADs emergence, which particularly affects livestock producers and rural societies in developing countries and endangers genetic resources in poultry”. The project

intended to achieve veterinary policies and strategies against HPAI that take into account the needs of smallholder producers and biodiversity conservation. Together with Cambodia and Uganda, Egypt was chosen by the project team as a case study country, given the importance of traditional poultry system in the country.

Despite the official EOD set in August 2006, the inception workshop was organized only in April 2007, and the project agreement signed in July 2007. At that time, an **FAO/WFP rapid assessment of the socio-economic impact of HPAI on vulnerable households** was carried out. The aim of the study – conducted by the two organizations in partnership with UNDP’s sister organization BEST, Catholic Relief Services and with the Egyptian Demographic Association responsible for data collection – was to gain a better understanding of the traditional poultry system, poultry keepers’ livelihood strategies and the impact of HPAI on the livelihoods of vulnerable households. FAO’s role was to provide technical assistance and training to local enumerators on socio-economic impact assessments. The Livestock Information Sector Analysis and Policy Branch (AGAL) and the Gender and Population Division (SDW) collaborated on developing gender-sensitive guidelines and tools.

The National Project Coordinator (Dr. Zahra Saleh Ahmed) was appointed in January 2008. Since then, a number of pilot activities have been carried out to cover four research components, namely:

- Animal health. A **Live Bird Market Survey** was jointly conducted by the GOVS and NLQP in the Tanta district (Gharbia Governorate), with FAO technically supporting the exercise. Information from 10 LBMs was gathered on location, source of traded birds, sanitary measures during trading, and more than 700 live birds were sampled. In addition, a national consultant (Dr. A.M Ali) was hired to work on **mapping 80 traditional hatcheries** in three governorates and gather information on production capacity, seasonality, source and type of breeds, sanitary measures, etc.
- Animal production. Some 440 interviews were conducted by the Egyptian Poultry Society Association in three governorates (August 2008), with the twofold aim of **characterizing Baladi chicken and ducks** and **gaining an overall better understanding of the village poultry production system** in Egypt. Activities were suspended during Ramadan (2008) and were finalized with a refreshing training workshop in early 2009.
- Poultry breed diversity. The Egyptian Poultry Society Association was also charged with physical **examination of phenotypic characters and the collection of blood samples for molecular characterization**, in collaboration with ILRI Nairobi. Information was gathered from some 2,500 birds by means of a pre-designed checklist, and some 400 blood samples collected and blotted onto filter paper to be sent to ILRI.
- Livelihood impact analysis. Following the previous joint study by FAO and WFP (finalized in April 2007, see above), a **field survey** was designed and implemented, including focus group discussions and rural rapid assessment in two governorates, in collaboration with the Egyptian Demographers Association as implementing partners. The collected data covered **areas of importance of poultry** in terms of income provision, food source, fulfilling social role, and coping strategies so far realized.

The preliminary results of the above components were used in the preparation of a paper (“An Integrated Approach to Controlling Highly Pathogenic Avian Influenza”) submitted to the

Egyptian Poultry Journal for publication and for presentation in a meeting in Taba, Egypt. FAO staff noted that the main outcome of this project is the poultry breed diversity study which was considered “an important contribution towards incorporating poultry genetic resources into the national programmes for HPAI prevention and control programmes”. Besides the knowledge generated and the linkages developed with some local NGOs through the project, the evaluation team was informed that there is not much left in terms of capacity developed. Although the project rationale and objectives were found to be very relevant by the team, the lack of clear linkages with other ongoing activities during implementation was said to be partially responsible for the lack of follow-up.

OSRO/EGY/701/USA project “Strengthening Avian Influenza Detection and Response (SAIDR) in Egypt”

The SAIDR project officially started in October 2007, with an estimated duration of 3 years and an annual contribution by USAID of US\$ 4 million (3 million allocated to FAO and 1 to the GOVS). A Project Management Unit was established within the GOVS, with 6 officers (including the project manager) collaboratively acting as counterparts to FAO ECTAD staff. The FAO share of the project in fact covers about 10 national consultancies but till recently had no financial provision for long-term international staff.

The overall objective of the project is to “minimize the risk to human health and to reduce the impact on people’s livelihoods from HPAI through its effective prevention and control”. Planned activities are articulated around five intermediate results and 11 objectives (see Box 1), that - according to the GOVS Project Manager - can be altogether grouped into five areas: i) preparedness and prevention; ii) institutional capacity building and training; iii) surveillance (assessment, plan, and implementation); iv) biosecurity and communication; v) response.

Box 1: SAIDR Project Objectives and Outputs (as in the Prodoc)

<p>Objective 1 – Improve preparedness and planning to contain bird-to-bird and bird-to-human transmission of H5N1</p> <p>1.1. Ensured use of the regularly updated National Integrated Plan (NIP) for design of project involvements where viral load reduction can be addressed</p> <p>Objective 2 – Prevent future outbreaks in poultry</p> <p>2.1. Improved biosecurity to reduce virus circulation in all production sectors of the poultry industry but especially in sectors 3 and 4 where viral load is entrenched</p> <p>2.2. Reduced virus load by implementation of a comprehensive vaccination programme, from selection of vaccine to administration in the field;</p> <p>2.3. Limited circulation of virus in the value chain</p> <p>Objective 3 – Improve detection of H5N1 in poultry and wild birds</p> <p>3.1. Assured functioning of the HPAI hotline</p> <p>3.2. System for active surveillance established</p> <p>3.3. Surveillance in wild and migratory bird population strengthened</p> <p>3.4. Laboratory capacity for detection of virus improved</p> <p>Objective 4 – Improve containment measures in poultry populations</p> <p>4.1. HPAI outbreaks in poultry to reduce viral load dealt with effectively</p> <p>4.2. Ability to respond rapidly and effectively to small or large outbreaks improved</p> <p>Objective 5 – Limit exposure of bird-outbreak investigators, poultry cullers, and poultry vaccinators to H5N1 virus</p> <p>5.1. Health of personnel working in presence of virus, both in field and laboratory conditions, protected</p>
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As poor coordination among donors and development partners affected past efforts to control the spread of HPAI, the second phase of this project has strategically been used as a platform where the contribution of different players (e.g. MoHP, MoE, NAMRU3, CHL, the World Bank, the EU, etc)¹⁷ to the project's objectives is indicated.

Given the ambitious objectives of the project, FAO had limited the scope of its intervention to a restricted number of (sub)activities such as:

- Assessment of the current national plan for HPAI and review of preparedness realities (disease detection, outbreak response, compensation policy, communication strategy);¹⁸
- Assess present surveillance system, design an overall surveillance plan, and develop a data system to store information (while waiting for TADInfo to be set up);
- Initiate PDS later on renamed as CAHO (as pilot activity in 6 governorates);
- Enforce data management and provide training on epidemiology/surveillance;
- Develop and field test alternative (more biosecure) husbandry practices;
- Ensure supplies, PPEs and cold chain equipment, transportation, and storage.

The focus of the project has so far indeed been on surveillance and participatory epidemiology but has also dealt with institutional issues, outbreak response, communication and coordination of activities.

At the end of 2007, an FAO Epidemiologist Consultant (Tony Wilsmore) was contracted to assess the design, management and human resource requirements to proceed with **restructuring the GOVS epidemiology task force**. Following previous work by Taylor and Douglas (see above), the consultant was asked to provide a detailed overall HPAI-related surveillance plan for the country (including methodologies for passive surveillance, sentinel birds, country-wide monitoring of all sectors, live-bird market monitoring, outbreak-related surveillance patterns, post-vaccination sero-surveillance, etc) and indicate the required inputs in terms of human resources, logistics, equipment and consumables.

Dr. Wilsmore was also asked to **appraise the quality of the ongoing vaccination campaign**, with the objective to draft a plan on how to determine the efficacy of the vaccines and vaccination strategies. At the same time, further to the study-mission accomplished in October 2007 (see above), a population and vaccination model was developed by Dr. Nick Taylor to predict the level of the annual flock immunity and inform the national vaccination strategy in sector 4 in Egypt. This **vaccination model was fed through data collected according to Participatory Epidemiology (PE)** techniques on simple random basis in 36 villages by a cadre of 12 trained veterinarians.

PE tools were also utilised to initiate **Participatory Disease Surveillance (PDS)** in 6 pilot governorates. 10 decision makers nominated by the GOVS were sent to Indonesia in August 2008, with a final workshop organized in collaboration with ILRI to plan the integration of PE into the HPAI prevention and control programme in Egypt. Training courses and ILRI (Briony Jones) supervised field work were conducted in early 2009.

¹⁷ The last SAIDR Platform meeting was attended by 36 delegates representing 15 different players (including governmental ministries, national laboratories, international organizations and NGOs).

¹⁸ In collaboration with the Ministry of Health and Population and CHL on communication

To date the project has achieved the following results:

Strengthening the institutional capacity of veterinary services:

Epidemiology Units have been established in central and governorate (10) veterinary services. The system has contributed in the development and smooth functioning of epidemiological data flow from district and governorate to the central EPI Unit in GOVS.

Human resources:

- Various skill enhancement trainings were provided to Epi-Unit team (Risk analysis, GIS, Database management, Statistics, Applied epidemiology, etc) which have substantially enhanced the functioning and performance of the epidemiology unit at the central level. As a result, the unit:
- Has developed a dependable capacity to efficiently identify outbreak locations, conduct risk analysis and risk mapping, develop risk-based surveillance plan for HPAI and other TADs.
- Has started to effectively utilize the database system that was earlier developed by SAIDR project. The system allows to collection and analysis of epidemiological data
- is capable to analyzing data and generate sound technical reports for key decision makers
- Able to establish and expand downstream networks up to district level.
- Has customized the TADInfo system for use at governorate/district levels. The Epi-Unit teams at Governorates (10) levels are capable to use TADInfo system independently.
- Effectively use SMS gateway message system to receiving information on suspect outbreaks from field veterinarians.

Inputs (infrastructure):

Through the SAIDR project, central and governorate level epidemiology units have been provided with equipments (127 computers, 10 laptops with required software, 125 printers, 10 fax machines and internet facilities), detailed GIS-based digital map and received copies of books on Avian Influenza and Participatory Epidemiology.

Strengthening surveillance capacity:

At central level:

- The project has supported the development of a national HPAI surveillance (passive, active, LBM, vaccine monitoring) plan, which was approved by GOVS and disseminated to veterinary directorates.
- Surveillance activities were carried out in LBM and village (household) poultry production sectors. The community-based animal health outreach (CAHO) (modified PDS) was proved to be useful as it has detected 33 out of 239 positive HPAI outbreaks reported in poultry.

At governorate level:

- Due to the series of trainings provided to field veterinarians on proper case definition, sampling, use of rapid field test kits, and disease reporting mechanisms, local capacity for conducting active and passive HPAI surveillances has slowly been improved.

Inputs/procurements:

- Support provided to database development and data analysis, coupled with provision of tailor-made training to key data handlers

- Sampling kits and equipments for sample shipment (transportation)
- NLQP provided with RRT PCR kits sufficient for testing 12000 pooled samples.
- AI Rapid diagnostic kits (75,000 kits) for field level use.
- Vehicles (4 station wagons and 5 pick ups) for use in field surveillance and outbreak investigation.
- Database software for active, passive surveillance activities.
- 500 mobiles and 100 GPS provided to GOVS to improve rapid notification.
- SMS gateway developed and in place for rapid disease reporting from the field.

Improve HPAI outbreak containment and response:

AI vaccination strategy: A comprehensive assessment of AI mass vaccination program in Egypt was undertaken and a recommendation of an elaborated sound strategy, with operational plan and exit strategy. Standard Operating Procedures (SOPs) encompassing selection of vaccines, organization and implementation of vaccination campaigns and its monitoring were also developed. This work is expected to lead to a change in government policy from mass to risk-base targeted AI vaccination. Also, tailor-made outbreak response training has been provided to key veterinary staff.

Support for the improvement of HPAI containment measures:

- 250 Refrigerators, 250 freezers and 550 cool boxes with required maintenance services to ensure and support cold chain.
- 60 outbreak investigation Kits with replacements 81 Sprayers and 28 mist-blowers.
- Disposal equipments (12,000 kg Plastic bags, 2000 pair of boots and 5000 boxes of gloves).

Gaps in outbreak response and management still prevail due partly to the lack of identified critical control points (CCPs) and weakness in veterinary services governance (commend chain and legislative reinforcement).

Communications and public awareness:

Enhanced animal health communication and dissemination of key messages were implemented at village levels especially through extension personnel in agriculture and local development ministries. A KAP survey was conducted in late 2009 (results will be available in early 2010)

As discussed earlier, considerable communications efforts were made at the start of the crisis and emphasis was generally given to the prevention of human exposure. Animal health communication and outreach is however still a major gap as projects arrangements were not favourable in view of implementing activities that promote/support HPAI response in various poultry production sectors. SAIDR Year III identified animal health communications and outreach as a major gap and is designed in such a way to respond accordingly.

Enhance coordination:

Monthly HPAI-EGYPT News Review were regularly published and disseminated to all partners working on HPAI in Egypt and to FAO/HQ. The News Review is also posted on SAIDR website (www.saidr.org) and the AHF page on the UNDP website.

Meetings are being held to harmonize and streamline activities between central and governorate-level veterinary authorities.

Ministry of Health receives all information upon confirmation of any HPAI outbreaks in poultry. In most instances, field epidemiological investigations in the health sector are conducted based on these information and shared by the animal health sector.

Wild bird surveillance

The project supported a wild bird surveillance study aimed to investigate the migratory ecology and host status of avian influenza amongst waterfowl from Manzala Lake in the Nile Delta. That was conducted as a joint effort between the US Geological Survey (Western Ecological Research Center) in collaboration with the US Naval Medical Research Unit, the Egyptian Ministry of the Environment and FAO. The third phase of the SAIDR project will continue the support and collaboration with the above-specified partners. In addition, surveillance activities in domestic poultry in wild-bird resting sites will still be carried out.

The SAIDR project is still ongoing; the project was largely doormen for the first year and half; most of the activities illustrated above have been conducted in the past twelve months. The SAIDR phase 3 project will have the same conditions (a US\$ 3 m one-year project) but a narrowed scope which reflects the donor implicit view that FAO should only implement few selected activities (such as biosecurity, surveillance and outbreak investigation) while other partners (CHL and STOP AI) will carry out complementary work.

OSRO/EGY/801/USA project “Vaccine efficacy for the control of Avian Influenza in Egypt”

The OSRO/EGY/801/USA project – planned to start in June 2008 but only started in early 2009 – has a twofold objective: i) to **identify antigenic variants** among field ones, including existing and newly isolates collected, to obtain a representative sample of circulating HPAI viruses across all sectors; and ii) to **determine the ability of currently available/used vaccines to provide information against each identified isolate.**

The project is still ongoing, but major achievements already obtained by the project include:

- The capacity of NLQP in terms of quality of service and speed for delivery of diagnostic results has substantially increased
- Linkage with various FAO-implemented projects, particularly with SAIDR (OSRO/EGY/701/USA) was maintained, and is proved to be valuable in terms of improving HPAI surveillance and diagnosis in Egypt.
- Sequencing data and phylogenetic map of Egyptian HPAI H5N1 isolates (2006-09) are now available through the project. This is beneficial for studying and understanding of viral gene mutations and in order to score the level of drift (change) over time.
- A cartography map will soon be made available and is believed to enhance the understanding of the virus mutation on the level of antigen; the relation and effects of mutation on the level of nucleotide and/or gene. This is a new (the first time) technological trend to be applied in Egypt. Selection of the Egyptian HPAI H5N1 strain for challenge test is tentatively planned to take place at the end of October, 2009.
- Skill enhancement trainings provided at SEPRL has enhanced the laboratory institutional capacity of NLQP through standardization of protocols according to the OIE reference labs. This was unequivocally proved when NLQP participated and succeeded in all international proficiency tests.

- Local training functions as technology transfer means have significantly contributed to the biosecurity/biosafety improvement of the Satellite (governorate) laboratories and in availing local HPAI diagnostic capability in different parts of the country.
- International communication has been established between NLQP and the OFFLU experts, as well as with OIE reference laboratories such as SEPRL, Erasmus University, IZSV Padova, NAMRU-3.
- Egyptian virus isolates are shared with international community, and sequencing of data is published in gene banks.
- The progress towards selection of Egyptian HPAI H5N1 strain for a potential use in vaccine production (in case of vaccine efficacy failure) to be achieved by the end of the project is progressing very well.

OSRO/INT/805/USA project “Developing and Maintaining Public-Private Partnerships for the Prevention and Control of Highly Pathogenic Avian Influenza H5N1 and other Emerging Infectious Animal Diseases (PPP)”

The overall objective of this project was to “Create, strengthen and maintain private-public partnerships to support poultry health and production systems in Egypt that is worse affected by HPAI, within a functional animal health system led by official veterinary services.”

The specific objectives of the project are:

- Initiate/re-establishing dialogue between the public and private sectors.
- Discuss and agree on a clear distribution of roles in the combat against the disease
- Put all the ‘players’ at the same level of technical information regarding the prevention and control of HPAI.
- Discuss together partnering mechanisms in key areas of the prevention and control of the disease

The main outputs to date include:

- (1) Public and private sector stakeholders have been identified; their capacity in controlling HPAI and the relationship between the sectors has been described.
- (2) Two workshops were conducted in Cairo during the month of September; they were facilitated by an international consultant (Mr. Bob Burden) and aimed at developing a “Compensation Strategy for Egypt”.

Following these events a compensation strategy for Egypt including the principles, the elements of policy application and fund governance for compensation program has been developed.

OSRO/GLO/802/USA project “Improved biosecurity and hygiene at production points, including decontamination”

The main project objective is to develop and implement an integrated programme for cleaning and decontamination of selected production and collection points in target Governorates. The project strategy is drawn on biosecurity principles and guidelines to develop a programme for cleaning and decontamination of selected sites.

To accomplish the above mentioned objective, the implementation of the project activities was based on four pillars as follows:

Output 1. Identify and prioritize the target commercial poultry farms

Output 2. Develop and agree upon cleaning and/or disinfection guidelines and protocols
Output 3. Train Sufficient staff/workers adequately and implement cleaning and/or disinfection operations
Output 4. Implement cleaning and disinfection operations and monitor at commercial poultry farms or collection points

The project has encountered several challenges during implementation; for instance, the banning of LBM have delayed the starting date; the issuance of a Ministerial decrees on closure of unlicensed poultry farms has posed another obstacle to implement project activities.

Regional Projects

Regional funds were the first to come in, as early as November 2005 through the TCP/RAB/3006 project - with the primary objective to “strengthen the capacity for generating and sharing HPAI disease intelligence and using this to mount emergency preparedness planning against the eventuality of HPAI being introduced into the region, specifically in relation to migration of and trade in wild birds”.

Ongoing activities at regional level are funded mainly by Sweden through SFERA funds. They mainly deal with prevention, preparedness and surveillance, with workshops and training organized to share national policies and information and improve local capacities to detect, respond, and contain a prospective HPAI outbreak.

Government officers from the Egyptian Veterinary Services and the Lab have been invited to take part in the above mentioned training and workshops. Given the disparities between Egypt and the other countries in the region in terms of risk and actual spread of the disease, regional projects have tended to not focus on Egypt but rather on strengthening prevention and harmonization in the Maghreb area. This has resulted in less interest and attention being given by the Egyptian authorities to those activities when compared to the national projects.

SECOND REAL TIME EVALUATION OF FAO's WORK ON HIGHLY PATHOGENIC AVIAN INFLUENZA

COUNTRY REPORT: BANGLADESH

7 - 13 NOVEMBER 2009

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I. INTRODUCTION

Bangladesh straddles the fertile Ganges-Brahmaputra Delta, is bordered by India on virtually all sides (except for a small frontier with Myanmar to the far southeast and by the Bay of Bengal to the south), and is a country highly vulnerable to natural disasters such as annual monsoon floods and cyclones. The country is the seventh most populous country in the world with an estimated 45% of its inhabitants below the poverty line. Per-capita GDP has more than doubled since 1975, and the poverty rate has fallen by 20% since the early 1990s. While over 50 percent of the GDP belongs to the service sector, nearly two-thirds of Bangladeshis are employed in agriculture, with rice as the dominant product. The livestock sector's contribution to GDP was 2.8 percent in 1990-91, which increased to 2.9 percent in 2005-06; the livestock sub-sector grew at a rate higher than the annual growth rate of the overall agricultural sector. Poultry is a critical element of the livestock sector. Remittances from Bangladeshis working overseas, mainly in the Middle East and East Asia, as well as exports of garments, are the main source of foreign exchange earnings.

The country faces a number of major challenges, including widespread corruption, economic competition relative to many other countries of the world, and an increasing danger of

hydrologic shocks brought on by ecological vulnerability to climate change. Highly pathogenic avian influenza (HPAI) is one of these challenges, affecting a poultry industry which is recognised as a core ingredient to processes of economic growth, food security and poverty reduction.

Bangladesh has experienced HPAI since February 2007. The disease has appeared in three season-associated epidemics (March to July 2007, September 2007 to May 2008 and November 2008 to June 2009). At the time of the visit by the Second RTE team¹ there had been no reported cases since August 2009 (a period of 3 months). Bangladesh has a very important poultry sector which has been growing rapidly over the last two decades (approximately 200 percent over the 5 years prior to HPAI²), and this industry has clearly been devastated by HPAI. It is claimed that the industry lost 40 per cent of the country's 150,000 poultry farms, put half a million poultry workers out of work and caused cumulative losses of around \$9.75m. Furthermore, recovery has been held back by the escalating cost of feed and other inputs.

The poultry industry in Bangladesh has long been considered by many to be crucial to agricultural growth, poverty reduction and the provision of dietary protein for its peoples. This sub-sector is particularly important in that it provides an important source of nutrition, is a worthwhile economic enterprise for women and the poorer sectors of society, and presents a range of employment opportunities (Raihan and Mahmud, 2008). The poultry industry in Bangladesh is very diverse. It comprises broiler chickens, layer chickens, native chickens and ducks. The production of broiler and layer chickens is characterised by large-scale, intensive, commercial production systems with modern technology and imported hybrids, and by small and medium scale enterprises of 2,000 to 25,000 birds. Native chicken production, on the other hand, is usually a backyard activity undertaken by rural households using minimal inputs, but there is also small scale commercial production of local chickens. The Bangladesh smallholder poultry model has been analysed and described in several publications (Jensen, 1996 and 2000³; Saleque and Mustafa, 1997⁴; Saleque, 2000⁵; Fattah, 2000⁶; Ahmed, 2000⁷;

¹ The First RTE, carried out in 2007, did not visit Bangladesh.

² Shamsuddoha, Mohammad and Sohel, Mir Hossain, Problems and Prospects of Poultry Industry in Bangladesh: A Study on Some Selected Areas (November 4, 2003). The Chittagong University Journal of Business Administration, Vol. 19, 2004. Available at SSRN: <http://ssrn.com/abstract=1295343>

³ Jensen, H. Askov (1996). Semi-scavenging model for rural poultry holding. In: Proceedings of XX World's Poultry Congress, New Delhi, India. Vol. I, 61-70.

Jensen, H. Askov (2000). Paradigm and Visions: Network for Poultry Production in Developing Countries. In: F. Dolberg and P. H. Petersen (eds.) Poultry as a Tool in Poverty Eradication and Promotion of Gender Equality Proceedings of a workshop, March 22-26, 1999, Tune Landboskole, Denmark.

<http://www.husdyr.kvl.dk/htm/php/tune99/3-AJensen.htm>

⁴ Saleque, A. and Mustafa, S. (1997). Landless Women and Poultry. The BRAC model in Bangladesh. In: F. Dolberg and P. H. Petersen (eds.) Integrated Farming in Human Development. Proceedings of a workshop, March 25-29, 1996, Tune Landboskole, Denmark. www.husdyr.kvl.dk/htm/php/tune96/3Mustafa.htm

⁵ Saleque, A. (2000). Scaling-up: The BRAC Poultry Model in Bangladesh. In: F. Dolberg and P. H. Petersen (eds.) Poultry as a Tool in Poverty Eradication and Promotion of Gender Equality. Proceedings of a workshop, March 22-26, 1999, Tune Landboskole, Denmark. <http://www.husdyr.kvl.dk/htm/php/tune99/5-Saleque.htm>

⁶ Fattah, K. A. (2000). Poultry as a Tool in Poverty Eradication and Promotion of Gender Equality. In: F. Dolberg and P. H. Petersen (eds.) Poultry as a Tool in Poverty Eradication and Promotion of Gender Equality Proceedings of a workshop, March 22-26, 1999, Tune Landboskole, Denmark.

<http://www.husdyr.kvl.dk/htm/php/tune99/2-Fattah.htm>

⁷ Ahmed, N. (2000). The smallholder poultry model in Bangladesh. In: G. Pedersen, A. Permin, and U. M. Minga (eds.) Possibilities for smallholder poultry projects in Eastern and Southern Africa. Proceedings of a workshop, Morogoro, Tanzania, 20-25 May 2000. Network for Smallholder Poultry Development, Copenhagen. www.poultry.kvl.dk

Dolberg, 2001⁸). It appears that the chicken meat industry, including broilers and native chickens, stands to benefit from an increase in demand because of the anticipated growth in population and household income. However, it faces a number of challenges. For the commercial broiler sector, its main concern would be the threat from global competition because it is a high-cost producer by world standards. The future of the commercial sector will depend largely on the availability of cheap feed sources and improvements in production and marketing efficiency. For the backyard and small-scale commercial sectors, the challenges are in knowledge, technical know-how and the scarcity of household resources.

In summary, the Bangladeshi poultry sector comprises of different production systems and two main species, chickens and ducks. The production systems that have developed can be divided into the traditional scavenge-based systems that produce the deshi breed chickens and local chicken eggs and also the local breed ducks and eggs. A new system introduced by the government as a poverty alleviation measure is based on a new breed “Sonali” that has higher egg production and higher bodyweight than the local breed birds. These production systems produce a bird that is intermediary in quality from the Deshi and broiler. Finally industrial chicken production systems for the production of meat and eggs have expanded rapidly in the last ten years. These systems produce a mass broiler meat bird which is considered to be an inferior product by Bangladeshi consumers, but the broiler production systems are an important component in supply protein for urban based consumers and to a lesser extent rural areas. The commercial layer systems produce white and brown eggs that are considered as being mass produced and seen as inferior to local breed eggs. A majority of products are supplied to urban consumers through a network of already established markets for eggs and live birds, and to date there has been little development or investment in slaughterhouse, processing and retailing facilities.

Battered by HPAI, floods and cyclones, the country's previously booming poultry industry shrunk in 2007 and has struggled to recover in 2008 and 2009 (Chakma and Rushton, 2008⁹).

Bangladesh was one of 6 countries selected for the second Real time evaluation of FAO's contributions to the preparedness and control of HPAI¹⁰, as part of a purposive evaluation of the country level assistance provided to countries by FAO through regional and national projects managed by the organisation. The evaluation team visiting Bangladesh comprised Professor Brian Perry, Dr. Trevor Ellis, Mr. Shashi Kapur and Mr. Carlos Tarazona. They arrived on Saturday 7th November and left on Friday 13th November. Their terms of reference and approach to the evaluation are set out in their inception report. The evaluation criteria specified in the inception report were applied to assess the relevance, efficiency, effectiveness, sustainability and – to the extent possible – the impact - of FAO's HPAI work.

II. HPAI STATUS AND EVOLUTION IN BANGLADESH

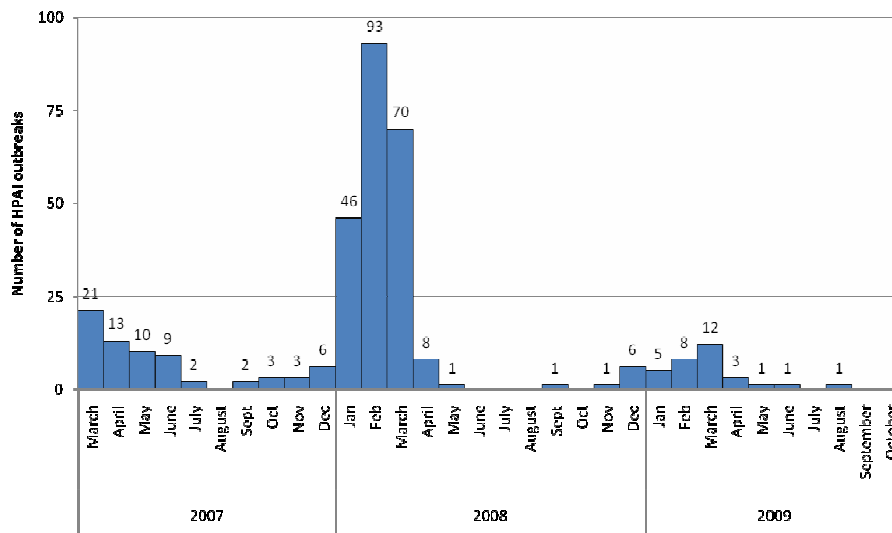
HPAI H5N1 was first declared as present in Bangladesh in March 2007 with outbreaks continuing until July 2007 and then a further two waves of outbreaks (September 2007 to May

⁸ Dolberg, F. (2001). A livestock development approach that contributes to poverty alleviation and widespread improvement of nutrition among the poor. Livestock Research for Rural Development: <http://www.cipav.org.co/lrrd/lrrd13/5/dolb135.htm>

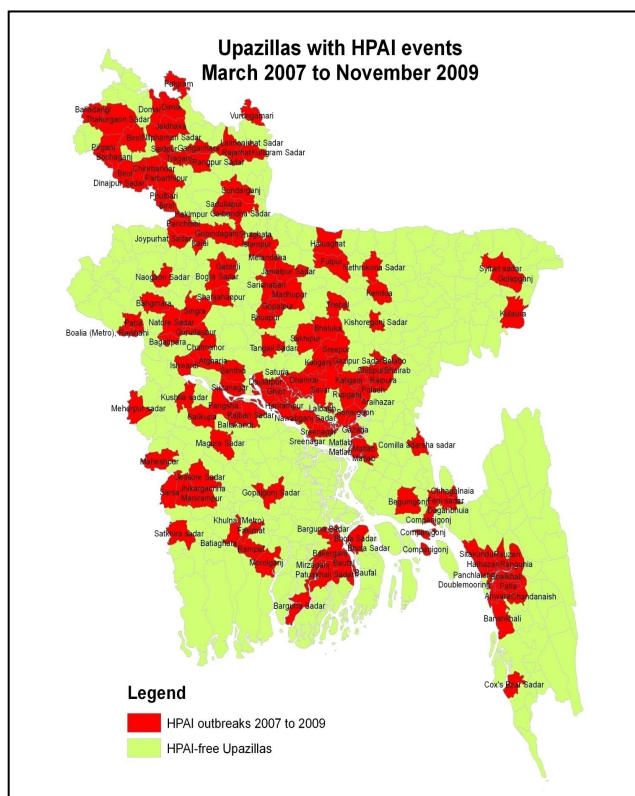
⁹ Chakma, D., Rushton, J. 2008. Rapid assessment of socioeconomic impact due to highly pathogenic avian influenza in Bangladesh, FAO, Rome, 32 pp.

¹⁰ Bangladesh was not visited by the First Real Time Evaluation team.

2008 and November 2008 to June 2009) peaking in the cooler months, with sporadic outbreaks in September 2008 and August 2009 (see Figure 1).



With 55 outbreaks detected in the first wave, 232 outbreaks in the second wave (2007-2008) and 39 detected in the third wave (2008-2009) the HPAI situation in the country appears to have stabilized but given the persistence of HPAI, Bangladesh has been declared an endemic¹¹ country. H5N1 virus in poultry has been confirmed in 47 out of 64 of the districts (73%), outbreaks are geographically widespread (Figure 2) and appear to be linked to chicken and human population density and movement along major roadways throughout the country.



¹¹ Report Exercise on Highly Pathogenic Avian Influenza – FAO contribution to the UNSIC report (2008)

With peak HPAI activity occurring in the winter period (December to March) in Bangladesh in the previous 2 years, close monitoring of the situation in the coming winter period (December 2009 to March 2010) will be a good indicator of whether the HPAI situation in Bangladesh has been contained or not.

The virus isolated from the initial outbreak [A/Chicken/Bangladesh/Biman01/2007 (H5N1)] was fully characterized at the National Institute of Animal Health, Bangkok, Thailand (NIAH) and shown to be a Clade 2.2 virus based on HA sequencing and a Z genotype virus based on sequencing of the NA and internal genes. Subsequent detection of virus has been based on rapid testing for influenza A antigen from suspect cases and confirmation as a H5 avian influenza virus by real-time H5 PCR tests. Currently, H5 avian influenza isolates are then confirmed as H5N1 viruses by submission to the FAO/OIE Reference Laboratory for Avian Influenza, Veterinary Laboratories Agency, Weybridge, UK (VLA).

It is still unclear how H5N1 virus reached Bangladesh to initiate the first outbreaks. Molecular virology studies have been initiated to try and shed some light on the source of infection. Forty-seven H5N1 viruses were sent from Bangladesh to VLA, where gene sequencing was conducted on the HA gene of 25 H5N1 isolates (15 from 2007 and 10 from 2008). Phylogenetic analysis of the HA genes of these viruses, as well as the original virus [A/Chicken/Bangladesh/Biman01/2007 (H5N1)] from Bangladesh, and 32 H5N1 HPAI viruses from different clades and sub-clades from 20 other countries was conducted (Islam et al 2009¹²). There was marked homogeneity in the HA genes of all Bangladesh isolates from 2007 and 2008 and these are closely related to viruses from Kuwait, Iran, Italy, Afghanistan, southern Russia, Mongolia from 2006 which are referred to as the European Middle East-African cluster 3 (EMA-3) and viruses from the initial Indian outbreaks in Navapur in 2006 (Ray et al., 2008¹³). The H5N1 HPAI viruses in Maharashtra, Gujarat and Madhya Pradesh in India in 2006 appears to have involved two separate incursions and may have been introduced by wild bird migration along the East Africa/West Asian flyway (Ray et al., 2008). This flyway extends to Bangladesh, and as Bangladesh does not have any common poultry trade links with these more distant countries and the western states of India, it suggests that migratory birds might have been the more likely source of initial introduction of HPAI to Bangladesh.

After the initial outbreaks the rapid spread and persistence of H5N1 infection was most probably a result of poultry trade, due to a combination of minimal biosecurity in small and intermediate sized commercial farms and village poultry, and insufficient resources deployed to rapidly detect outbreaks, control poultry movement, undertake control activities and provide adequate compensation for culled birds.

In a study undertaken in partnership with FAO¹⁴, estimates of losses associated with HPAI outbreaks in Bangladesh based on official reports of birds that have died or been culled, and of eggs destroyed indicate direct losses in the magnitude of US\$ 9.88 million. The State through its compensation policy is estimated to have borne 24% of the losses.

¹² M.R. Islam, M. Giasuddin, M.A. Samad, M.J.F.A Taimur, M.A. Baqi, A.T.M. Mahbub-E-Elahi and M.M. Amin. Phylogenetic Analysis of Highly Pathogenic Avian Influenza (H5N1) Virus Isolates of Bangladesh

¹³ Ray K, Potdar VA, Cherian SS, Pawar SD, Jadhav SM, Waregaonkar SR, Joshi AA and Mishra AC. (2008). Characterization of the complete genome of influenza A (H5N1) virus isolated during the 2006 outbreak in poultry in India. Virus Genes K.Ray et.al..html [06/08/2008 17:29:30]

¹⁴ Chakma, D., Rushton, J. 2008. Rapid assessment of socioeconomic impact due to highly pathogenic avian influenza in Bangladesh, FAO, Rome, 32 pp.

Clearly the total losses were much greater than this, including loss of revenue from the drop in poultry consumption and therefore a drop in the prices of poultry; losses due to mortality which was not compensated; the loss of revenue as hatcheries could not sell and had to destroy chicks, and from hatching eggs not set in incubators due to the diminished demand. The worst affected component of the poultry sector both in terms of absolute and relative losses and low levels of compensation has been the layer producers.

The above estimates are based on official reports of HPAI outbreaks. However field reports, expert opinions and information of the lack of incentives for some components of the poultry sector to report, indicate that losses are far higher. It is likely that losses in the commercial layer and breeding units have been underreported and that backyard systems have not reported disease either through a lack of information or due to problems of receiving compensation.

Year	Number of outbreaks	Number of deaths	Number of birds culled
2007	68	35,000	170,000
2008	227	243,000	1,062,000
2009	31	3,600	45,000
Total	326	280,000	1,277,000

The table above shows the number of birds culled on infected farms. In 2007 and early 2008 a further 400,000 birds were culled in the “infected zones” surrounding outbreaks.

III. NATIONAL HPAI RESPONSE FRAMEWORK

The national HPAI response framework in Bangladesh is a multi-sectoral plan that is based on the National Avian Influenza and Human Pandemic Influenza Preparedness and Response Plan, Bangladesh 2006-2008. This was prepared by a National Multi-Sectoral Planning Team from the Ministry of Health and Family Welfare (MoH&FW), Ministry of Livestock and Fisheries (MoFL) and the Ministry of Environment and Forest with joint technical support from FAO and WHO and was formally approved by the Prime Minister in April 2006.

A follow on plan, the National Avian Influenza and Human Pandemic Influenza Preparedness and Response Plan, Bangladesh 2009-2011, has been developed by a multi-sector Planning Team consisting of representatives of MoH&FW, MoFL, MoEF and international organizations (WHO, FAO, UNICEF, ICDDR), is now being finalized and will be submitted for Prime Ministerial approval.

Livestock activities are regulated by the Department of Livestock Services (DLS), which is a Department within MOFL and is headed by a Director General. Each of the 64 districts in Bangladesh has a District Livestock Officer (DLO) responsible for a number of sub-districts (Upazilla) which have an Upazilla Livestock Officer (ULO) in charge. The DLS has prepared an Avian Influenza Operational Manual based on the national influenza plan and which provides detailed operating procedures for HPAI prevention, preparedness, response and recovery and repopulation.

For administrative purposes in DLS there is a system of registration of commercial farms (>200 birds) and there are reported to be 42,000 registered farms present but also an undetermined number (maybe >20,000) of unregistered small family poultry farms (in theory with < 200 birds). Certain management conditions are applied to registered farms, but

registration currently appears to be voluntary, and there is no restriction applied to unregistered farms or small family farms; as a result, any enforcement of biosecurity measures, for example, is unlikely to be effective. Establishing an effective database of the poultry industry is an important step in attempting to improve the industry structure and this will be the focus of a new FAO project OSRO/RAS/704/SWE Baby 02 “Geospatial referencing of commercial poultry farms and live bird markets in Bangladesh” supported by Sweden through SFERA funds.

Control of HPAI outbreaks in poultry to date has been by depopulation and associated control measures. Initially this was all poultry (including commercial flocks) within a 5 km radius of the confirmed case. This rather harsh approach had a major impact on the level of reporting, and many poultry were reportedly sold off before the cull started. From May 2008 a cull was initiated on the basis of a positive field test, and the culling policy was changed. In the case of an infected farm, all poultry on the farm were culled, followed by a stand down period of 3 months. In some cases, enhanced surveillance is conducted around the farm, but neighbouring farms were not culled. In the case of infection in a backyard flock, stamping out of all poultry was carried out in the “infected zone”, defined as a circle with a radius of 500 metres. This was accompanied by a stand down for 3 months, with enhanced surveillance in markets close to outbreak. A total of about 1.3 million birds (of a population of approximately 220 million) have been culled.

The Government of Bangladesh (GoB) does not currently permit vaccination for HPAI control. Initially, it was considered that the disease could be controlled by early detection and stamping out of infected flocks; and in the early stages this was supported by the commercial poultry sector, who could sustain a higher level of biosecurity and movement control. With the large number of outbreaks in the second wave in 2007-2008 the resources available for control by stamping out became stretched, and again with persistence of outbreaks in 2008-2009, consideration has again been given to possible use of targeted vaccination as part of the control options. The commercial poultry industry has also changed its viewpoint on vaccination as a control option with the disease now being endemic.

The response procedures in the AI Operational Manual included detailed procedures for initial investigation and diagnosis, declaration of infected and control areas, activation of outbreak management centres and preparation for stamping out operation, stamping out operations, movement restrictions for humans, poultry and poultry products, epidemiological investigations, surveillance in the control zone and tracing of suspect products.

In conjunction with the Operational Manual other specific documents have been prepared such as the Bangladesh Avian Influenza Compensation Strategy and Guidelines.

Reporting of suspect cases occurs at the Upazilla level, and initially this depended on passive surveillance, but this has been enhanced since February 2008 by an active surveillance programme. This programme is supported by FAO and DLS staff with funding from ADB initially then USAID, with some SFERA funding. Farms or households with suspect HPAI cases are visited by ULO veterinary officers who will investigate and submit suspect birds for laboratory testing.

The official laboratory testing for HPAI diagnosis in poultry is conducted within the MOFL and has several components including the National Avian Influenza Reference Laboratory (NAIRL) that is part of the Bangladesh Livestock Research Institute and conducts PCR

testing to confirm presence of H5N1 virus. The initial laboratory testing is conducted by the veterinary diagnostic laboratory service within the DLS that consists of the Central Disease Investigation Laboratory (CDIL) and 8 regional Field Disease Investigation Laboratories (FDIL) that are strategically located throughout Bangladesh to provide laboratory support for the avian influenza surveillance system. CDIL and FDIL conduct rapid influenza A antigen detection tests on tracheal samples from suspect cases. Positive samples from the rapid antigen testing are submitted to NAIRL for testing by real time RT-PCR tests for influenza A Matrix gene and H5 HA gene. Samples from highly suspect cases giving negative results on rapid tests are monitored over the following days with repeat testing by rapid antigen detection tests.

Both NAIRL and CDIL are able to conduct avian influenza serological testing for surveillance purposes using c-ELISA kits and haemagglutination inhibition (HI) tests and staff have attended in-country training courses in HI testing and PCR for avian influenza provided by experts from USA. The facilities at CDIL are quite old and have significant problems with electricity supply. They would need significant upgrading to permit PCR testing for avian influenza or other disease diagnosis. However, the throughput for PCR testing at NAIRL is around 20 samples per day with existing equipment and procedures and in severe outbreak situations it may be valuable to have back up facilities at CDIL capable of conducting PCR testing for avian influenza and increasing test throughput.

The technical staff at NAIRL have had post-graduate training in molecular biology and received specific training in avian influenza PCR testing in Denmark and at AAHL, Geelong, Australia and participated in local training courses in PCR and HI testing for CDIL and FDIL staff with experts from USDA. They have participated in proficiency testing for avian influenza PCR testing and avian influenza serological testing by HI and ELISA in Denmark and Australia and will participate in a further round of PCR proficiency testing from AAHL later in November. Currently, the facilities available at NAIRL are not suitable to permit cultivation and further characterization of H5N1 viruses. However, the laboratory will soon move into a newly renovated facility containing two fully functional, secure BSL 3 laboratory suites as well as other BSL 2 laboratory rooms provided by World Bank funding. Plans are also in place to purchase gene sequencer equipment and train staff to conduct genetic characterization of avian influenza viruses. This will permit characterization of H5N1 viruses within the NAIRL and enable molecular epidemiology studies of H5N1 viruses in Bangladesh.

The DLS recognizes that it has limited capacity in epidemiology to support its surveillance activities and in discussions with the evaluation team the recently appointed DG indicated this was an immediate focus for him and he plans to set up a surveillance group with strong epidemiological support. In the short term this will require support from international funding bodies and international epidemiology experts for in-country training but in the longer term the plan is to send selected national staff off for postgraduate training in epidemiology.

The key issues relating to the national response mechanisms include:

- Completeness of the farm database;
- Understanding of market value chains;
- Sensitivity of the active and passive surveillance systems;

- Level of compensation and possible role of vaccination and need for input from private industry in discussions affecting the poultry industry;
- Quality of outbreak investigation, tracing and definition of epidemiology of outbreaks;
- Capacity of epidemiology units to plan surveillance activities, analyse surveillance data and providing advice on management and control of HPAI based on risk analysis;
- Structured virological surveillance of duck flocks ;
- Improved career pathways for trained laboratory experts and epidemiologists within the DLS structure.

IV. DONOR AND TECHNICAL ASSISTANCE SUPPORT

There are several agencies involved in providing technical assistance and support to Bangladesh in the HPAI programme. The list includes the USAID, World Bank, Asian Development Bank (ADB), UNICEF, WHO, DANIDA, CARE, Japan International Cooperation Agency (JICA), Rural Employment Generation Foundation (PKSF), Stop A.I., AI.COMM., Research, Training and Management International (RTM), Bangladesh Rural Advancement Committee (BRAC), etc.

There is a regular meeting of donors on HPAI (chaired by USAID), which reportedly seeks complementarity of contributions and tries to avoid duplication. Also, there is an element of coordination amongst the various UN agencies involved in providing support to HPAI control. FAO appears to be playing an effective lead role in these activities. There is a nominal division of labour, with FAO responsible for animal health matter, WHO for human health and UNICEF leads the responsibility for health communications¹⁵.

WHO and FAO assisted in the formulation of the National Avian Influenza and Human Pandemic Influenza Preparedness and Response plan 2006-2008. The plan was drawn up in association with Ministry of Environment, Health, and Livestock & Fisheries. After the occurrence of H1N1, the plan has been revisited in 2009, and is now relabelled the National Pandemic Influenza Preparedness & Response Plan. It has been drawn up under the leadership of the Ministry of Health and supported by WHO, FAO, UNICEF, DLS (Dept of Livestock) and DOE (Department of Environment) for the period 2009-2011; it is awaiting the approval from the Prime Ministers office.

USAID has been by far the main donor with investments of around US\$ 20m in the past three years (2007-09) on human and avian influenza control. Most of this assistance has been channelled through FAO and implementing partners such as STOP AI and KTM (see below).

The World Bank started in June 2007 an Avian Influenza and Human Pandemic Preparedness and Response Project (AIPRP) in Bangladesh to minimize the threat posed by highly pathogenic avian influenza (HPAI) to humans by controlling such infections in domestic poultry, and preparing for, controlling, and responding to possible human infections, especially an influenza epidemic and related emergencies. This objective is expected to be achieved through three types of interventions: (i) prevention; (ii) preparedness and planning; and (iii) response and containment. This US\$ 16m project (excluding US\$ 3m from the GoB and a US\$2m grant from the AHI facility) has to date only disbursed about US\$ 1.2m. The main reasons for this unsatisfactory progress have reportedly been “an inadequately staffed project unit, the inability to resolve tax issue in order to sign the technical assistance contract

¹⁵ UNICEF has a pandemic preparedness project on H1N1/H5N1; previous HPAI activity was funded by Japan.

with FAO... and availability of substantial grant funding from other development partners for national AI program”.¹⁶ The evaluation team was informed that the first two bottlenecks would be solved by the time of the next project review mission scheduled for January 2010. As discussed later in the text, FAO’s role as provider of technical services is seen by all stakeholders as a natural role for the organization given its technical expertise and heavy involvement in the response.

STOP AI is an initiative of the Development Alternatives Inc. (DAI), based in the US and initiated worldwide in 2007. Funded by USAID, it has been operating in Bangladesh since 2008. The objectives of the initiative are:

- Training in biosecurity to people working in the live bird markets in the country,
- Pilot cleaning, disinfection and pressure washing in two live bird markets in Dacca. FAO will then take over these markets for further bio-security infrastructure building and also extend the same cleaning and disinfection to 6 other markets in Dacca and 12 markets in other parts of the country,
- Promote Public Private Partnerships in promoting the concept of biosecurity amongst all stakeholders in poultry production, notably the producers.

Along with other partners, the organization short-listed 2 markets (Kaptaan Bazaar and Mohammadpur market) in Dacca. In these markets the organization has upgraded the facilities by providing sanitary measures and power points as well as water points so that effective cleaning of the markets can take place. There is a plan to overhaul the drainage facilities of these markets which is presently either non existent or not working.

The two projects have been completed by Stop AI and handed over to FAO who will continue to provide improvements in infrastructure. The organization has conducted a TOT (Training of Trainers) programme for cleaning of the live bird markets in collaboration with the DLS and the local market committee in 5 divisions of the country. The training programme was reviewed by FAO. The organization has conducted one day training in 5 Upazilas of Gazipur and 6 Upazilas of Dinajpur on bio security for hatcheries, commercial farmers, backyard poultry growers and poultry sellers.

RESEARCH, TRAINING & MANAGEMENT INTERNATIONAL (RTM) has been contracted by AED (Academy for Educational Development) for training of Government officials in 18 out of the 48 affected districts of Bangladesh. Between 2007 and 2009, it has conducted training on Operation and Management of AI outbreaks to 1018 officers in the Departments of Livestock, Health, Forest and Environment.

Other donors supporting the development of the poultry sector are DANIDA and JICA. The Danish started their development programme in the late 80s. In partnership with CIDA, IFAD and the ADB, DANIDA promoted smallholder livestock development throughout the country and is currently working on poultry rearing in 5 districts in the south as part of the Agriculture Development Sector Support programme 2000-10. JICA has supported the Poultry Management Techniques Improvement Project since the late 90s with the objective of improving feeding management, breeding and disease control. It’s currently working in 12 locations and has a target of training 100 farmers on poultry production (up to 1000 birds) and biosecurity (including HPAI) at each of these locations.

¹⁶ Aide memoire Mid-term Review Mission (August 2009)

The Institute of Epidemiology, Disease Control and Research (IEDCR), as a part of capacity building ICDDRDB (International Centre for Diarrhoeal Diseases Research, Bangladesh) is putting up a BSL 3 Laboratory funded by CDC at the request of WHO. WHO also supports epidemiology programmes and training. The institute, in collaboration with UNICEF has trained a large number of people (managers) at the National and the District level on emergency response. An 11 member emergency response team has been established at the District level and a 5 member team at the Upazila levels all of who have been trained. A total of 2320 managers have been trained at the Upazila level. 60 training courses have been held for training of trainers and the UN (mainly UNICEF) bodies have been involved in almost all the training activities. After the occurrence of H1N1 in April, the Institute has established a Level 3 BSL Laboratory by importing a prefabricated unit with an RT PCR and this receives samples from 12 sites – 2 from each Division of Bangladesh – one from a Govt. hospital and another from a private source on a regular basis to closely monitor the virus scene.

The Bangladesh Rural Advancement Committee (BRAC) is a very large NGO operating in 12 countries, and has extensive involvement in the poultry production, finance, animal health and marketing of poultry products in Bangladesh. It essentially works in the rural areas (present in more than 80% of all villages in BD), with the objective of poverty alleviation and improvement in incomes of the lower income group. It has one of the three poultry processing plants in Bangladesh. BRAC has been participating in several awareness programmes and also has the unique advantage of having over 20,000 trained vaccinators (all women) who vaccinate for ND and Fowl Pox. This very large human resource in the rural areas involved directly with poultry could play a very meaningful part in the surveillance programme.

V. ROLE AND ACTIVITIES OF FAO

Since 2006 FAO has been supporting the efforts of the Government of Bangladesh to prevent and control avian influenza through global, regional and country level initiatives conducted mainly with funding provided by the Asian Development Bank (ADB), USAID and the Swedish contribution to SFERA. FAO, mainly through ECTAD, has played a strong strategic role at the technical level, participating actively in the development and subsequent update of the National Preparedness and Response Plan¹⁷ for HPAI, as well as a major front line role, such as supporting the implementation of active surveillance, as well as other training and capacity building activities. The FAO Representation has also played a commendable role in advocating for, and seeking, political and financial support for the avian influenza response, both at the time of the initial outbreaks and subsequently over the last 18 months. The involvement of the FAO Representative was reportedly instrumental in seeking, securing and maintaining the attention of Government during a period characterized by continuous changes in senior staffing at the Ministry of Livestock and Fisheries (including Ministers, Secretaries, Director Generals and Chief Veterinary Officers).

FAO front line activities have been guided by an Operational Matrix first developed by FAO in June 2007 to co-ordinate the implementation of the avian influenza component of the National Preparedness and Response Plan (see annex 3). Following the update of the Government's Plan in late 2008, the operational matrix was updated and used as a management and communications framework to cover the period 2009-11. The matrix

¹⁷ Recommendations of the FAO Crisis Management Centre (CMC) primary assessment mission report (Tripodi et al, 2007) and FAO's technical experiences in the control of avian influenza in Southeast Asia (2004-06) were reportedly taken into account during its elaboration (originally led by FAO consultant C. Ahlers). The evaluation team was informed that the Plan is being currently updated to also cover H1N1.

provides a list of priority areas for FAO (highlighted in bold) as well as clear linkages between activities and results on five different “pillars”: coordination & policy; disease detection; disease diagnosis; disease control & eradication; and disease prevention. The evaluation team was informed that the matrix has served as a framework not just for FAO but also for other development partners in view of the need to coordinate the numerous activities funded by primarily the World Bank, USAID, ADB (through FAO), DANIDA and JICA.

FAO Country Programme

FAO Avian Influenza field programme has been running for about three years (2007-2009). The table below includes a timeline of FAO main activities in Bangladesh:

Year	Activities
2007	<ul style="list-style-type: none"> Supplied rapid antigen detection kits and emergency reagents for national reference laboratories and field laboratories Contributed to the development of the national communication strategy for avian and pandemic influenza (2008-09) Supported Government to develop operational manual Supported BRLI laboratory to develop protocol for HPAI diagnosis using PCR Supported Government to establish an epidemiology unit Fielded an international consultant to recommend plan for strengthening epi capacity Supported Government to send first batch of virus sample overseas to confirm index case Fielded an CMC mission after the first outbreak Formulated a laboratory working group to coordinate lab activities Deployed a lab engineer and a microbiologist to develop plan for lab upgrade Develop a 3 year operational matrix to coordinate HPAI activities in the country Develop active surveillance project Develop a wet market communication pilot project Establish (in late 2007) a national ECTAD unit at DLS
2008	<ul style="list-style-type: none"> Supported government in epidemiological investigation Supported NRLI with additional laboratory staff Conducted meetings of the laboratory working group Established the SMS Gateway system Participated in the development of the Animal Diseases Rules (Under Bangladesh Animal Diseases Act of 2005) Participated in the development of the 2nd National Avian Influenza Preparedness and response plan
2009	<ul style="list-style-type: none"> Participated in the revision of the 2nd NAIPRP to include H1N1 and other influenza diseases Continued and expanded the active surveillance and the use of SMS gateway system Conducted outbreak investigation for FMD Prepared biosecurity guidelines for backyard poultry Strengthened national capacity in Veterinary Epidemiology through overseas training of DLS staff Geospatial mapping of commercial farms and markets was initiated Supported the development of biosecurity manual for commercial poultry (PPP) Started work on LBM cleaning and decontamination

As October 2009, nine projects had directly contributed to HPAI prevention and control activities in Bangladesh (see table below). The evaluation team has assessed these projects based on discussions with a wide range of local stakeholders, field visits and a throughout documentation review. Specific comments on their performance can be found in annex 4 on a project-by-project basis; here some more general observations are made regarding surveillance and epidemiological activities (surveillance being the bulk of project assistance).

Table 1. Avian Influenza Projects implemented in Bangladesh as of October 2009

Project	EOD	NTE	Donor	Total Approved Project Budget	Total Expenditures under the project	Budget Allocated for Bangladesh through FBA	Expenditures and Commitments under FBA for Bangladesh
OSRO/BGD/902/USA	01-Sep-09	31-Oct-10	USA	3,082,800	-	-	-
Total National Projects:				3,082,800	-	-	-
Global- (OSRO/GLO/504/MUL BABY02)	01-Jan-06	31-Dec-07	Switzerland	3,696,573	3,597,935	9,600	7,186
Global - (OSRO/INT/805/USA BABY02)	01-Jan-09	31-Jan-10	USA	301,000	16,304	-	50,153
Global – (OSRO/GLO/802/USA BABY02)	01-Jan-09	31-Jan-10	USA	575,000	19,860	510,000	13,979
Regional - (OSRO/RAS/605/USA BABY01)	01-Jul-06	31-Dec-09	USA	2,590,000	1,694,483	824,147	443,599
Regional - (OSRO/RAS/701/USA)	31-Mar-08	31-Mar-10	USA	2,000,000	805,736	79,300	31,784
Regional - (OSRO/RAS/601/ASB)	28-Apr-06	31-Aug-10	ADB	11,140,000	7,757,712	815,138	754,523
Regional – (OSRO/RAS/704/SWE BABY 02)	08-May-06	31-Dec-09	Sweden	1,680,849	1,173,773	251,167	139,892
Total Global/Regional Projects:				21,983,422	15,065,803	2,489,352	1,441,116
Grand Total:				25,066,222	15,065,803	2,489,352	1,441,116

The active clinical surveillance system developed using community animal health workers (CAHW), additional veterinarians and Upazilla Livestock Veterinarians with the SMS Gateway electronic reporting system is an innovative approach to tackle the difficult issue of getting adequate reporting of outbreaks from farms and villages where incentives to report are insufficient. However, at this stage the resources available, compared to the number of households and farms to be visited in each Upazilla, means that the system is relatively insensitive in real time. An improved or more targeted sampling strategy based on epidemiological analysis of existing data, may give better use of the resources available.

With the possibility that initial incursions of H5N1 in Bangladesh came from wild bird movement and also with the importance of duck flocks in H5N1 virus persistence in the region, some active virological surveillance of ducks in relevant parts of Bangladesh is warranted.

FAO epidemiological capacity and mentorship is still needed to build up the capacity of the epidemiology units within DLS to plan surveillance activities, analyse surveillance data and providing advice on management and control of HPAI based on risk analysis. In the longer term advocacy to improve the capacity of epidemiology units in DLS, expand the emerging infectious disease and differential diagnostic capacity of the laboratories and to build good career structures in the epidemiology units and laboratories will be the major sustainable contribution by FAO from the HPAI programme.

New initiatives from FAO to foster closer interaction/partnerships between the public and the private sectors, including small and large scale commercial poultry farms, animal health companies and the NGOs are encouraging and have initially focused on developing, implementing and auditing practical biosecurity guidelines for commercial poultry. A complementary project is introducing practical biosecurity and hygiene improvements at 18 selected live bird markets in Dhaka and 5 other Divisions with active involvement of city market authorities and private stall-holders. Socio-economic benefits of improvement in the marketing system will be assessed and potentially used to role out improvements in livebird market systems in Bangladesh.

A synthesis of the evaluation team's views on the projects' overall contribution to avian influenza prevention and control can be found in section VI of this report.

FAO Country Team

A significant share of the ADB (2006-07) and USAID (2006-09) funding has been used to set up a technical unit for Avian Influenza within the premises of the Department of Livestock Services (DLS). The unit, which was created in late 2006 with the recruitment of a national consultant, was not fully manned (i.e. absence of a multi-disciplinary team) until October 2007. The unit has supported DLS in a myriad of activities and played a significant role in the co-ordination of post-outbreak activities in 2007-08, including laboratory capacity development and on the establishment of an active disease surveillance network and related information system (SMS gateway).

The core staffing of the unit is currently composed of two international and eight national consultants¹⁸. However there have been substantial variations in the levels of staffing from

¹⁸ www.aitubd.org

only one national staff in late 2006/early 2007 (working with short-term consultants) to three international and three national staff for most of 2007/08, and two international and three national staff in early 2009.

Shortage and rapid turnover of personnel in 2006-07 was reportedly the result of financial constraints to offer long-term (one year) contracts (there were 3 CTAs and several consultants were fielded in this period) and the apparently difficult living conditions in Bangladesh. Since mid-2006 donors made funding available for several long- and short-term international and national positions, but again a combination of delays from FAO and the Government in selecting and providing staff clearance, respectively, constrained the capacity of the country team to deliver the outputs originally planned. As an example, following the decision not to extend the contract of the previous CTA in December 2008, FAO selected a replacement only in June 2009 but until very recently his appointment has been pending Government clearance. This has now been resolved, and a new CTA has been in post since mid December 2009.

The evaluation team was unable to assess the effectiveness of all the short-term missions conducted by ECTAD Bangkok and ECTAD Rome (particularly those funded by global and regional projects). However, some of these visits were reportedly very productive, particularly when funding and responsibilities for follow-up were clearly specified at the outset. Examples include the consideration given to the recommendations of the CMC-AH mission during the preparation of the National Preparedness Plan's operational matrix and work related to the revamping of Laboratory capacity (Mueller's, Finlay's and Sudarat's consultancies were said to have been effectively followed-up by FAO and taken into account by the World Bank AIPRP and DANIDA funded projects). On the contrary, the application of initiatives resulting from the socio-economic studies carried out in 2008 (Dipta and Rushton) and the FAO technical assistance project in support of the AIPRP (first elaborated by TCEO with support from M. Nosseir in late 2007) have yet to be approved/implemented.

The evaluation team is of the view that FAO has been a valuable partner for the Government and the donor community. It has also played an important co-ordination role with civil society organizations and the private sector. In the early days, FAO seems to have been successful in mobilizing, under the strong leadership of the FAOR, key policy and technical services in support of the Government. Upon the establishment of the technical team, FAO's support focussed more on field implementation for which neither the organization nor the Government were fully prepared. The team noted that there are several lessons to be learned from this period regarding the adequacy of short-term (*vis-à-vis* long-term) consultancies and the procedures followed for staff deployment (most staff are new to FAO and have to go through a steep learning curve under limited guidance; international staff are all new to the country as well), which could be used to improve FAO's management of human resources in the programme.

Another point that requires further consideration is the role of the donor community and the civil society at large. The strong partnership with USAID, which is by far the main FAO donor in the country, seems to have been the source of very constructive dialogue on issues to be tackled (notably strong involvement of USAID contractors in FAO-led support; open and continuous dialogue at regional and national level on avian influenza status). But there are issues such as the short-term nature and uncertainty of USAID funding and in a few occasions differing views on the FAO programme's management and outcomes, which have contributed to tensions in the relationship.

VI. SYNTHESIS AND DISCUSSIONS OF FAO'S CONTRIBUTIONS AND ROLES

Relevance and Appropriateness of FAO's Strategy and Programme at country level:

- Adequacy of FAO's support vis-à-vis the national agenda and priorities, national development needs and challenges and decision-making processes;

FAO is seen and recognised as the lead institution in supporting Bangladesh's efforts towards HPAI preparedness and response. The high stature of FAO in the HPAI arena has been there since the personal interventions of the FAOR when HPAI was first reported in Bangladesh, and it has matured over time, in particular over the last 12 month period.

- Extent to which FAO's field work is in line with the Organization's priorities (as described in programming documents such as the National Medium Term Priority Frameworks, the FAO's Programme of Work and Budget, the FAO/OIE Global Strategy and the FAO Global Programme for the Prevention and Control of HPAI);

FAO has a programme in Bangladesh which is very much in line with the Organisation's priorities. It has developed a full understanding of preparedness and response mechanisms, has translated these into an operational matrix, and has played a key role as a facilitator between government and the various national and international stakeholders in the HPAI programme.

- Extent to which the various FAO activities at country level are underpinned by a strategy and form a coherent programme, with consistent approaches and common goals;

Bangladesh is one of the few countries visited by the evaluation team in which the FAO programme has developed a conceptual framework for planning and communication of its contributions to the National Avian Influenza and Human Pandemic Influenza Preparedness and Response Plan. This Operational Matrix clearly articulates a set of five strategic pillars for the control of transboundary diseases, sets out the clear objectives and components under each, and then updates the priorities within each component annually, according to funding streams obtained. According to donor representatives, this matrix is used at the regular meetings of the donor agencies to discuss the complementarity of donor engagement and funding.

This matrix is an exemplary initiative. The evaluation team suggests that it could be further enhanced by including an additional pillar on epidemiology (currently seen as cross cutting, but merits a separate pillar with interface with other pillars), and broadening the context of some pillars. The six suggested pillars are presented below:

- I. Policy development and programme coordination
 - II. Disease surveillance mechanisms
 - III. Disease diagnosis, differential diagnosis and infection characterisation
 - IV. Disease control and/or eradication
 - V. Epidemiological data synthesis, analysis, presentation, communication and use
 - VI. Disease prevention
- Coherence and integration of regional projects into country programmes/activities;

The Bangladesh programme has several regional perspectives which are worthy of attention. Firstly is the link to the Regional ECTAD in Bangkok. The Bangkok office provides valuable oversight and backstopping to all the activities undertaken. The role of the ECTAD RAP in support of the national programme is also recognised. The regional coordinator went several times to Bangladesh to cover for the absence of a CTA; there was also support to the laboratory work, and the strategy itself was undertaken with major inputs from Bangkok staff. The sub-regional Manager of South Asia has also provided technical support to Bangladesh as and when required, especially during the first outbreak of H5N1.

In addition there is a South Asia Cross Border project entitled “Strengthening cross-border activities among Bangladesh India, Nepal and Myanmar to control possible cross-border spread of HPAI” (OSRO/RAS/701/USA). This project aims to gain greater understanding of poultry dynamics across the common borders of these three countries, with the intentions of improving ways to manage cross border trade in a way that minimises the risk of HPAI transmission. This project has managed to bring together the veterinary authorities of the three countries, a milestone that needed HPAI (and the facilitation skills of FAO) to achieve.

Two other short term projects have regional implications, namely the Public Private Partnership (PPP) project (Developing and Maintaining Public-Private Partnership for the prevention and control of Highly Pathogenic Avian Influenza H5N1, OSRO/INT/805/USA), coordinated from Rome and Bangkok, and a project on biosecurity (Improved Biosecurity and Hygiene at Production, Collection Points and Live Bird Markets including Decontamination, OSRO/GLO/802/USA); both projects involve Bangladesh, Egypt and Indonesia.

The Bangladesh PPP project has placed considerable emphasis on bringing various public and private stakeholders together in a workshop setting, and trying to understand the roles that different stakeholders play.

- Appropriateness of FAO interventions in terms of:
 - Approach: comprehensiveness;
 - Duration: short term inputs versus long-term technical assistance; and,
 - Focus: HPAI versus other Transboundary Animal Diseases

FAO’s interventions could not be described as comprehensive, but are strategic, based on the needs of Bangladesh. However it is very evident that much greater capacity is required on the epidemiology side to strengthen the risk-based aspects of surveillance and response. Bangladesh is recognised as being a highly vulnerable country, and while there has been a decrease in HPAI cases, it is evident that poor reporting is contributing to this, and it will be important to minimise both the human risk from any new wave of cases, as well as any negative impacts on the economy and the poultry-dependent livelihoods of the Bangladesh population.

As discussed earlier, inputs have been accomplished by a mix of short term consultancies, long term international staff, and national consultant contributions. The FAO programme is still struggling to achieve the right balance of these three human resource ingredients; the evaluation team commends the recruitment of national consultants, but considers that careful consideration should be given to their mentoring, through key international staff positions in epidemiology and value chain analysis, complemented by stronger linkages with national universities (such as the Chittagong Veterinary and Animal Sciences University in Chittagong).

FAO initiated its technical assistance to the Government of Bangladesh (GoB) well before the HPAI crisis by participating actively in the development of the National Preparedness Plan. After the outbreaks in early 2007 diagnosis of HPAI was made possible thanks to the facilitating role played by FAO in dispatching samples to reference laboratories abroad and several FAO projects (see Table 1) contributed to successfully setting up the technical unit for Avian Influenza within the premises of the Department of Livestock Services (DLS) of the GoB.

The focus of the FAO programme is still very much on HPAI, but the team considers that much of the capacity built is readily adaptable to other diseases such as Newcastle disease and duck plague in the poultry sphere, and to foot and mouth disease in ruminants and pigs, for example, both in the field, in the laboratory and in the epidemiology unit.

Efficiency

- Timeliness of FAO's response to requests for assistance on HPAI prevention and control

There have been several timeliness issues affecting the Bangladesh programme, and the reasons for them have been complicated and multi-institutional. The first and most serious relates to an extended delay of more than two years in gaining Government approval for an FAO project funded out of a World Bank credit, ostensibly due to the reluctance of Government to agree to tax-free status for international consultants. The second, also serious, relates to an extended delay in approving the appointment of replacement CTA. The evaluation team brought both of these to the attention of the newly appointed Secretary in the Ministry of Fisheries and Livestock. It is understood that both of these approvals have now been given, and that a new CTA was in place in mid December 2009.

- Adequacy of FAO's response, including human/financial resources, operational, administrative, monitoring and reporting arrangements

The office of the FAOR provides strong administrative support and guidance to the programme. In addition, the location of the FAO team within the Department of Livestock Services is considered highly appropriate, and supports partnership.

It has been difficult to have a CTA in post for an adequate length of time. There have been 4 CTAs since the programme started (including the current acting CTA), and a 5th is about to take up his post.

The evaluation team was informed that the relationship between FAO and the DLS, and between FAO and other partners, most notably the USAID office, were deleteriously affected by conflict and behaviour associated with the immediate former CTA. Through decisive recommendations from the donor and strong leadership by the FAO in Bangladesh and Rome, the CTA contract was not extended. Nevertheless, it took some time to rebuild those relationships, and at least one year during which the epidemiologist had to assume team leader duties. In view of the evaluation team, the current acting team leader has done an outstanding job, but inevitably the productivity of the epidemiology section has been affected.

The appointment of a dedicated international staff member in charge of avian influenza operations in Bangladesh is seen by the team as an excellent move.

- Timeliness and adequacy of technical and operational support from FAO Headquarters (HQ) and decentralized offices (including ECTAD units and RAHCs) to country level activities, including:
 - quantity and quality of co-ordination and support from HQ, decentralized offices and Regional ECTAD/RAHCs (in terms of backstopping/supervision missions);
 - quantity and quality of country level work undertaken by the ECTAD national units and, where relevant, the FAO Representations

The support provided by FAO Rome and FAO Bangkok was considered overall to be adequate, with frequent missions particularly from Bangkok on a wide variety of topics including short-term missions of senior staff to cover for the absence of a CTA. The main limitation for a timely provision of support and follow up on recommendations made by visiting consultants was the relatively high turn over of staff and the small size of the national ECTAD unit when compared to the size of the country, the size of the problem and to staffing levels in similar affected countries (such as Indonesia and to a lesser extent, Vietnam). Resources allocated to the FAO HPAI programme in Bangladesh are half of those to Cambodia, a quarter of those to Vietnam and less than a tenth of those to Indonesia. On the other hand, the strong leadership and guidance provided by the FAO Representation in the early days was met with appreciation by all the stakeholders consulted.

Effectiveness of individual country programmes

- Achievements in terms of outputs and outcomes, including:
 - development of effective national policies, preparedness measures, communication and public awareness campaigns, surveillance systems, laboratory capacities and contingency plans to deal with the disease;
 - new or strengthened institutional frameworks, organizational structures and processes, as well as knowledge, skills and competences acquired resulting in improvements in the performance of public and private veterinary services; and,
 - enhanced preparedness and response capacities of the poultry sector to deal with the risk of HPAI outbreaks, and of other animal diseases.

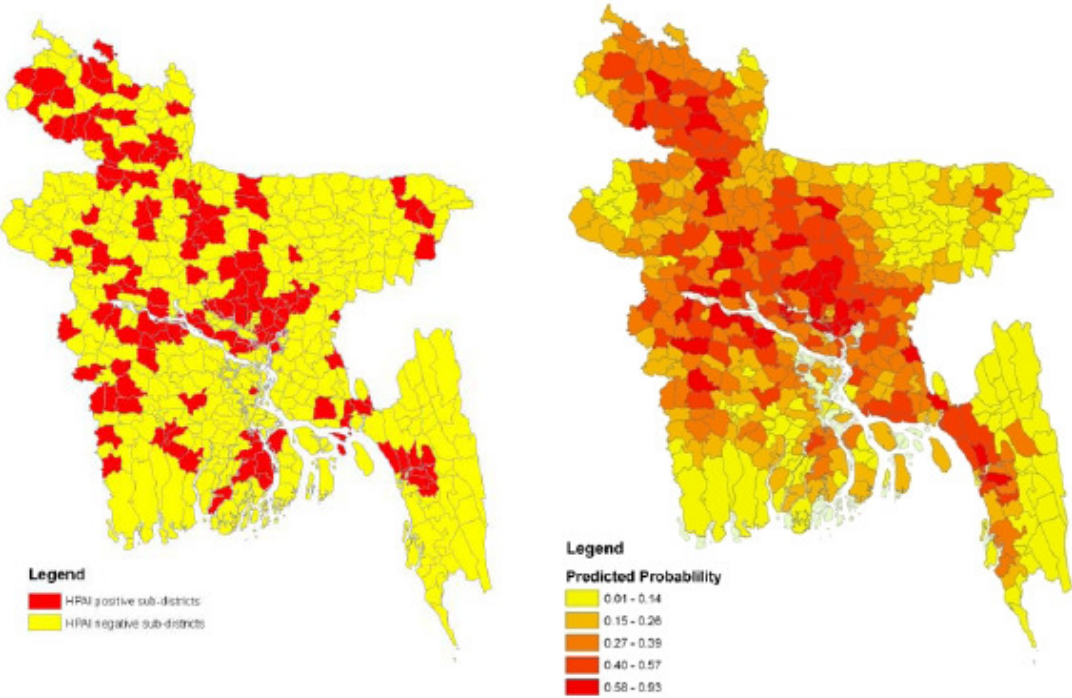
The Bangladesh country programme has provided substantial support to government and other agencies in HPAI preparedness and response. The acting CTA has strengthened cooperation with DLS, funding partners and has improved team work with the national FAO consultants and with DLS partners. The three year operational plan for FAO's activities in Bangladesh provides excellent planning and communication framework, and is used as basis for focusing activities and measuring output achievement.

In the laboratory, the disease investigation framework with ULO investigation, sample submission to, and rapid antigen testing at, FDIL/CDIL, PCR confirmation at NAIRL, then virus characterisation at VLA Weybridge, all provides nationwide coverage and acceptable speed of confirmation of H5N1 outbreaks. The staff at NAIRL who conduct real-time PCR testing have been well trained, equipment is good and the nearly completed laboratory renovations will provide very suitable facilities for PCR and virus culture. They have participated in and performed well in proficiency testing programs for PCR and HI serology testing. The transport system and electricity supply problems can cause significant delays.

The throughput for real-time PCR at NAIRL is limited, especially if multiple outbreaks occur and there would be a major problem if machine failure occurs. Introduction of PCR testing to CDIL would provide a back up facility and increase test throughput for surveillance and outbreak investigations. The laboratory building, facilities and electricity back up at CDIL needs to be upgraded for it to provide backstopping function and for capacity building. There also appeared to be some weakness in laboratory capacity required for other non-H5N1 endemic disease investigations. None of the laboratories observed had active histopathology facilities for example.

The innovative mechanism of active clinical surveillance using the SMS Gateway System provides an efficient and effective way to manage the input from the CAHW and monitor progress of investigations. 22 of 33 outbreaks were detected by the active surveillance during the period October 2008 – April 2009. The time of teams is also used for awareness, and advising on biosecurity on commercial poultry farms. However, with the large number of village households and farms in Upazillas to be covered by 3 CAHWs, who visit a total of approximately 100 places per day, it would take well over a year to cover all of an Upazilla. Beyond this, the system is very expensive. The sensitivity of this approach would be high if all households were covered, but in reality is low because of the financial and logistical impracticalities of such an extensive coverage on a real-time basis.

In part due to the epidemiologist having to act as CTA, and in part due to the weaknesses of the national epidemiology capacity, there are not as many products of structured epidemiological investigations as are required for adequate feedback into updating national policy and strategy guidelines. As part of this, there is inadequate traceback of outbreaks, but this is itself contingent on the dearth of data on poultry dynamics and of trained field staff. Some products, such as the initial spatial risk assessment (see figure below), are encouraging, but the question arises as to whether such broad spatial analyses of risk, based on poultry density, human density and road networks, but without the market dynamics of poultry trade, can be used as practical risk-based approaches to surveillance and response by government.



On the left are HPAI positive and negative sub-districts in Bangladesh, and on the right is the predicted spatial distribution of HPAI.

An important part of understanding risk is to have a sound and adequately detailed knowledge of the highly complex market dynamics of poultry enterprises, and this is largely missing from the FAO agenda in Bangladesh. This in spite of the fact that there is a value chain component to the South Asia Cross Border Project based in Nepal (which includes Bangladesh's border areas), but no such study has been undertaken for the whole country.

The FAO ECTAD team has developed clear plans to develop and communicate practical guidelines for biosecurity training in the commercial poultry sector and for improvement of hygiene and biosecurity in live bird markets. These activities have not been in place for long, but from observations and discussions held in markets by the evaluation team there is still a widely prevalent lack of understanding of the concepts of biosecurity, and of how measures will reduce risk of HPAI, and more importantly improve productivity and food safety in a broader context.

The RTE team believes that much more could be done to engage the private poultry sector. Private industry grew by over 200% in the five years prior to the HPAI outbreak, and suffered huge losses. It is considered that they should be much more actively involved and engaged as a partner in the HPAI preparedness and response planning and activities. They comprise a very significant sector and their active support and engagement is desirable from the national point of view. Their closer involvement will ensure better implementation and success of the programmes.

Effectiveness of global/regional programmes at country level, in particular the extent to which the:

- Crisis Management Centre – Animal Health has improved early response and the design of follow-up interventions.

A CMC-AH mission was fielded from 13-26 April 2007 after the first outbreak was announced on 22 March 2007. The mission's main recommendation "[to develop] a consistent and comprehensive approach through the design of a Strategic Framework for HPAI Prevention and Control... to allow coordination of all control activities and actions of stakeholders and donors" was followed-up by FAO (process led by C. Ahlers from ECTAD RAP) through the preparation of the avian influenza Operational Plan in June 2007. The RTE2 team found the operational plan to be a very valuable planning and coordination tool, not just for FAO but also for other partners, and certainly acknowledge that the CMC-AH mission, by providing inputs to its formulation, did also contribute to a better design of follow-up interventions.

- GLEWS information, analysis and technical expertise have improved disease response and understanding of HPAI epidemiology

Reports are regularly made to GLEWS and the regional and international data reported via GLEWS is scrutinised by the Technical Unit on a regular basis and considered valuable.

- OFFLU scientific data exchange and technical expertise have improved national capacity for laboratory diagnostic, vaccine efficacy and development

Viruses are routinely sent to VLA Weybridge for genetic and antigenic characterisation. As a member of OFFLU, Weybridge contributes to international data exchange. They also provide information on phylogenetic relationships of viruses from Bangladesh with other H5N1 viruses. This system appears to be quite efficient with respect to Bangladesh.

- Regional networks have contributed to national capacity building and information-sharing

Close links were apparent with the regional ECTAD RAP in Bangkok and the sub-regional ECTAD Office in Nepal particularly in the context of the cross-border project. Back-stopping support from ECTAD Bangkok and the provision of specialist expertise in epidemiology, wild bird surveillance, communication and cross-border market value chain studies were acknowledged by in-country and Government staff as being useful and effective.

- Research and technical expertise on wildlife has improved countries' understanding of the role of migratory birds in the spread of HPAI

The regional wildlife studies, including on-going studies in India and Bangladesh and regional satellite telemetry studies of wild birds involving China, Mongolia, India and Kazakhstan, are providing useful data in relation to potential H5N1 transmission via migratory wild birds that can be used in planning in-country surveillance and control activities.

Sustainability and Impacts

- The *likely* effect of FAO's work on the institutional, organizational and human capacity of affected and at-risk countries beyond HPAI

There has undoubtedly been a series of broader impacts of the HPAI programme; on awareness of disease, on approaches to disease control, on laboratory and epidemiology capacity, on field services, among other areas. However the evaluation team is of the view that in Bangladesh, with all its other development challenges, it will be almost impossible to sustain these gains in understanding, and translate them into measures that respond to long-term development priorities (in agriculture and health) without a strategic plan that links emergency responses to long-term development, and substantial funding to support such mechanisms.

- Sustainability of the strengthening taking place in public and private veterinary services

The strengthening that has taken place is relatively modest; prospects for sustainability are even more modest in the absence of a long-term programme that responds not only to emergency disease prevention and control, but also to larger development priorities.

- Extent to which disease surveillance and control interventions have likely contributed to reducing HPAI prevalence

Due to the lack of a full understanding of the dynamics of HPAI in Bangladesh, and only a superficial understanding of the risk factors, while the investment in surveillance and control measures have almost certainly benefited the country, it is impossible for the evaluation team to specify how, and to what extent, they have influenced the apparent reduced prevalence of HPAI.

- Likely macro-economic, livelihoods and food security impact of FAO’s strategy and response to HPAI

Given that HPAI is endemic in Bangladesh, and that Bangladesh has many other unaddressed constraints to its poultry enterprises at both industry and smallholder levels, FAO is probably not reaping the macro-economic and livelihood returns that it could by a broader, more encompassing and development-orientated approach to livestock production and health, which incorporate the specific disease emergency elements of donor interest as specific components. In this regard, the RTE2 team acknowledge some recent initiatives (such as the purchase of FMD vaccines with CERF and Switzerland funds) and urge FAO to continue and deepen its engagement with the Government and other partners to develop more comprehensive initiatives.

Partnerships

- The clarity of FAO’s role, based on its comparative advantages and capacities, as well as the degree of complementarity, co-ordination and collaboration with regional and national partners, particularly: multilaterals, major Bilateral/donor agencies

FAO in Bangladesh has attempted to clarify its role and its interface with other players well, through the Operational Matrix and the regular dialogues it holds. There is no doubt that FAO has a unique advantage in facilitation of agricultural emergency and development issues, and there is no doubt that it could do even more particularly in the context of the forthcoming World Bank funded project.

- FAO’s contribution to the preparation of partners’ HPAI regional and national strategies

FAO has made substantial contributions to national strategies, and more recently to regional harmonisation of animal health interventions, a role which could undoubtedly be strengthened further.

In conclusion, the evaluation team have summarized the strengths and weaknesses of the avian influenza programme as follows:

Strengths	Weaknesses
FAO programme seen as the lead institution in HPAI preparedness and control in Bangladesh	A one year period without a CTA, and periodic changes of DG of DLS and of MOFL, and issues of conflict associated with one of the CTA, previously led to poor cooperation between FAO AI programme and DLS/MOFL and funding partners.
Acting CTA has strengthened cooperation with DLS, funding partners and has improved team work with the national FAO consultants and with DLS partners.	The use of the veterinary epidemiologist as acting CTA meant reduced output in epidemiology planning and products.
Three year operational plan for FAO’s activities in Bangladesh provides excellent	Capacity building for epidemiology within DLS needs to be further strengthened.

<p>planning and communication framework, and is used as basis for focusing activities and measuring output achievement.</p>	<p>There is a strong role for an FAO international epidemiologist in supporting and guiding epidemiology investigations until the DLS Epidemiology Unit capacity present.</p>
<p>Active participation in multi-sector and technical committees and acknowledgement of leading role by FAO in promotion of private public partnership.</p>	<p>Advocacy for MOFL/DLS to seriously consider input from private industry in matters like compensation and vaccination policy needs to be enhanced</p>
<p>Laboratory: The disease investigation framework with ULO investigation, sample submission to and rapid antigen testing at FDIL/CDIL, PCR confirmation at NAIRL, then virus characterisation at VLA Weybridge does provide nationwide coverage and acceptable speed of confirmation of H5 outbreaks.</p> <p>Staff at NAIRL who conduct real-time PCR testing have been well trained, equipment is good and the nearly completed laboratory renovations will provide very suitable facilities for PCR and virus culture. They have participated in and performed well in proficiency testing programs for PCR and HI serology testing</p>	<p>Laboratory: The transport system and electricity supply problems can cause significant delays.</p> <p>The throughput for real-time PCR at NAIRL if machine failure occurs is limited. Introduction of PCR testing to CDIL would provide a back up facility and increase test throughput for surveillance and outbreak investigation.</p> <p>The laboratory building, facilities and electricity back up at CDIL needs to be upgraded for it to provide backstopping function and for capacity building.</p> <p>There appeared to be some weakness in laboratory capacity required for other non-H5N1 endemic disease investigations. None of the laboratories observed had active histopathology facilities.</p>
<p>The mechanism of the active clinical surveillance programme using the SMS Gateway System provides an efficient and effective way to manage the input from the CAHW and monitor progress of investigations</p>	<p>Active surveillance: With the large number of village households and farms in Upazillas to be covered by 3 CAHWs, who visit a total of approximately 100 places per day, it would take well over a year to cover all of an Upazilla. The sensitivity of this approach is too low and needs some epidemiology input to get better use of resources.</p>
<p>The FAO team has developed clear plans to develop and communicate practical guidelines for biosecurity training in the commercial poultry sector and for improvement in live bird market hygiene and biosecurity. These activities have not been going for long and the challenge is to drive and follow through on them.</p>	
	<p>FAO advocacy is needed to influence DLS policy on staff rotation for promotion, with respect to staff that undergo specialist training in fields like laboratory diagnosis</p>

	or epidemiology. Such staff rotation can be detrimental to creating strong laboratory, epidemiology and surveillance teams that can deliver quality outputs.
	Further FAO involvement to understand market value chains within Bangladesh would be valuable to enhance surveillance and control and preparedness planning.

Based on the above, the evaluation team recommends the following priority actions for FAO:

- Focus on enhancing the capacity of the Government epidemiology units to plan surveillance activities, analyse surveillance data and provide advice on management and control of HPAI based on risk analysis. More effective epidemiological analyses should particularly be used to target resources for active clinical surveillance and duck surveillance. Quality of outbreak investigations will also be further improved with more elaborate epidemiological analysis and synthesis of data.
- Capacity building also has to become institutionalized; the current training process has to involve private actors and be rigorously followed up and evaluated by the national ECTAD unit in-country. DLS has to be given a stronger role in co-ordinating not only FAO but also the different animal health training programs being conducted in the country.
- The FAO programme should take a much more active role in engaging and partnering with the private poultry industry at all levels. This is an active and growing sector, and deserves to be a much stronger part of the preparedness and response mechanisms than it currently is. Progress on this front will be instrumental to:
 - Ensure that the roles of compensation and vaccination as tools for enhancing reporting and reducing risk are maintained on the national agenda for discussion. This is particularly in regard of protecting the poultry industry, and seeking incentives for more sustainable poultry disease control.
 - Include other potential sources of passive surveillance and communication for poultry HPAI outbreaks in villages, such as CAHWs that report to IEDCR and BRAC representatives that are present in most villages in Bangladesh; they could be given basic training and provided a system to report suspicious cases for investigation.

Other recommendations for the FAO include the improvement of:

- The current public private partnerships initiative; which should be enhanced to develop highly practical and sustainable improvements in risk reduction through biosecurity and hygiene in farms and markets.
- Laboratory capacities, which should continue both at central and field level particularly for other non-H5N1 endemic disease investigations through the World Bank project.
- The understanding of market value chains, which is a key element for improving the sensitivity of surveillance activities and for identifying risks and critical control points at a level of resolution that is practical and sustainable.
- The approach to disease control in Bangladesh; given the poultry density, its importance for food security and poverty alleviation, and the endemic nature of the disease, control and eradication of HPAI in Bangladesh will only be possible through a comprehensive animal disease control programme that includes not only typical emergency responses but

also address long-term development constraints (including improvement of bio-security and behaviour change) and can be expanded to control other economically important animal diseases such as FMD and PPR.

- The management of human resources, from staff selection to supervision and evaluation. This includes, besides transparent advertisement of positions, consideration in the selection process to not only technical expertise but also to region and country specific knowledge and issues; clear reporting lines and coaching/supervision duties for field staff; periodic assessment of performance of particularly long term serving senior staff with the view of rewarding merit and progress (with promotion).

Annex 1. List of People Met

FAO

Mr. Ad Spijkers FAO R
Dr. Leo Loth, Officer In charge & Veterinary Epidemiologist,
Ms. Nan Mon, Operations Officer, Emergency Recovery Coordination Unit,
Dr. Mahbubul Haque, National Consultant, Disease Control & Training,
Dr. Md. Abul Kalam Azad, National Consultant Outbreak Response & Training,
Dr. Priya Mohan Das, National Consultant, HPAI Surveillance,
Dr. Md. Shahjahan, National Project Manager C&D Project,
Mr. Ishteaq Hossain, National Consultant, Communications Specialist PPP Project,
Mr. Md. Zaikul Hasan, National Consultant, PPP Project,
Dr. S.K. Mahbub Ahmed, National Consultant – Data Analyst,
Dr. K.B.M. Ashfakur Rahman, National Consultant, C&D Project,
Ms. Amina Islam, Secretary.

Government

Dr. Md. Habibur Rahman, Director General, Department of Livestock Services,
Dr. Bidhan Chandra Das, Assistant Director, Animal Health & Administration,
Dr. Md. Afzal Hossain, Program Coordinator, HPAI Active Surveillance Programme,
Dr. Md. Forhadul Alam, Upazilla Livestock officer, Savar.

Dr. Md. Giasuddin, Senior Scientific Officer & Laboratory In-charge
National Reference Laboratory for Avian Influenza,
Dr. Mahammed Abdus Samad, Scientific Officer, NRL-AI

Dr. Ranjit Kumar Chakraborty, Principal Scientific Officer, Central Dis. Inv. Laboratory,
Dr. Mahammed Ahasan Habib, Scientific Officer, CDIL,

Proff. Mahumudur Rahman, Director, Institute of Epidemiology, Disease Control &
Research, National Influenza Centre,

UN Agencies

Dr. Biswas M. K Zaman, National Professional Officer (Epidemiology), WHO,
Mr. Usman Qazi, Programme Specialist, Office of the UN Resident Coordinator.

CD

Mr. Samuel Egero, Counselor/Deputy Head of Mission, Embassy of Sweden,
Mr. Syed Khaled Ahsan, Senior Programme Officer, Embassy of Sweden.
S.A.M. Rafiquzzaman, Agriculture & Rural Development, World Bank
Arun Kumar Saha, Project Implementation Officer (Agriculture), Asian Development Bank
Asm Harun Ur Rashid, Royal Danish Embassy
Zandra Hollaway Andre, Technical Advisor, USAID
Carey Gordon, Deputy Mission Director, USAID

NGO's

Dr. Md. Nazrul Islam, Project Director, PTDDP (JICA),
Prof. Dr.Md. Mujaffar Hossain, Local Consultant, PTDDP (JICA),
Mr. Md. A. Salaque, Programme Head, (Agro & Salt), BRAC,
Dr. Dewan Zahid Hossain, Senior manager Technical, Poultry Farm, BRAC,

Dr. Shankar P. Mondal, Country Team Leader, STOP AI,
Dr. Ahmed Al Kabir, President RTM International,
Dr. Md. Habibur Rahman, Senior Technical officer, RTM International,
Ms. Farhtheeba Rahat, Business Development Specialist, RTM International.

Industry

Mr. Kazi Zahedul Hasan, Kazi Farms Limited,
Mr. Moshiur Rahman, Managing Director, Paragon Group,
Dr. A.K.M. Khasruzzaman, Animal health department, CP Group,
Dr. Salim H. Siddique, Secretary General, Animal health Companies Association of BD,
Mr. Kamaluddin, Poultry Farmer,

Dr. M.M. Khan, Secretary General, Bangladesh Poultry Industries Association,
Mr. Khandaker Md. Mohsin, Advisor, Bangladesh Poultry Industries Association.

Field

Mr. Abdul Hai, Commercial Poultry farmer, (Sector 2), Pandua Village
Dr. Hasina Beghum, AVS,
Ms. Sheuli Akhtar CAHW,

Technical staff at the Field Disease Investigation Laboratory at Manikgon and a Commercial Sector 3 farm in the village nearby.

Annex 2. Documentation Reviewed

- Ahmed, N. (2000). The smallholder poultry model in Bangladesh. In: G. Pedersen, A. Permin, and U. M. Minga (eds.) Possibilities for smallholder poultry projects in Eastern and Southern Africa. Proceedings of a workshop, Morogoro, Tanzania, 20-25 May 2000. Network for Smallholder Poultry Development, Copenhagen
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- Chakma, D., Rushton, J. 2008. Rapid assessment of socioeconomic impact due to highly pathogenic avian influenza in Bangladesh, FAO, Rome, 32 pp.
- Dolberg (2008) Poultry Sector Country Review.
- Fattah, K. A. (2000). Poultry as a Tool in Poverty Eradication and Promotion of Gender Equality. In: F. Dolberg and P. H. Petersen (eds.) Poultry as a Tool in Poverty Eradication and Promotion of Gender Equality Proceedings of a workshop, March 22-26, 1999, Tune Landboskole, Denmark.
- Islam et al (2008) Phylogenetic Analysis of Highly Pathogenic Avian Influenza (H5N1) Virus Isolates of Bangladesh
- Jensen, H. Askov (1996). Semi-scavenging model for rural poultry holding. In: Proceedings of XX World's Poultry Congress, New Delhi, India. Vol. I, 61-70.
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- Saleque, A. and Mustafa, S. (1997). Landless Women and Poultry. The BRAC model in Bangladesh. In: F. Dolberg and P. H. Petersen (eds.) Integrated Farming in Human Development. Proceedings of a workshop, March 25-29, 1996, Tune Landboskole, Denmark.
- Shamsuddoha, Mohammad and Sohel, Mir Hossain, Problems and Prospects of Poultry Industry in Bangladesh: A Study on Some Selected Areas (November 4, 2003). The Chittagong University Journal of Business Administration, Vol. 19, 2004.
- World Bank (2007) Avian Influenza Preparedness and Response Project – Project Information Document
- World Bank (November 2009) Aide Memoire Second Joint Supervision Mission 1st and 2nd National Avian and 2nd Pandemic Influenza Preparedness and Response Plan
- Plus more than 30 project reports, over 15 BTORs and end-of-contract reports, several monthly reports, power point presentations, etc.

Annex 3: Overview of Bangladesh's Avian Influenza Operational Matrix

Effective control of transboundary animal diseases needs to address five strategic pillars:

I	II	III	IV	V
Coordination & Policy	Disease Detection	Disease Diagnosis	Disease Control & Eradication	Disease Prevention
<i>Objective:</i> Concerted action and consistent approach on disease control based on appropriate legal and policy framework	<i>Objective:</i> Early detection of HPAI to allow rapid response	<i>Objective:</i> Quick and correct diagnosis of HPAI	<i>Objective:</i> Immediate response to outbreak occurrence to avoid the spread, minimizing the impacts and eradication of the disease	<i>Objective:</i> To prevent introduction and to avoid reintroduction of HPAI

Components within the strategic pillars I-V, containing areas of activities with defined outputs to be achieved:

I.1 Legal framework I.2 Contingency planning I.3 Coordination I.4 Socio economic impact I.5 Communication I.6 Research	II.1 Surveillance of poultry II.2 Monitoring of wild birds II.3 Epidemiology: analysis II.4 Communication	III.1 Laboratory network III.2 Laboratory capacity	IV.1 Epidemiology: outbreak investigation IV.2 Stamping out IV.3 Compensation IV.4 Vaccination IV.5 Human protection IV.6 Communication	IV.1 Poultry database V.2 Biosecurity V.3 Import of poultry and poultry products V.4 Animal health services V.5 Regulation of poultry farming and trade V.6 Communication
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Areas of high priority requiring immediate action are presented in bold letters.

Annex 4. Assessment of FAO Avian Influenza Projects in Bangladesh

OSRO/RAS/601/ASB “Immediate Technical Assistance to Strengthen Emergency Preparedness for Highly Pathogenic Avian Influenza”

This project was expected to contribute to international efforts aiming at controlling and eliminating the threat of HPAI, thus reducing the impact on the agricultural sector and minimizing the risk to the human health. It will also contribute to regional efforts to contain the disease and reduce the significant risk of disruption of the poultry industry in the region. In addition this project will build the capacity of the Government of Bangladesh to prevent and other serious emerging animal zoonotic and epizootic diseases.

Expected outcomes of the project are:

- A reduction in the incidence of outbreaks of HPAI in poultry in Bangladesh;
- Strengthening the national capacity for avian influenza prevention and control;
- A better understanding of disease prevention and control strategies by poultry producers, traders and government veterinary services;
- The creation of more effective poultry disease reporting mechanisms at the community level;
- An increased capacity of the DLS to train and communicate with poultry farmers from different sectors;
- Better understanding of hygiene and food safety by the general population;
- Promotion of safe trade in poultry and poultry products; and,
- Reduction of risk of a human epidemic in Bangladesh.

To achieve these outcomes, the project was expected to accomplish the following:

Output 1: Project Management

- The FAO Technical Unit will be further strengthened. Two more National Consultants will be recruited for Communication as well as Training and Outbreak Response.
- The members of the Technical Unit will contribute in revising the National Response Plan and the Operation Manual.
- Technical coordination through Laboratory Working Group for renovation and refurbishment of laboratories and procurement of equipment and reagents will continue.

Output 2: Surveillance, quarantine and response activities

- Modified and expanded surveillance in 150 upazilas involving 450 CAHWs under an LoA with DLS for a period of six months will commence in July 2008. 50 veterinarians will be recruited for six months to assist ULOs in disease investigation, sample collection and supervision of CAHWs. They will be provided with motorbikes and other logistics.
- Two Laboratory Associates will continue to support HPAI diagnostic activities at the National Avian Influenza Reference Laboratory.
- Workshops on quarantine and movement restriction will be organized in six divisions for people from civil administration, law enforcing agency and DLS policy makers.

Output 3: Virus Elimination at Source and Personnel Safety

- SOPs for outbreak containment including culling, disposal, decontamination, personal safety and laboratory procedures will be finalized.

Output 4: Awareness Raising and Communication

- The wet market biosecurity and communication pilot project under the LoA with a local NGO Thengamara Mahila Sabuj Sangha (TMSS) will continue.
- Two pilot courses on wet market biosecurity and disinfection conducted in collaboration with USAID.

Project implementation was lengthy and had to overcome several challenges as follows:

- Endorsement of activities by Government was time consuming and cumbersome.
- Limited office space and number of telephone lines available to the HPAI unit at DLS affected project staff efficiency.
- Lack of full time operational officers retarded project implementation. This particularly affected procurement of vehicles and the implementation of the active surveillance. Work on markets biosecurity was eventually not conducted under this project.
- Support from multiple donors often created confusion and duplication of activities (particularly on communication and biosecurity). This was partially remedied through regular donor meetings but still activities of certain NGOs and consulting companies recruited directly by some donors are unknown.
- Activities planned and undertaken were strongly influenced by and had to be adapted to the ongoing HPAI outbreak situation and government policies. For example work on SOPs was subsequently not considered a priority by the Government.

In spite of these shortcomings, the project was instrumental to support disease surveillance and control activities as well as the deployment of a multi-disciplinary technical unit at DLS during a period of continuous outbreaks (2007-08). The project also conducted a Wet Market communication pilot at Rugpur District, staff training on GIS, and the procurement of laboratory test kits including diagnostic kits and napsak sprayers. Most of the activities accomplished have been followed-up or carried out in conjunction with OSRO/RAS/605/USA Baby01 project, so that overall results of this project are presented together below.

OSRO/RAS/605/USA BABY01 “Immediate technical assistance to strengthen emergency preparedness for HPAI in Bangladesh”

The primary objective of this project was to rapidly strengthen the capacity of the official veterinary services to identify and implement strategies aimed at the control of HPAI thus preventing it from developing into epidemic proportions. Specific immediate objectives were to provide support to the DLS in: (i) strengthening national capacity in disease surveillance; (ii) strengthening capacity to undertake laboratory diagnosis for HPAI; (iii) promoting biosecurity in poultry and duck production; and (iv) establishing a HPAI technical unit within the DLS.

The original project document included the following activities:

Output 1: Strengthened national capacity in disease surveillance

- Establish a Network of CAHWs to carry out active surveillance.

Output 2: Strengthened capacity to undertake laboratory diagnosis for HPAI

- Provision of training in diagnostics, laboratory equipment and consumables.

Output 3: Increased biosecurity in poultry and duck production

- Training in biosecurity.

Output 4: Established technical unit within DLS

- Build up capacity of the staff in the concerned unit of DLS.

New activities (and further details) were added in two successive amendments to the project. The last amended ended in September 2009 but is largely being continued through project OSRO/BGD/902/USA. The main activities that were funded through this project are:

- Active surveillance programme: 5 LoAs have been signed with DLS between February 2008 and October 2010 (2 LoAs were funded by ADB, 1 by SFERA funds, and the rest by this project) reaching now 260 Upazillas (from 50 at the beginning) through 780 CAHWs and 88 AVS. Surveillance activities were initially designed to be door-to-door but from January 2009 they were also used to disseminate basic bio-security knowledge in commercial farms. New upazillas were selected on the basis of outbreaks, poultry density and bordering infected ones. The Epidemiology Unit of DLS co-ordinates this system and monitors the implementation of LoAs. By November 2009 around 6 m households and close to 50,000 farms have been visited, with 55 out of 385 samples collected resulting positive to HPAI +ve®.
- Training activities: FAO has conducted a number of training activities, with the objective of introducing HPAI control strategies both to public and private sector actors; strengthening outbreak management capacity of DLS, building capacity for HPAI diagnostic, improving knowledge on epidemiological investigation, carrying out effective surveillance, improving biosecurity and decontamination at farm and in markets, using IT in epidemiology and disease control, and define role of communication in HPAI control. Recipient groups include government officials from DLS, poultry producers, CAHWs, law and order forces, NGOs and other Government officers. Training has been provided by international and national experts from FAO and DLS. Modules were prepared by each trainer and cleared by FAO National ECTAD unit. More recently, FAO has started training over 700 school/madrasha teachers in avian influenza awareness to increase passive surveillance. The main achievements linked to the training conducted to date are:
 - there is better laboratory diagnosis capacity
 - effective outbreak management is now possible
 - biosecurity practices have improved in commercial farms
 - increased knowledge about HPAI have reduced panic
 - active surveillance is now more reliable
 There are however a number of weaknesses such as:
 - no mechanisms to follow-up on the trainings
 - selection of right trainees is sometimes difficult
 - ToT is ineffective due to lack of funds for follow-up training
 - it is difficult to get feedback from recipients
 - process of evaluation is insufficient
- Web based SMS gateway system: This system is a two way communication that enables to send and receive short text messages (SMS) over digital cellular networks. It has been used to notify and alert relevant authorities about potential disease outbreaks, and has reportedly led to quicker response.

Although project implementation reportedly suffered from the same challenges faced by the ADB project, it has been able to undertake a number of important activities in the past two years that have empowered central and local levels of the Veterinary services and increased the visibility of the FAO AI programme with the Government, donors and other local partners. The project is still ongoing and is planning to scale up the active surveillance programme as well as to consolidate the web based SMS gateway system. Although hundreds of people have already been trained by the programme, there is a need for a more formalized and regular training process that involves private actors and is rigorously followed up and evaluated by the national ECTAD unit in-country. DLS has also to be given a stronger role in co-ordinating not only FAO but also the different animal health training programs being conducted in the country.

OSRO/RAS/701/USA “Strengthening cross border activities among Bangladesh, India, Nepal and Myanmar to control cross-border spread”

The main goal of the project is to prevent cross border spread of HPAI resulting from movement of poultry and poultry products. Specifically the project aims to: (i) the development of a platform for dialogue and information exchange between countries in the region on issues related to potential cross border spread of HPAI (ii) strengthen capacities of institutions to deal with the threat of transboundary spread of HPAI and (iii) increase understanding of ways to manage cross border trade to reduce risk of HPAI outbreaks. Planned activities include:

Output 1: Project management and coordination mechanisms established and operating

- Recruitment of local and international staff, procurement of office equipment and vehicle.
- Project inception workshop.
- Establishment of modality for communications and dialogue to facilitate coordination.

Output 2: High risk areas for introduction of HPAI via cross border routes identified and mapped

- Identification of suitable partners to gather information on cross border value chains for poultry and poultry products.
- Mapping of market chains and poultry trade volumes across borders.

Output 3: Increased capability for emergency response to HPAI outbreaks due to cross border spread of disease

- Development of standard operating procedures for emergency response to disease in high risk areas related to cross border trade.
- Provision of laboratory training and supplies in key locations.

Output 4: Increased capability to prepare import and export protocols in conjunction with trade partners

- Review of regulatory frameworks for import and export (regional workshop approach to initiate).

In the case of Bangladesh, procurement of non expandable and expandable equipment was reportedly late in part due to frequent changes requested by the donor. Poultry value chain and risk mapping studies across the Bangladesh and India borders have been conducted by an NGO. Other activities conducted include:

- Stakeholder meetings: a regional meeting was held in March 2008 in Nepal; this was followed by a technical and policy level meeting in April 2009 in India with the participation of senior officers from the beneficiary countries, FAO and the donor. The South Asian Association for Regional Cooperation (SAARC) has also been engaged through the joint FAO/OIE sub-regional meeting of GF-TADS for the SAARC region held in June 2009 in Nepal. Bimonthly bulletins are also produced since April 2009.
- Animal surveillance: poultry value chain mapping across Nepal-India, Bangladesh-India, Bangladesh-Myanmar and India-Bangladesh, India-Nepal borders has been completed. The data reflects large volumes of poultry and poultry products from India going into Nepal at several border training points with people engaged full time in transporting live birds and products. Similarly, a large volume of poultry enters from Myanmar into Bangladesh. Comilla in Bangladesh and Sonamura in India were identified as a hot spot for large volume of poultry trade in both directions between the two countries. Price difference, gap in demand and supply and socio-cultural events were the main driving

factors. The result of the value chain mapping studies were shared with local stakeholders in June 2009 (Nepal-India) and in July 2009 (Bangladesh-India and Bangladesh-Myanmar borders). This was followed by a regional workshop in September 2009 on understanding and using value chain analysis.

- Animal response: A regional workshop to develop Standard Operating Procedures (SOP) for emergency response was held in May 2009 with the objective of sharing available SOPs and working on their harmonization. The workshop led to the development of draft SOPs for guidance, technical support and infrastructure development for emergency response in border areas.

The project is still ongoing but in view of the project manager it has already achieved a few important successes: i) contrary to the situation at the beginning of the outbreaks, country representatives now frankly discuss issues of mutual interest and work towards finding solutions at the regional level; ii) findings of the value chain mapping led the GoB to open egg imports from India to bring down prices and fill the gap in demand and supply; and iii) the Government of India has shown greater interest in engaging with FAO for greater collaboration and technical advice. As a result, a new 3-year project (OSRO/IND/802/USA) to improve epidemiological capacity and establish a risk based surveillance programme in India has just been approved for implementation.

The project manager has also identified the following lessons learnt:

- Looking at the large informal trade of poultry and poultry products within the three countries it is clear that the disease will continue to appear periodically.
- Sorting out policy issues and restructuring the poultry industry in the region can reduce current incentives for informal trade and thus minimize the risk of disease incursion.
- Countries have recognized that a concerted regional approach is needed to avoid likelihood of disease becoming entrenched.

OSRO/INT/805/USA B04 (PPP) “Developing and Maintaining Public-Private Partnerships for the Prevention and Control of Highly Pathogenic Avian Influenza H5N1”

The main objective of this project is to strengthen and maintain public-private partnerships to support poultry health and production systems in countries worse affected by HPAI. The Bangladesh component of the project expects that by project end (January 2010) “functional public-private forums and networks will be available (biosecurity and vaccination) to facilitate on going cooperation and coordination for the prevention and control of HPAI H5N1 and other poultry diseases”.

PPP activities to date include the holding of a workshop on sharing and harmonizing training materials for biosecurity (August 2009), a workshop on public and private veterinarians interaction and the prospect of roles delegation (September 2009), a meeting to review identify and recommend ideal material for biosecurity training (October 2009) and a workshop for developing biosecurity guidelines for the commercial poultry sector (October 2009). The PPP project has also developed working relationships with poultry associations, academicians, and civil society.

Some outputs achieved so far by the project in Bangladesh include:

- Bio Security Guidelines have been developed for commercial poultry in Bangladesh.
- Roles of public and private veterinarians and the prospect of roles delegation have been assessed.

The project has also “mapped” relevant actors and reviewed the status of industry players.

According to project management the project have to operate within a number of constraints:

- Poor communication between public and private sector.
- Limited participation of private sector in decision making processes.
- Lack of formal founs and platforms for interaction.
- Inadequacy of public sector capacity to deal with private sector issues.
- Unclear status and representativity of poultry associations.

The project is coming soon to an end, and according to project management, the following areas of work are being prioritized:

- Use results of “roles workshop” to create a legal provision for delegation of roles.
- Formally pursue the implementation of the biosecurity guidelines for commercial poultry
- Organize additional training for private sector actors on biosecurity for input providers and for public sector on biosecurity auditing practice.

OSRO/GLO/802/USA “Improved biosecurity and hygiene at production, collection points and live bird markets, including decontamination”

The main objective of this project is to develop and implement an integrated programme for cleaning and decontamination of selected Live Bird Markets (LBM) in target countries, thereby contributing towards the efforts to minimize the risk to human health and reduce transmission and spread of HPAI virus. In total 18 LBM have been selected (8 in Dhaka and 10 in other five major cities). Some outputs achieved so far by the project include:

- Infrastructure improvement of 3 LBMs in Dhaka are completed.
- Upgrading work for 6 LBMs in other divisions is under way.
- Trainings to markets cleaners is ongoing.

OSRO/RAS/704/SWE Baby 02 “Geospatial referencing of commercial poultry farms and live bird markets in Bangladesh”

This project is expected to identify the exact geo-spatial location of all commercial poultry farms and the main poultry markets in Bangladesh to facilitate and support HPAI outbreak related control and response measures. To this end over 100 CAHWs will be trained in the use of GPS and reporting precise geographical coordinates of the poultry farms and the major wet markets in each district. Data will then be entered at DLS and analyzed to produce spatial information at the upazilas, district and country levels. All poultry farms will be registered and identified by codes which can be used for the active surveillance through the SMS gateway system. This project was originally designed in late 2008 but has yet to be implemented. The evaluation team was informed that it was considered a priority for early 2010 depending on the availability of staff time for project supervision.

SECOND REAL TIME EVALUATION OF FAO'S WORK ON HIGHLY PATHOGENIC AVIAN INFLUENZA

COUNTRY REPORT: CAMBODIA

14 - 21 NOVEMBER 2009

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I. INTRODUCTION

Cambodia was one of 7 countries selected for the second Real Time Evaluation (RTE) of FAO's contributions to the preparedness and control of HPAI, as part of a purposive evaluation of the country level assistance provided to countries by FAO through regional and national projects managed by the organisation. Although it had a relatively well funded avian influenza programme, the country was not included in the First RTE. The evaluation team visiting Cambodia as part of the second RTE comprised Professor Brian Perry, Dr. Trevor Ellis, Mr. Shashi Kapur and Mr. Carlos Tarazona. They arrived on Friday 13th November and left on Saturday 21st November. Their terms of reference and approach to the evaluation are set out in their inception report. The evaluation criteria specified in the inception report were applied to assess the relevance, efficiency, effectiveness, sustainability and – to the extent possible – the impact - of FAO's HPAI work.

II. HPAI STATUS AND EVOLUTION IN CAMBODIA

Characteristics of the Poultry Sector

The poultry population has increased steadily over the second half of the 20th century. An increase of 50% was observed between 1995 and 2000. The last census conducted in

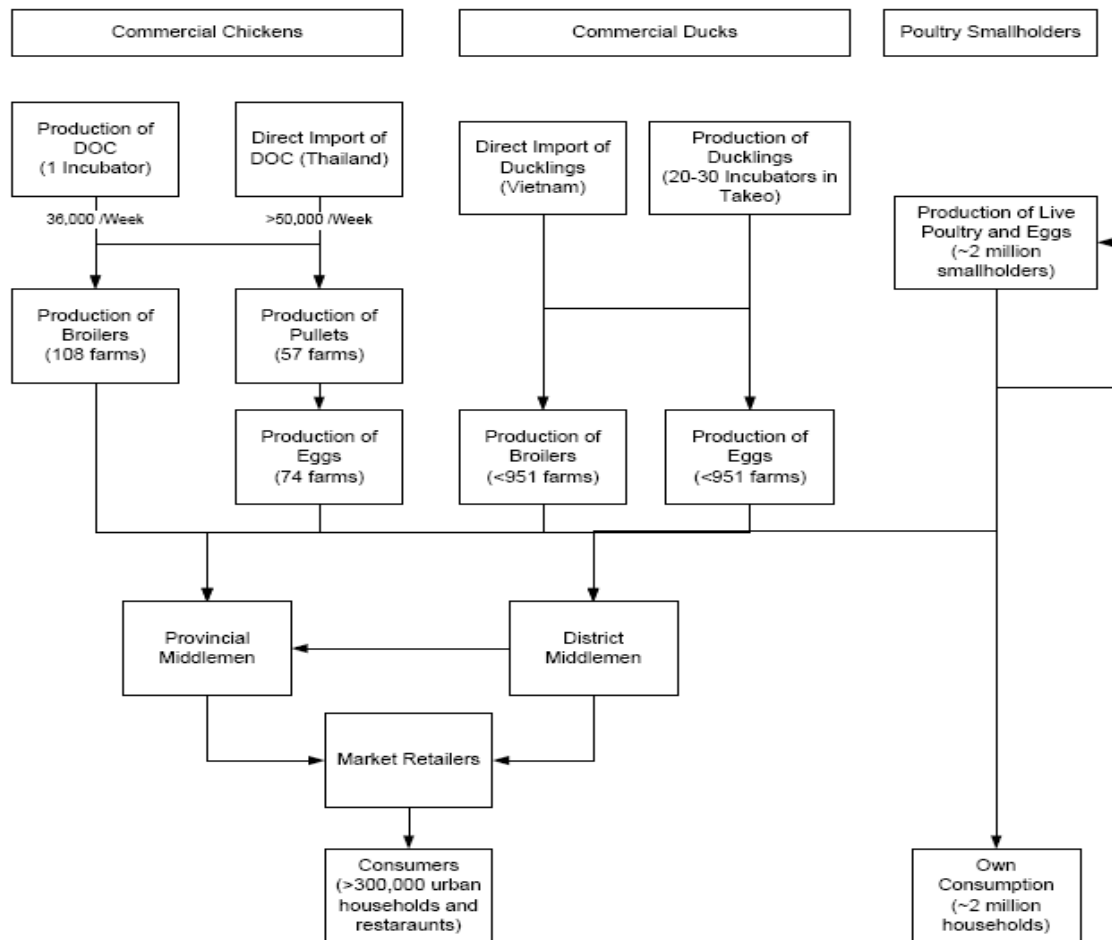
2002 indicates a poultry flock of more than 16 million in Cambodia. The main species raised are chicken (82%) and ducks (18%). Six per cent of the chickens in Cambodia are raised in commercial farms and 94% in non-commercial farms. For ducks the figures are approximately 29% and 71%, respectively, reflecting the increasing importance of small-scale duck production. The reader is referred to an extensive literature review of the poultry enterprises of Cambodia, and an early assessment of HPAI impacts¹.

Poultry density is much higher in the south-east part of Cambodia (the lower Mekong area, around Phnom Penh, and close to Viet Nam) and in the north-west part (north and around Tonle Sap, close to Thailand), than in other parts of the country. Medium & large-scale commercial production of poultry is a recent innovation in Cambodia, starting between 1995 and 2000 and associated with the start of Thai-based CP's activities in Cambodia in 1997. The establishment of CP in Cambodia has enabled poultry producers to find chicks and pullets of improved genetic stock without having to import directly from Thailand or Viet Nam (although this direct import still continues). The State Services are very little involved in the poultry sector. The National Strategic Plan for Animal Health & Production (December 2000), written in relation to the Agriculture Productivity Improvement Project (a World Bank loan), intended "to focus Government, private enterprises and livestock owners on the two livestock species (pigs and large ruminants) that have the potential to assist in the development of all livestock due to their turnover in value and volume."

A large proportion of poultry products produced is consumed by producers themselves. Middlemen play a key role in bringing poultry and eggs from producers to markets, transporting products by bicycles, motorbikes and cars. Market retailers exist at commune (very few), district and provincial levels. The biggest markets are located in Phnom Penh and in Siem Reap. Supplies of live chickens and ducks and poultry eggs are brought by middlemen directly to the markets and to restaurants. Consumers usually buy the poultry alive; the market retailer then slaughters the animal and prepares it before the consumer takes it home. There are frequent imports of poultry and poultry products from Thailand and Viet Nam. There is very little poultry export from Cambodia, but some layer ducks are sold to Viet Nam. Most of these movements of poultry and poultry products are not controllable by the State.

¹ Agricultural Development International (ADI), 2007. The impact of highly pathogenic avian influenza on the Cambodia poultry sector. Prepared for the FAO by ADI, Brisbane, Australia.

Figure 1. Marketing chain for poultry production in Cambodia (Agronomes et Vétérinaires sans Frontières, Cambodia, 2004²).



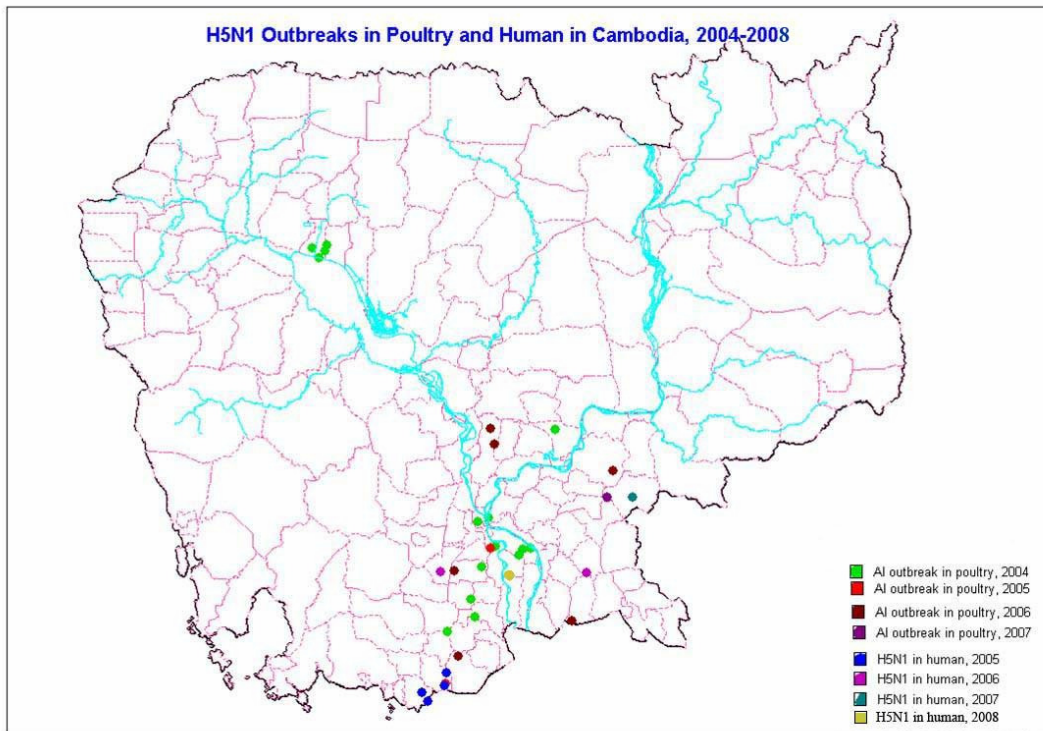
Highly Pathogenic Avian Influenza H5N1 in poultry was first suspected in chickens in Cambodia on 12 January 2004 in a commercial layer operation in Phnom Penh Province but mortalities had started around the 14 December 2003 (Desvaux et al., 2006³). The case was notified on 23 January 2004. A second confirmed case from a small-scale commercial farm in Phnom Penh, 10 km from the assumed index farm, was investigated on 16 January. It involved deaths of chickens, ducks, and geese. At this same time (14 January 2004) mortalities were occurring in a large variety of captive birds, captive exotic species and free-flying crows at the Phnom Tamao Wildlife Rescue Centre located approximately 45 km south of the city in Takeo Province⁴. Overall mortality in captive avian species reached 25%.

² Agronomes & Vétérinaires sans frontières (2004) *Review of the poultry production and assessment of the socio-economic impact of the highly pathogenic avian influenza epidemic in Cambodia*, final report for FAO's TCP/RAS/3010, Emergency Regional Support for Post-Avian Influenza Rehabilitation, Rome: FAO.

³ Desvaux, S., Sorn, S., Holl, D., Chavernac, D., Goutard, F., Thonnat, J., Porphyre, V., Menard, C., Cardinale, E., Roger, F. 2006. HPAI surveillance programme in Cambodia : Results and perspectives. *Developments in Biologicals*, 124, 211 - 24

⁴ Desvaux, S., Marx, N., Ong, S., Gaidet, N., Hunt, M., Manuguerra, J-C., Sorn, S., Peiris, M., van der Werf, S., Reynes, J-M. 2009. Highly pathogenic avian influenza (H5N1) outbreaks in captive wild birds and cats, Cambodia. *Emerging Infectious Diseases*, 15, 475 – 478.

There have been 24 poultry outbreaks recorded to date with the last outbreak detected on 22 December 2009, and also nine human H5N1 cases, with death occurring in seven of these. The most recent human case was confirmed on 16 December 2009⁵. 20 of 24 outbreaks were detected in the winter months (November to March). These periods coincide with releases of ducklings into rice fields in South Cambodia's and Viet Nam's Mekong region. The temporal occurrence of the eight recorded HPAI infections in humans coincides with periods of HPAI outbreaks in poultry. The first 4 human deaths from January to April 2005 corresponded to the period when Viet Nam experienced a very high number of human cases and deaths (60 cases and 18 deaths between January and June 05). Since early 2006, 4 of 6 outbreaks have been detected in August.



Outbreaks have occurred in 8 Provinces [Phnom Penh (2), Kandal (6), Kampot (2), Kampong Cham (6), Kampong Speu (1), Prey Veng (1), Siem Reap (2 but 3 villages in Feb 2004 outbreak), Takeo (4)] with human cases in 5 of these [Kampot (4); Kampong Cham(2); Kandal, , Kampong Speu and Prey Veng one each]. Apart from the outbreaks in Siem Reap all other outbreaks have been in south eastern provinces which are close or adjacent to the southern part of Viet Nam. Nationally, about 30,000 birds were lost to HPAI, and the medium- and large-scale duck and industrial-integrated layer and broiler farms bore most of the impact (Burgos et al., 2008⁶).

Commercial producers were more severely affected by market uncertainty and production downtime than by the disease itself. Culling caused particular hardships to smallholder farmers that had borrowed from micro-finance and banking institutions. There have been major changes in the markets for poultry products and also changes in the prices for other protein products. While this may have affected profit margins for producers with high fixed

⁵ As reported to WHO on 18 December 2009.

⁶ Burgos, S., Hinrichs, J., Otte, J., Pfeiffer, D., Roland-Holst, D., Schwabenbauer, K., Thieme, O. 2008. Poultry, HPAI and Livelihoods in Cambodia – A Review. Mekong Team Working Paper No. 3, http://www.hpai-research.net/docs/Working_papers/wp03_2008.pdf

costs and borrowings, the other losers are likely to be poor consumers who would have had to pay higher prices for protein during and after the outbreaks.

Phylogenetic analysis has shown that the H5N1 HPAI clade 1 viruses detected in Thailand, Cambodia and Viet Nam are linked to viruses isolated in Yunnan Province, China in 2002 and 2003 and the first isolates in Cambodia in 2004 cluster with a large number of H5N1 viruses isolated in Thailand in 2004 and 2005 (Buchy et al., 2007⁷). Characterization of 33 H5N1 viruses isolated from Cambodia from 2004 to 2007 indicated they are all clade 1 viruses and belong to H5N1 genotype Z (Buchy et al., 2009). Phylogenetic comparison of these isolates with 116 H5N1 viruses isolated from Southeast Asia in GenBank showed that viruses isolated from chickens, humans and ducks in Cambodia from 2005 onwards were grouped into 7 discrete clusters or sublineages that cluster with viruses that were isolated previously or contemporaneously in southern Viet Nam (Buchy et al., 2009).

Given the direction and volume of live poultry trade movements from Thailand and Viet Nam into Cambodia and particularly by middlemen into Phnom Penh, with virtually no biosecurity practised (van Kerkhove et al., 2009⁸), coupled with the recent molecular epidemiology findings (Buchy et al., 2009), it is highly likely that the source of the H5N1 viruses for the initial Cambodian cases in 2004 was poultry movement from either Viet Nam or Thailand. However, the poultry trade movement pattern and the molecular epidemiology studies, particularly the temporal findings, indicate that there have probably been multiple incursions of H5N1 viruses into Cambodia since 2005; the most likely source of these viruses was the live poultry trade from Viet Nam, followed by local dispersal within Cambodia.

Migratory wild bird movement appears less likely as the source of virus in Cambodia. Although the wild bird surveillance studies conducted in Cambodia have not detected any H5N1 viruses⁹, the numbers and species of live birds examined would likely not be of sufficient sensitivity to detect H5N1 viruses in live birds at the prevalence levels that are likely in healthy birds.

There have been no clinical outbreaks of HPAI detected in Cambodia from December 2008 until December 2009 when a human H5N1 case was reported and a poultry outbreak was subsequently detected in the same district. With endemic H5N1 infection in Viet Nam, the poultry trade from Viet Nam into Cambodia and a passive and active surveillance system of low sensitivity in Cambodia (as discussed later), it is not possible to conclude that Cambodia has remained free from H5N1 infection between December 2008 to December 2009. With the level of surveillance and reporting it is also difficult to identify if H5N1 infection has persisted at a low level in ducks or other village poultry in between incursions and new outbreaks or if the virus infection dies out before another incursion event.

⁷ Buchy, B., Fourment, M., Mardy, S., Sorn, S., Holl, D., Ly, S., Sowath, V., Vong, S., Emouf, V., Peiris, J.S.M., van der Werf, S. 2009. Molecular epidemiology of clade 1 influenza A viruses (H5N1), southern Indochina Peninsula, 2004 – 2007. *Emerging Infectious Diseases*, 15, 1641 – 1644.

⁸ Van Kerkhove, M.D., Vong, S., Guitian, J., Holl, D., Mangtani, P., San, S., Ghani, A.C., Poultry movement networks in Cambodia: implications for surveillance and control of highly pathogenic avian influenza (HPAI/H5N1). *Vaccine*, 27, 6345 – 6352.

⁹ Joyner, P., Yang, A., Gilbert, M. 2009. Wild bird surveillance for avian influenza in Cambodia. Wildlife Conservation Society, Final Report to FAO.

III. NATIONAL HPAI RESPONSE FRAMEWORK

Cambodia has had a National Comprehensive Avian and Human Influenza Plan since July 2007. This was developed from the 'Cambodia and UN Joint Programme for Addressing Avian Influenza and Pandemic Planning in Cambodia' that had earlier been endorsed by the Deputy Prime Minister (December 2005). The plan meets the objectives of the Government of Cambodia, the Asian Regional Framework and the FAO/OIE Global Strategy for the containment of avian influenza and its major components include:

- Component 1: Veterinary Service Strengthening
- Component 2: HPAI surveillance investigation and response
- Component 3: Strengthening Biosecurity in Poultry Production and Trade
- Component 4: Information Education and Communication
- Component 5: Pandemic Planning
- Component 6: Strategy Management

FAO is a major partner in all components. For national policy decisions, there is an Inter-ministerial Committee for the Control and Prevention of Avian Influenza at the central level (composed of representatives from MAFF (Chair), MoH as well as Ministries of Commerce, Interior, Finance and Economics, Council of Ministers, Customs Department, Provincial and Municipal Governors and DAHP (Secretary)). At the local government level Provincial Committees were established with multi-sector representation, headed by the Provincial or Municipal Governor with the Head of the Provincial Animal Health and Production Office as the Secretary. The international partner organizations providing technical assistance and emergency resource support include FAO, WHO, UNICEF, Pasteur Institute and funding agencies (AUSAID, ADB, EU, JICA, German Government, USAID and USDA).

In addition, the National Committee for Disaster Management (NCDM) has been designated to serve as the focal point agency for inter-ministerial cooperation on pandemic preparedness planning including avian influenza. The co-ordination structure also includes decentralized Government offices, the UN system and other partners.

NaVRI/DAHP is the lead technical agency for implementation of the avian influenza preparedness and outbreak plan. This entails many responsibilities. These include: rapid response to reports of suspect cases; formation of emergency response teams to investigate; collection and submission of samples to NaVRI; confirmation of laboratory diagnosis; notification of relevant agencies; declaration of outbreaks through the Minister; liaison and communications activities; establish infected, control and surveillance zones; initiate and ensure appropriate movement restrictions; coordinate depopulation and disposal; conduct outbreak and epidemiological investigations into source and spread of infection; liaise closely with CDC/MoH to determine public health risk. At the provincial level the DAHP takes a lead role in local liaison and coordination to implement control measures, assisting with field investigations, culling teams, carcass disposal, movement control and managing public awareness at village, district and provincial levels zones.

The outbreak plan activates the establishment of three Technical Task Forces overseen by DAHP during an outbreak. These include the Communications Task Force (led by NaVRI), the Investigation Task Force (also led by NaVRI), and the Control Measures Task Force (led by the Provincial Animal Health Offices, which control the relevant activities and report to the designated emergency response team leader). With FAO support NaVRI/DAHP/MAFF

has prepared an official Guide for Avian Influenza Outbreak Investigation and Emergency Response that forms the basis of the outbreak investigation and response activities.

Control of HPAI outbreaks in poultry to date in Cambodia has been by depopulation and associated control measures. Vaccination against avian influenza is not permitted and there is no process or system for compensation for loss of poultry or livelihoods in Cambodia.

Case detection in poultry originally depended on passive reporting of mortalities or outbreaks from farmers or villagers to NaVRI /DAHP or provincial animal health officers and from tracing and investigations after human case detection. In an attempt to enhance passive reporting, a considerable effort has gone into specific awareness, biosecurity and human safety training for HPAI by FAO/DAHP and NGO groups for village animal health worker (VAHW), village chief (VC), district veterinary officer (DVO) and small-scale commercial duck farmers as well as at community forums for backyard farmers. A system of monthly reporting of individual disease investigations by VAHW and VC to DVO's provides information on background mortality rates in districts and it is expected that the VAHW or VC will report directly to NaVRI if suspect HPAI cases occur. As well as attendance at training courses, supply of PPE and a substantial amount of communication material is left with VAHW and VC. No other incentives are provided to encourage reporting and the lack of any compensation system may lessen the chance that farmers or villagers will report to VAHW or VC or directly to NaVRI by an avian influenza hotline.

It is widely recognised that the competency and skills of the veterinary services need to be reinforced substantially, particularly at the local level. This process has been initiated by the conduct of a PVS mission by OIE in June to July 2007; this will be followed up with a PVS gap analysis in 2010. One critical factor is the lack of legislation regarding veterinary services. This was initially addressed by participating in a the First Workshop on Veterinary Legislation and Governance organised by the OIE/AusAID Program on Strengthening Veterinary Services in Southeast Asia (PSVS), held in Phnom Penh in April-May 2008. Some progress has also been made in developing veterinary legislation through an FAO project supported by the German Government funding, but legislation is not yet in place, and this needs further follow-up.

A programme of active surveillance has also been established to target the (largely small scale) commercial duck population. Market surveillance initially planned to be undertaken through all 24 provinces. Following the market assessment in 24 provinces, the team decided to focus on the main markets. Twelve markets in eleven provinces are now targeted and cloacal, tracheal swabs and blood samples, collected from 30 ducks from each market twice monthly. Swabs are tested by virus isolation in chicken embryos and influenza A and H5 PCR tests and serum can be tested for antibody to avian influenza H5N1, H7N1 and H9N2 viruses by haemagglutination inhibition (HI) tests at NaVRI.

Wild bird surveillance has been contracted out to the Wildlife Conservation Society (WCS) with the samples submitted to NaVRI for virological testing. The first study (Nov 07-June 08) collected samples from 955 birds of 71 species (62% wetland species; 47% wild-caught and 53% from wild bird trade for food, pets, or merit-release). The wetland areas targeted were in Kandal (Koh Thom) and Banteay Meanchey (Ang Trapeang Thmor). The second study (Dec 08 to June 09) collected samples from a total 606 birds of 38 species from 9 sites within 6 provinces (Battambang, Siem Reap, Takeo, Kandal and Phnom Penh) Two sites were for wild bird surveillance in important wild bird habitat areas (Kraing Chek, Kandal Province; Phnom

Tameo, Takeo Province); one site for wild bird sampling at a restaurant, 3 sites for trapper-caught birds for food and 3 sites for merit bird sampling. None of the birds sampled were positive for H5N1 viruses¹⁰.

NaVRI conducts the official laboratory testing for HPAI diagnosis, or surveillance in poultry. Swabs from suspect cases or surveillance samples are inoculated into 9-11 day-old chicken embryos and haemagglutinin positive samples are tested for H5 and N1 genes by PCR tests as well as by HI tests to detect H5 subtype antigenically. Positive cases must be confirmed by submission to the National Influenza Reference Laboratory at the Pasteur Institute in Phnom Penh prior to any official declaration of an outbreak. The laboratory staff at NaVRI received initial support and training in avian influenza diagnosis from the Pasteur Institute after the first outbreaks. FAO arranged further training in virus isolation and HI testing by consultants from USA. Additional enhancement of the HPAI diagnostic capacity at NaVRI was undertaken in 2007-2008 through a series of missions by an international consultant from Australia (Dr Ibrahim Diallo) who helped upgrading the biosafety in the virology unit, introduced real-time PCR testing for influenza A and H5 detection and compiled a laboratory manual with SOPs for the virology testing. Improved quality control systems were introduced and the laboratory has successfully participated in proficiency testing for the HI and PCR tests with samples from IPC and AAHL, Geelong. NaVRI has recently been relocated to a new laboratory facility. The new facility has been designed to conduct the relevant virology procedures with a high level of proficiency in a safe manner. Although there were some initial problems exacerbated by electricity failures, the facility appears to be working reasonably well. The consultant returned to assist with the checking and calibration of the PCR tests after the relocation and this testing appears to be working well and has resulted in detection of some LPAI viruses (not H5N1). NaVRI staff has been included in the Regional Laboratory Network Meeting and Biosecurity Training in Bangkok in September 2009. Further antigenic and genetic characterization of any isolated avian influenza viruses can be conducted very efficiently at the National Influenza Reference Laboratory at IPC.

NaVRI has set up an epidemiology unit that would be expected to have a role in analysis of data from the HPAI surveillance systems and providing risk assessment advice to DAHP. However it appears that data is kept within NaVRI, and not analysed. Currently, the capacity of this unit needs further development to be effective in this role. Further specific epidemiology training, and database and mapping system development appear to be needed.

IV. DONOR, PRIVATE SECTOR AND TECHNICAL ASSISTANCE SUPPORT

There are several agencies involved in providing technical assistance and support in Cambodia contributing to the HPAI programme.

FAO has been the dominant actor in the past five years in relation to control of HPAI at its source. In this process FAO has co-operated with UN sister organizations such as WHO, UNICEF, IOM and WFP under the co-ordination of the UN Resident Co-ordinator in the Avian and Pandemic Influenza Partnership Co-ordination Meetings. Another active player has been the NGO CARE, with AusAID funding. The World Bank is poised to become a leading actor with their recently started US\$ 11 m project on Human and Avian Influenza, which will very likely see FAO as responsible for the provision of technical assistance.

¹⁰ Joyner, P., Yang, A., Gilbert, M. 2009. Wild bird surveillance for avian influenza in Cambodia. Wildlife Conservation Society, Final Report to FAO.

Donors such as the US, Germany, France, Japan, Australia and the EC have also supported not only FAO but several other international organizations (OIE, USDA, CARE, AED, GAINS, VSF, etc.) and research centres (Pasteur Institute, CIRAD, etc.) for HPAI related work. FAO has had collaborative arrangements with a number of NGOs (CELAGRID, WSF/GAINS, etc) and Government authorities to undertake studies and active surveillance in markets, villages and wildlife but mostly in the context of specific projects. AusAID has funded a regional programme for developing community-based avian influenza prevention and control capacity for CARE implementation in the Greater Mekong area until 2010. In Cambodia, CARE is working with communities to reduce the vulnerability of people to HPAI across the Mekong Region. It is also playing a role in influencing the confinement of chickens as a step towards increased bio-security; to this end it has set up a pilot programme in 194 villages using Village Animal Health Workers (VAHW's) in fencing the birds with locally available material; providing know how to grow water spinach and breeding earthworms which mixes with rice husks to provide alternate feeding because of relative confinement versus scavenging. There has been some element of success in this programme and an increase in income from poultry has been recorded. However, by its own estimates, it is not likely to impact more than 10% of the backyard poultry growers in the country.

In March 2006, the World Bank Board approved a US\$ 11 million grant for Cambodia to support the implementation of the Cambodia Comprehensive AHI National Plan, which is designed to minimize the threat posed to humans and the poultry sector by AHI infection in Cambodia, and to prepare for, control, and respond if necessary, to a human influenza pandemic. It was officially signed and launched in May 2008, but it is not fully operational to date¹¹. This Project is expected to provide direct support to the implementation of the National Comprehensive AHI Plan to produce the following outcomes: (a) contain the spread of the disease, thus reducing losses in the livelihoods of commercial and backyard poultry growers and damages to the poultry industry and diminishing the viral load in the environment; (b) prevent or limit human morbidity and mortality by stemming opportunities for human infection, and strengthening curative care capacity; and (c) prevent or curtail macroeconomic disruption and losses by reducing the probability of a human pandemic and improving emergency preparedness and response. The project would finance activities fully consistent with the objectives and the description of the National Comprehensive Plan, with a focus on the financing of items not already covered by other financiers (technical and financial gaps). The Project would include three components. The first component on animal health is detailed below.

Component A -- Animal Health Systems (total cost of about US\$5.80 million). The objective of the animal health component is to minimize the levels of infection with H5N1 HPAI virus in Cambodia. The component objective would be achieved through six subcomponents (four major and two minor). The first subcomponent will strengthen veterinary services from the central to the village level so as to enhance the capacity to prevent, recognize and respond to avian influenza and other emergency animal diseases. This will be achieved through strengthening and consolidation of training resources, reviews of training needs and curricula for village animal health worker (VAHW) training, enhanced reporting by trained VAHWs to

¹¹ This World Bank project has been under discussions with partners such as UNDP (for component with NCDM), WHO (for human health) and FAO for animal health for more than two years. The partnership between UNDP and NCDM was terminated at the end of 2007. Finalization of contracts with the remaining UN agencies depends on administrative procedures set within the UN agencies, the Government and the World Bank. Discussions on implementation modalities have reportedly been the major source of delays for project operations.

District Veterinary Services, provision of resources to support disease responses for district and provincial level veterinary services, and development of appropriate animal health laws. The second subcomponent will provide training in emergency vaccination, and necessary resources to implement emergency responses. Some additional epidemiological studies including studies in wild birds will also be conducted under this subcomponent. The third subcomponent will review high risk practices in production and marketing that facilitate persistence and transmission of infection, and implement appropriate measures to reduce these risks. The fourth subcomponent will include some additional epidemiological studies including studies in wild birds, and will strengthen existing animal health IEC programs. The fifth subcomponent will enhance pandemic preparedness response for animal health staff, and the sixth subcomponent will provide support for management of the animal health component. FAO is expected to play a role as provider of technical assistance for this component through a contract with the Government.

Besides the World Bank and FAO, the UN system has been active in avian influenza prevention and control mainly through WHO, UNICEF and the office of the UN Resident Coordinator (UNDP). The UN Resident Coordinator has indeed played an important coordinating role between government ministries and other UN Agencies. This office produces a weekly newsletter in collaboration with the relevant ministries, FAO and WHO.

The WHO is currently engaged in surveillance for H1N1, of which at the time of the RTE visit there have been approximately 400 cases with 4 deaths reported. The Pandemic preparedness response plan has been modified in the light of H1N1, focusing more on managing a low mortality but high incidence of disease. Currently sentinel sites in the country are used for the collection of biological samples. There was a technical working group on infectious diseases created in the light of the H5N1 outbreaks. This involved the MOH, Pasteur Institute, WHO and FAO; this group now focuses on H1N1, also includes NAMRU, and does not meet regularly.

With funding from Japan and Australia, UNICEF in collaboration with the Ministry of Health and World Health Organization launched a massive communication campaign in 2006. Over 1.5 million posters, 560,000 booklets have been printed and distributed through multi-sectoral meetings involving government officials, and through the existing networks of NGOs, Cambodian Red Cross, religious leaders and teachers in all 24 provinces. UNICEF also trained 6,000 monks and 78,600 teachers on public awareness on avian influenza. 7,200 school kits were developed and distributed along with soaps and brushes to all primary schools in the country. 406 billboards have been erected throughout the country and 12 TV/radio spots have been produced and aired. Under this programme there has been an emphasis on communicating the nature of disease and its impact on human health. In 2008, UNICEF also prepared material for pandemic preparedness and these posters/leaflets are used in awareness campaigns. These have also been distributed to villages and schools.

Whereas the awareness on avian influenza has become very high and Cambodia is reportedly 'better prepared' for a pandemic, the representative of UNICEF believed that it has probably not had a great impact on the behaviour of the population in terms of washing hands, etc. unless human deaths are reported. It also believes that despite several efforts in the direction of 'fencing and caging' chickens, poultry growers in the backyards are unlikely to effect these changes since it would result in feeding the chickens (incurring costs) versus scavenging (no cost).

Private Sector: Poultry, Duck Meat and Egg production.

There is a very small role played by the commercial private sector in poultry production in Cambodia. Other than the large Thai based company CP, there are a few small chicken layer farms in the country. These are mostly of the sector 3 type and poorly managed, contributing a very small percentage of the total egg production. There is insignificant broiler production in the country.

There are some small to medium duck (300 to 5000 ducks) growers in the country. These growers play a role in both duck egg and meat production. The production methods followed by them are very basic and no real biosecurity norms are followed. Many of these growers have attended the FAO sponsored training programmes but with limited uptake from the course content. There are also traditional hatcheries which produce ducklings for three months (dry months) of the year but which have had no formal biosecurity training and follow very poor biosecurity principles.

Other players in the private sector are the VAHW's (Village Animal Health Workers) who have also received training (in several cases more than once) who form the basic layer of the biosecurity and awareness programme. They also are providers of field information of poultry population and disease situation data (for TADinfo), but their real contribution to the surveillance for and reporting of the H5N1 disease situation in Cambodia is limited due to the lack of incentives to farmers for reporting disease.

CELAGRID is an NGO with some commercial enterprises that takes on output-based contract for the FAO HPAI programme (and others). It has been involved in the following activities which have been outsourced by FAO.

- a) Questionnaire-based market survey of poultry in Cambodia, carried out in 24 provinces in 2007, and working with FAO Rome.
- b) Village animal health worker evaluation in the 24 provinces in which FAO had trained up to 2007 more than 5,000 people. Results showed that they were effective, but many necessary skills still lacking.
- c) Asian Partnership for Emerging Diseases (APED) project, funded by IDRC. CELAGRID in undertaking the backyard livestock component of this multi disciplinary and multi country project.
- d) Duck production system and hatchery survey, currently being finalised with the Animal Production group in Rome.
- e) Fertile egg production for laboratory; started with 120, now 720 eggs per week.

V. ROLE AND ACTIVITIES OF FAO

Since early 2005, FAO has been supporting Cambodia's efforts to prevent and control HPAI. As end-March 2009, twelve regional and national projects have contributed to this objective.

The HPAI programme in Cambodia is probably the most comprehensive in terms of areas covered (e.g. socio-economic studies, IEC activity, poultry disease surveillance, laboratory capacity, poultry genetics studies, wild bird surveillance, etc.) and also one of the longest and better funded on a per capita basis. FAO's HPAI work was thoroughly reviewed in the 2007 Evaluation of FAO activities in Cambodia. A detailed review of the main projects conducted can be found in annex 3.

Table 1. Avian Influenza Projects implemented in Cambodia as of October 2009

Project	EOD	NTE	Donor	Total Approved Project Budget	Total Expenditures under the project	Budget Allocated for Cambodia through FBA	Expenditures and Commitments under FBA for Cambodia
National - (OSRO/CMB/402/AUL)	01-Apr-04	30-Jun-05	Australia	50,000	50,081	46,948	47,024
National - (OSRO/CMB/502/AUL)	25-Nov-05	24-Feb-06	Australia	33,197	21,818	33,197	21,818
National - (TCP/CMB/3002)	01-Feb-04	31-Oct-05	FAO	349,935	349,935	99,433	99,433
National - (GCP /CMB/027/GER)	01-Dec-07	31-Mar-09	Germany	3,506,892	3,256,090	1,890,124	1,892,452
National - (OSRO/CMB/401/GER)	30-Mar-04	30-Jun-05	Germany	50,000	49,866	49,866	46,823
National - (OSRO/CMB/403/FRA)	23-Apr-04	30-Jun-05	France	53,571	53,639	15,200	15,365
Total National Projects:				4,043,595	3,781,429	2,134,768	2,122,915
Regional - (OSRO/RAS/602/JPN)	30-Mar-06	31-Dec-09	Japan	11,400,052	11,003,464	275,095	276,492
Global - (GCP /INT/010/GER)	13-Jul-06	15-Nov-09	Germany	2,563,665	2,152,851	128,030	113,503
Regional - (OSRO/RAS/505/USA)	25-Sep-05	31-Mar-07	USA	6,000,000	5,944,049	545,110	544,432
Regional - (OSRO/RAS/401/JPN BABY 01)	29-Mar-04	30-Nov-05	Japan	334,068	353,008	304,170	231,646
Regional - (TCP/RAS/3010)	01-Apr-04	30-Sep-05	FAO	362,013	362,013	35,668	35,668
Regional - (OSRO/RAS/604/USA BABY01)	01-Aug-06	31-Dec-10	USA	4,050,000	3,223,883	2,174,577	1,758,085
Total Global/Regional Projects:				24,709,798	23,039,268	3,462,650	2,959,826
Grand Total:				28,753,393	26,820,697	5,597,418	5,082,741

VI. SYNTHESIS AND DISCUSSIONS OF FAO'S CONTRIBUTIONS AND ROLES

Relevance and Appropriateness of FAO's Strategy and Programme at country level:

- Adequacy of FAO's support vis-à-vis the national agenda and priorities, national development needs and challenges and decision-making processes;

FAO has been at the front line since the first outbreak of HPAI in 2004, providing advice to the Government and advocating to donors and several levels of government for the need to improve the funding and structure of the veterinary services to deal with avian influenza and other TADs. Action plans were developed first within the UN System (in 2005) and later under Government leadership (2007). Several challenges and gaps however remain, chiefly among them the absence of adequate animal health legislation to deal effectively with TADs, and the poor delivery capacity of the veterinary services. Despite FAO providing specific support, including the hiring as national consultants of staff purposively released by the Government, the structural weakness of the Cambodia Government has limited the uptake of the assistance provided (e.g. for drafting a new veterinary law, upgrading the laboratory equipment and staff skills, etc). FAO global (GCP/INT/010/GER), regional (OSRO/RAS/505/USA, OSRO/RAS/604/USA) and national (GCP/CMB/027/GER) interventions have all had to deliver under very difficult conditions. Some have achieved the expected outputs, mainly those which used appropriate strategies for the country e.g. working directly with decentralized governments and involving the network of Village Animal Health Workers.

Cambodia is in a sensitive position. It has seen only 24 outbreaks of HPAI, seven of which were associated with human fatalities. The last human case was recorded on 16 December 09 before a confirmation of a poultry outbreak on 21 December 09. Inevitably, with the relatively small number of outbreaks, low numbers of human deaths, relative absence of commercial poultry enterprises and many other priority constraints to national development, there is considerable complacency regarding the disease; the USAID and WHO offices both indicated that there are much higher priority human and zoonotic diseases which affect the country, for example. So should so much be spent by FAO on such an apparently small problem in Cambodia? Clearly it is not that simple. Cambodia is wedged between two countries which have both experienced considerable losses from HPAI (Thailand and Viet Nam, and in the case of Viet Nam a country which continues to have human cases), and is a country in which the disease may well persist and/or be reintroduced, given the weaknesses of surveillance and movement controls, and the strength of informal (including trans-frontier) trade in poultry. FAO must consider the vulnerability of Cambodia, but must do that in a much broader context than purely HPAI preparedness and response.

On the great efforts by FAO in its communications programmes, undoubtedly an increased awareness of HPAI, of how to reduce human risk of infection, and of how to reduce the risk of exposure to poultry through biosecurity, has been brought about as a result of the various campaigns and training programmes; nevertheless, as reported in the last KAP survey¹² and from the evaluation team observations, there appears to be an astonishingly wide gap between knowledge-belief of people and practice at all levels (vendors, middlemen, farmers, etc).

¹² TNS (2009) Impact of AI Campaign 2008.



Phnom Penh market. Left, multiple species of poultry for sale in a public pathway through the market, and right the slaughter and processing immediately adjacent. Photos by the RTE2 team. FAO has been engaged in conducting a market forum on biosecurity practices in this building complex on the floor above.

- Extent to which FAO's field work is in line with the Organization's priorities (as described in programming documents such as the National Medium Term Priority Frameworks, the FAO's Programme of Work and Budget, the FAO/OIE Global Strategy and the FAO Global Programme for the Prevention and Control of HPAI);

The FAO programme is generally in line with the Organization's priorities, and particularly with those included in the FAO/OIE Global Strategy. In the past it focussed on active disease surveillance and the strengthening of laboratory and overall government staff capacity. Today, and following a decline in funding, it is placing particular attention to surveillance in live bird markets, issues of awareness of HPAI, and of biosecurity measures necessary to reduce the disease in poultry and to reduce the risk to humans. However, there has been very weak adoption of measures being advocated. Some innovation in approach is undoubtedly required to induce behavioural change. For marketers this can probably only be achieved by regulation and investment in simple but well designed facilities (the stick), and for small-holders to report disease as part of the surveillance programme, there is undoubtedly the need for more attractive incentives (the carrot).

- Extent to which the various FAO activities at country level are underpinned by a strategy and form a coherent programme, with consistent approaches and common goals;

Comprehensive national avian and human influenza plans covering appropriate activity areas are in place, with high level policy support at the central and provincial government level and clearly defined operational roles and responsibilities for the NaVRI/DAHP as the lead technical agency. FAO has had a major role in facilitating this.

The National Comprehensive Avian and Human Influenza Operational plan exists and has associated documents such as the AI Outbreak Investigation and Emergency Response Guide. The evaluation team considers that these need to be kept under constant review and updated periodically. There is also an urgent need to involve a wider set of partners in the process, such as representatives of the poultry industries and the NGOs in review and revision. This is particularly relevant with respect to the practicalities of biosecurity and movement controls. Feedback from these groups is also required to determine what incentives are needed for the

industry to report suspicion of disease and this probably needs to include discussion on compensation.

On the one hand, the FAO's programme relates directly to the six components of the National Comprehensive Avian and Human Influenza Plan, and the programme has developed a set of outputs which are linked to 4 of the 6 components; but on the other hand the components and the outputs are very broad, and there is not a clear, well articulated framework that can be used as a planning and communication tool for FAO's engagement, which is amenable to regular updating. FAO's comparative advantage is in setting out clear planning tools, providing strategic technical inputs, and acting as a lead facilitator in bringing other stakeholders around the table to ensure consensus, to ensure an evidence base to policy and strategy, to ensure that gaps are identified, and to promote advocacy for sustainable funding based on a gap analysis.

Veterinary legislation to support existing policies and operational plans is not enacted despite good progress on drafting legislation in the FAO/German Government funded project (GCP/CMB/027/GER). This needs to be followed through.

- Coherence and integration of regional projects into country programmes/activities;

The cross-boundary market value chain studies involving Cambodia, Viet Nam, Thailand and Lao PDR, and managed through ECTAD RAP, appears to be well integrated within the country programme, with use of a local NGO (Celagrid) to carry out the job, and with a final joint workshop planned for February 2010. Joint government to government MOU's to tackle emerging issues have been developed with Thailand and Viet Nam to date. Other regional/global projects with large national components agreed at local level (such as OSRO/RAS/604/USA baby 01 and GCP/INT/010/GER) have been operated in close association with national projects (such as GCP/CMB/027/GER).

- Appropriateness of FAO interventions in terms of:
 - Approach: comprehensiveness;
 - Duration: short term inputs versus long-term technical assistance; and,
 - Focus: HPAI versus other Transboundary Animal Diseases

As raised above, FAO cannot afford to have all the eggs of its support to transboundary disease preparedness and response in the basket of HPAI, with the contrasting understanding of the high priority of other constraints to human and animal health, as well as the relatively low, but ever present, risk of further human disease. A broader approach to the interventions is considered appropriate.

The FAO interventions have targeted major issues relating to HPAI in the Cambodian context but there will be a need for long-term technical support to achieve sustainable improvement in surveillance, disease diagnosis and control responses for HPAI and other TADs, as discussed below.

Efficiency

As concluded in the 2007 evaluation of FAO activities in Cambodia, HPAI-related initial interventions (2004-05) were quick, but not at the level required. The start of project GCP/CMB/027/GER (early 2006) provided the critical mass needed to effectively respond to

HPAI outbreaks. FAO was slow to provide adequate backstopping and staff to the HPAI programme in Cambodia. The absence of an FAOR and the recruitment of staff who were new to FAO operational and administrative regulations caused delays and some frictions within FAO and with the Government. The arrival in 2007 of a full-time international team, composed of a CTA, an operations officer and administrative staff dramatically improved programme delivery. The adoption of a programme approach, whereby the CTA was responsible for the main projects implemented in the country (such as GCP/CMB/027/CMB and OSRO/RAS/604/USA) was indeed very efficient.

A major issue affecting project delivery was the payment of incentives to nationals, a widespread but controversial practice in Cambodia. It was considered that in the absence of such incentives Government and private sector (VAHW) staff would be less inclined to deliver. Thus, most FAO field activities between 2007 and early 2009 were conducted with Government staff, who were temporarily released from their other duties, under contract with FAO and VAHWs being paid on a monthly basis (for a short period of time in 2007 only) or receiving monetary incentives according to UN regulations (restricted to those attending training from 2008 onwards) for their work. The FAO HPAI programme stopped this practice in early 2009 following the end of project GCP/CMB/027/GER. More recently, in December 2009, the government issued a note to stop all salary incentives to government counterparts in all programmes implemented by development partners from January 2010.

- Timeliness of FAO's response to requests for assistance on HPAI prevention and control

While generally the timeliness of FAO's responses have been appropriate, and has improved over time; there have been considerable delays in the negotiations with Government and the World Bank (WB) on FAO's technical assistance role in the WB project; it is understood that these delays have been multi-factorial and multi-institutional, but it is an area which remains unresolved, and which requires urgent attention of all parties. Communication and coordination with DAHP, NaVRI, other UN agencies and donors appears to be generally sound and the FAO staff appears to be respected within these bodies.

- Adequacy of FAO's response, including human/financial resources, operational, administrative, monitoring and reporting arrangements

The FAO response was considered adequate both in terms of financial (over US\$ 5.5m in total to date) and human resources (52 staff in total, with 4-5 regular international staff) in the period 2007-09. Operational and administrative arrangements now seem to be satisfactory as well. It is unclear whether the resources mobilized for 2010 (mainly OSRO/RAS/604/USA) will be enough to sustain ongoing activities and the operational structure built for implementing the programme. FAO involvement in the World Bank project would certainly be a major boost, and besides helping FAO play a major technical role on animal health issues it would provide the FAO HPAI programme with an opportunity to build on the success of previous activities while reforming or shedding those that prove to be not very effective.

- Timeliness and adequacy of technical and operational support from FAO Headquarters (HQ) and decentralized offices (including ECTAD units and RAHCs) to country level activities, including:

There have been significant difficulties in the past associated with support to many projects from the in country FAO representation and FAO Regional office, most of them raised in the

2007 evaluation of the FAO activities in Cambodia¹³, but these have largely been resolved, and current support from ECTAD Bangkok is seen as strong and effective. The programme has also received backstopping from FAO HQ on many areas, including the socioeconomic impact assessment, TADinfo deployment and wildlife activities. Follow-up to FAO HQ missions has been less noticeable than in the case of ECTAD Bangkok, with the former being more in the form of one-time visits while staff from RAP (C. Ahlers and then C. Benigno in particular) has been more often to the country.

Effectiveness of individual country programmes

The substantial resources committed to fight HPAI in the country have certainly strengthened individual skills and knowledge of several hundreds Government staff and VAHWs. The effects are less noticeable at institutional and organizational levels. For example, in spite of FAO support to developing national HPAI policies and preparing a draft veterinary law, the lack of an adequate legal framework has reportedly limited the engagement with the private sector (both large and small commercial producers) and preparedness for other TADs. Another major challenge to the use of FAO outputs (particularly of public awareness work) is public fatigue (i.e., in view of the small number of human cases reported) and inobservance by public and poultry producers alike of several practices promoted by the programme.

The FAO/DAHP training programmes in HPAI awareness, risk communication and biosecurity to the VAHW, VC and DVO, and the involvement of DVO's with FAO in re-training of VAHW and in community and market forums, is helping to foster grass-roots level public-private partnerships. However some groups appear not to have been included in HPAI awareness and biosafety and biosecurity training activities, for example: duck egg hatcheries, staff involved in poultry slaughter at markets.

The quality of the printed and audio-visual communications material used for awareness, risk communications and biosecurity training is generally good. However some of the literature produced in the early days focused mainly on public health aspects (e.g. washing hands, sleeping well, etc.). This has now largely been corrected by developing more targeted messages, but still the team noted that poultry producers and other targeted audiences should have been more involved in preparing such documents to ensure adequacy of the material.

Despite the broad improvement in HPAI awareness and the biosecurity and biosafety training for farmers, middlemen and live bird market sellers, safety and biosecurity practises are poorly adhered to or completely ignored. FAO needs to foster innovative approaches to improve the uptake of practical safety and biosecurity activities in farms, villages and markets.

The combination of enhanced passive surveillance for early outbreak detection through the VAHW, VC, DVO network, and of active surveillance of ducks through the high-throughput duck markets to detect build up or new incursions of H5N1 viruses, is a sound approach to risk assessment. This should enable Government to reduce the risk of further outbreaks and prevent human infection. However, the lack of a compensation for poultry or livelihood loss from culling, the absence of legislation that would require reporting of diseases, and other incentives, all reduce the chances that farmers will report disease to VAHW, VC or NaVRI. The detection of the recent human case in December 2009 in Kampong Cham province 5 days

¹³ <http://www.fao.org/pbe/pbee/common/ecg/370/en/CambodiaEvaluationReport.pdf>

before detection of the poultry outbreak in the same district serves as an indicator that despite an improved surveillance system the incentives to report suspect disease cases are lacking.

The efficiency, effectiveness, sensitivity and sustainability of the active surveillance in ducks through live bird markets needs to be kept under constant review to ensure the best value results from this activity. Are the best markets being targeted? Are the district staff attempting to get the most appropriate samples according to the study design, or just the most convenient samples? Is there adequate rationale for the sample size, frequency and location for the duck surveillance so that sound and scientifically valid explanations can be provided to funding partners to justify ongoing funding?

The wild bird surveillance activity based on sampling of healthy birds is too insensitive and not cost-effective. If the objective is to determine if wild birds are being infected with H5N1 viruses either in, or on route to, Cambodia, collection and testing of swabs from dead wild birds of selected high risk species in selected districts with wetlands or habitats would likely be more effective. VAHW in selected districts could be trained to submit suspect sick or dead wild birds to DVO for swabbing and submission to NaVRI.

The Animal Health Hotline for passive surveillance is a useful initiative and is meant to be manned 24 hours a day. The throughput is recorded and checked at monthly meetings but it is relatively expensive. In addition, some reportedly lost confidence in the hotline as “nobody came to help”. Furthermore, more epidemiology value-adding is need with both the passive and active surveillance systems. Some level of mapping, analysis and measure of sensitivity is needed on a spatial and temporal basis for the negative data gathered from the surveillance activity since December 2008.

Training of staff at NaVRI has been well supported from FAO through the engagement of international consultants from the USA and Australia for training in HPAI virus isolation, PCR testing and HI serology testing. The trained staff has been shown to be proficient by inter-laboratory proficiency testing panels from IPC and AAHL. The new facilities at NaVRI are suitable for quality diagnostic testing for avian influenza viruses. There is also ready access to the National Influenza Reference Laboratory at the Pasteur Institute for confirmation of positive cases and high quality antigen and genetic characterization of viruses.

With the lack of outbreak cases the laboratory does not have a lot of diagnostic sample throughput, and has limited experience with positive field cases. This is offset by a reasonable throughput of surveillance cases. The ongoing maintenance programme for technical equipment and maintaining facilities at the required biosecurity level is expensive. A clear policy and ongoing funding are needed to build and sustain laboratory capacity at NaVRI.

Although it is apparently planned in the World Bank project, the evaluation team consider that it is not cost-effective to set up virus sequencing capacity at NaVRI. This is given: the good access to the Pasteur Institute for antigenic and genetic characterization of H5N1 and other avian influenza viruses; the specialist skill levels required; the expense of reagents and the cost of equipment and maintenance.

DAHP has engaged OIE to undertake a PVS evaluation of Veterinary Services and has committed to the next step of undergoing a gap analysis in 2010. This shows commitment to improve veterinary services and provides an opportunity for advocacy by FAO to enhance the process. Having said that, it must be stated that the competency and skills of the veterinary

services at the district level need to be reinforced, particularly at the local level. Continuous training and support for this group will underpin a sustainable disease investigation and surveillance capability in Cambodia.

Epidemiology Capacity – there is a need to enhance this capacity in DAHP, especially analyzing and using data from the surveillance system to conduct risk assessment and for risk management. Improvement in demographics of the samples sources at district and provincial levels for ducks could contribute to risk assessment and management. It was also uncertain as to how much analysis was being conducted on passive surveillance data with respect to risk assessment for districts and provinces. The TAD-Info system in Cambodia is not being used effectively, and should arguably have been introduced in a few selected provinces before being expanded as training and capabilities improved. Now it is only operational in the five provinces supported by the FAO SLPP project (GCP/CMB/028/EC) but no analysis or use is reportedly made of the data gathered.

Cross-border market chain studies are being coordinated by the ECTAD-RAP so that markets can be mapped at the regional level. Individual country workshops have been held by Celagrid including a final workshop with local stakeholders. There has also been separate government to government activity with MOUs for Cambodia/Viet Nam and Cambodia/Thailand in place and Cambodia/LaoPDR in progress. The plan is to target adjacent areas in each country for the initial studies.

- Extent to which improvements in these areas have contributed to increasing national capacities to prevent and control future outbreaks of HPAI and of other transboundary and zoonotic animal diseases

Clearly there have been some spillovers to the capacity to detect and respond to other diseases, but it must be emphasised that this capacity is very weak.

Effectiveness of global/regional programmes at country level, in particular the extent to which the:

- Crisis Management Centre – Animal Health has improved early response and the design of follow-up interventions.

FAO initiated its emergency response technical assistance to the Government of Cambodia soon after the regional outbreaks in 2004 and have contributed to emergency response activities as required and contributed to the development of the National Comprehensive Avian and Human Influenza Plan for Cambodia.

- GLEWS information, analysis and technical expertise have improved disease response and understanding of HPAI epidemiology

Reports are regularly made to GLEWS and the regional and international data reported via GLEWS is scrutinised by the Technical Unit on a regular basis and considered valuable.

- OFFLU scientific data exchange and technical expertise have improved national capacity for laboratory diagnostic, vaccine efficacy and development

Viruses are sent to National Influenza Reference Laboratory at the Pasteur Institute in Phnom Penh for genetic and antigenic characterisation. Virus sequences are deposited in Genbank

and viruses are shared with international colleagues so they are accessible through the OFFLU network. Phylogenetic comparisons of viruses from Cambodia with other H5N1 viruses from the region and internationally have been undertaken and published.

- Regional networks have contributed to national capacity building and information-sharing

Staff from NAVRI are members and have participated in the Southeast Asia Regional HPAI Surveillance and Laboratory Network and will be involved in the coordinated laboratory proficiency testing programs.

- Research and technical expertise on wildlife has improved countries' understanding of the role of migratory birds in the spread of HPAI.

Cambodia has been involved in wild bird surveillance field projects through collaboration with WCS; as recorded above the sensitivity of the surveillance to date has not added to the understanding of role of wild birds in spread at the country level.

Sustainability and Impacts

- The *likely* effect of FAO's work on the institutional, organizational and human capacity of affected and at-risk countries beyond HPAI

There are several areas of work whose effects will be noticeable even after a prolonged period of time e.g. public awareness of HPAI; laboratory capacity; VAHW and Government staff's knowledge of HPAI symptoms and diagnosis. There are others which will very likely end or diminish without further assistance e.g. active surveillance, disease reporting, etc. It is more difficult to evaluate to what extent the work done so far has contributed to a reduction in the prevalence and circulation of the virus. It has been suggested that the low density of poultry in the country and the lack of incentives for reporting are behind the relatively low number of outbreaks. After all, human cases since 2005 have been few and far apart, and no great impact on mortality in chickens, even if it is being caused by HPAI, has been reported. In any case, the dismantling of the ongoing active surveillance and subsequent fall of disease reporting will not allow for tracking of the status of virus prevalence, nor will allow building on this capacity for surveillance of other diseases. For the time being the FAO HPAI programme and the incoming World Bank project should still provide funding for these activities but there is certainly a need to have a fuller understanding of the dynamics of HPAI in Cambodia.

The main concern however is the minimal change of behaviour taking place both by the public sector and by the poultry producers, which is a key element for reducing the risk of new outbreaks and of poultry to human disease transmission. One reason for this situation is that HPAI has not resulted in devastating effects to Cambodia's economy, livelihoods and food security, leaving people with the feeling that they are untouched by the disease. FAO needs to develop and explore new approaches to increase actual practice, particularly by farmers and traders, of HPAI preventive measures. For example CARE and the FAO EC Livestock (SLPP) project are providing subsidized equipment to farmers (so that they can now follow HPAI advise, e.g. separating ducks from chickens, keeping birds in cages and/or in quarantine facilities for 14 days in case of new acquisitions), training VAHWs and producers on other animal diseases and assisting farmers with marketing and costing of their produce. In other countries, poultry slaughterhouses and markets are being progressively revamped to comply with minimum safety standards. The role of the Government might also

have to be enhanced through new veterinary legislation, so that it can take over the implementation of such public good activities as well as law enforcement.

- Sustainability of the strengthening taking place in public and private veterinary services

Without broader thinking on the strategy to build on current capacity improvements to encompass broader disease surveillance and response for other TADs and national priorities, and funding to support this, the prospects for sustainability are not good.

- Extent to which disease surveillance and control interventions have likely contributed to reducing HPAI prevalence

Due to the lack of a full understanding of the dynamics of HPAI in Cambodia, and only a superficial understanding of the risk factors, while the investment in surveillance and measures have almost certainly benefited the country, it is impossible for the evaluation team to specify how, and to what extent, they have influenced the apparent reduced prevalence of HPAI.

- Likely macro-economic, livelihoods and food security impact of FAO's strategy and response to HPAI

Given the unknown status of HPAI in the country, the high-risk for re-infection from neighbouring countries¹⁴, and that Cambodia has many other unaddressed constraints to its poultry enterprises at both industry and smallholder levels, FAO is probably not reaping the macro-economic and livelihood returns that it could by a broader, more encompassing and development-orientated approach to livestock production and health, which incorporate the specific disease emergency elements of donor interest as specific components.

Partnerships

- The clarity of FAO's role, based on its comparative advantages and capacities, as well as the degree of complementarity, co-ordination and collaboration with regional and national partners, particularly:
 - Multilaterals: OIE, World Bank, Asian Development Bank, ASEAN, WHO and UNICEF.
 - Major Bilateral/donor agencies

The programme in the country seems to have exploited the comparative advantages of each constituency met (e.g. local knowledge and networks of Cambodian NGOs; specialized expertise for wildlife surveillance). Some reports have highlighted that potential synergies, particularly with OIE and USDA regarding laboratory equipment and training, were not fully realised. An increased co-ordination at regional level would probably have allowed a more effective collaboration between these three agencies. At national level the Government gave limited priority to co-ordinate the different donors and agencies, and the holding of UN Resident Co-ordinator-led "partnership meetings" did not avoid the reported duplications and overlaps. Partnerships with emerging private sector actors is probably an area that requires more support with FAO playing a facilitating role in the establishment of representational bodies.

¹⁴ Report Exercise on Highly Pathogenic Avian Influenza - FAO contribution to the UNSIC report (2008)

- FAO's contribution to the preparation of partners' HPAI regional and national strategies

FAO has made substantial contributions to national strategies, and more recently to regional understanding of value chains in the Mekong region, roles which could undoubtedly be strengthened further.

In conclusion, the evaluation team have summarized the strengths and weaknesses of the avian influenza programme as follows:

Strengths	Weaknesses
Communication and coordination with DAHP, NaVRI, other UN agencies and donors appears to be generally sound and the FAO team appears to be respected within these bodies.	Issues like the slow commencement of the WB project, with an underlying concern about public sector governance, require additional input from higher levels of FAO, WB and Government.
Comprehensive national avian and human influenza plans covering appropriate activity areas are in place, with high level policy support at the central and provincial government level and clearly defined operational roles and responsibilities for the NaVRI/DAHP as the lead technical agency. FAO has had a major role in facilitating this.	Veterinary legislation to support existing policies and operational plans is not enacted despite good progress on drafting legislation in the FAO/German Government funded project. This needs to be followed through.
The FAO/DAHP training programs in HPAI awareness, risk communication and biosecurity to the VAHW, VC and DVO and involvement of DVO's with FAO in re-training of VAHW and in community and market forums is fostering grass-roots level public-private partnerships	Some groups appear to have not been included in HPAI awareness and biosafety and biosecurity training activities, for example: duck egg hatcheries, staff involved in poultry slaughter at markets.
The quality of the printed and audio-visual communications material used for awareness, risk communications and biosecurity training is very good	Despite the broad improvement in HPAI awareness and the biosafety and biosecurity training for farmers, middlemen and live bird market sellers, good safety and biosecurity practises are poorly or not adhered to. FAO needs to support innovative approaches to improve uptake of practical safety and biosecurity activities in farms, villages and markets.
The combination of enhanced passive surveillance for early outbreak detection through the VAHW, VC, DVO network and active surveillance of ducks through the high-throughput duck markets to detect build up or new incursions of H5N1 viruses	The lack of compensation for poultry or livelihood loss from culling, absence of legislation that can require reporting of disease, or other incentives, reduce the chance that farmers will report disease to VAHW, VC or NaVRI.

<p>is a sound approach to risk assessment and should enable Government response activities to reduce the risk of further outbreaks and prevent human infection.</p>	<p>The efficiency, effectiveness, sensitivity and sustainability of the active surveillance in ducks through live bird markets needs to be kept under review to ensure the best value results from this activity.</p> <p>More epidemiology value-adding is need with both the passive and active surveillance systems. Some level of mapping, analysis and measure of sensitivity is needed on a spatial and temporal basis for the negative data from the surveillance activity since Dec 2007.</p>
<p>Training of staff at NaVRI has been well supported from FAO through engagement of international consultants from USA and Australia for training in avian influenza virus isolation, PCR testing and HI serology testing. The trained staff have been shown to be proficient by interlaboratory proficiency testing panels from IPC and AAHL. The new facilities at NaVRI are suitable for quality diagnostic testing for avian influenza viruses.</p> <p>There is ready access to the National Influenza Reference Laboratory at IPC for confirmation of positive cases and high quality antigen and genetic characterization of viruses.</p>	<p>Initial problems of unreliable electricity supply, lack of reliable internet connectivity, difficulty with re-calibration of equipment needed to be addressed but seem to have been resolved.</p> <p>With the lack of outbreak cases the laboratory does not have a lot of diagnostic sample throughput and has limited experience with positive field cases. However, this is offset by a reasonable throughput of surveillance cases.</p> <p>The ongoing maintenance programme for technical equipment and maintaining facilities at the required biosecurity level is expensive. A clear policy and ongoing funding are needed to build and sustain laboratory capacity at NaVRI</p> <p>With access to IPC for antigenic and genetic characterization of H5N1 and other avian influenza viruses; the specialist skill levels required; the expense of reagents; and the cost of equipment and maintenance it is not cost-effective to set up virus sequencing capacity at NaVRI.</p>
<p>DAHP has engaged OIE to undertake a PVS evaluation of Veterinary Services and has committed to the next step of undergoing a gap analysis in 2010. Shows commitment to improve veterinary services and provides an opportunity for advocacy by FAO to enhance the process.</p>	<p>The competency and skills of the veterinary services at the district level need to be reinforced, particularly at the local level. Training and support for this group will underpin a sustainable disease investigation and surveillance capability in Cambodia</p>

	<p>The competency and skills in the epidemiology unit within NaVRI need to be enhanced so that this unit has greater input into planning of surveillance activities, analysis of data and providing advice on management and control of HPAI based on risk analysis.</p> <p>The TAD-Info system in Cambodia is not being effectively used and should have been introduced in a few selected provinces then expanded as resources, training and capabilities improved.</p>
	<p>The wild bird surveillance activity based on sampling of healthy birds is too insensitive and not cost-effective. If the objective is to determine if wild birds are being infected with H5N1 HPAI viruses either in, or on route to Cambodia, collection and testing of swabs from dead wild birds of selected risk species in selected districts with wetlands or habitats would be more effective. VAHW in selected districts could be trained to submit birds to DVO for swabbing and submission to NaVRI.</p>

Based on the above, the evaluation team recommends the following priority actions:

- The FAO team should evaluate more critically the design and implementation of the active and passive surveillance, and the biosecurity support to poultry producers and markets, to ensure credibility of the FAO programme. This would include:
 - Revising the design of the active surveillance in live bird markets;
 - Considering options for increasing disease reporting (such as the setting up of a SMS voicemail system modelled in the Bangladesh example);
 - Formulating a long-term proposal for biosecurity work that includes other constraints for safe poultry production beyond HPAI.
- The FAO team should continue to engage in whatever consultations it deems necessary at the appropriate level to ensure that the WB project activities it is due to carry out can get underway as soon as possible.
- As already identified in the 2007 PVS Cambodia report, there is a need to follow through on the veterinary legislation activities to ensure that this component ceases to be a stumbling block for the implementation of more effective surveillance and control measures.

In the medium term, the evaluation team considers that:

- The FAO Team should give greater attention to the broader context of its activities, particularly as to how to ensure that the measures it is supporting for HPAI surveillance and response can have broader impact to other priority transboundary and zoonotic

diseases in the country. FAO should explore the extent to which the World Bank project activities are and/or could be aligned with this objective.

- Particular attention should be given to enhancing the epidemiology capacity at NaVRI. Consideration should be given to engaging specific medium term consultancy through FAO in this area.
- There should be a proactive attempt to facilitate better engagement with the various representatives of the poultry industry private sector, particularly when it comes to securing greater compliance and behavioural change in farm and market level biosecurity and movement control. Perhaps there is a longer term role for FAO to facilitate the establishment of representational bodies which give a voice to sector 3 in particular.
- FAO staff should have greater involvement in the PVS gap analysis to take place in 2010 as this process will potentially result in priority areas for future animal health field work and provide opportunities for fund-raising with donors.

Annex 1. List of People Met

FAO

Mr. Ajay Markanday, FAO R,
Dr. Lotfi Allal, CTA, AI Programme,
Mr. Etienne Careme, AI Operations Coordinator & Emergency Programme Coordinator,
Ms. Maria Cecilia Dy, Information & Communication Officer,
Mr. Ny Mouyry, National Project Assistant.
Mrs. Ken Dajy, NPA
Mr. Mith Sokpao, NPA
Mr. Heng Virith, NPA
Mr. Kieng Sokpheng, NPA

Mr. David B Thomson, Inception Team Leader, Food Facility
Dr. Dirk L. Van Aken, Team Leader SLPP.
Dr Yves Froehlich, FAO Consultant (SLPP)

UN Agencies

Mr. Douglas Broderick, United Nations Resident Coordinator,
Ms. Ann Lund, Office of the UN Resident Coordinator,
Dr. Nima Asgari, Public Health Specialist, WHO,
Mr. Try Tan, Programme Communication Specialist, UNICEF.
Ms. Chamroeun Mudita, Sr. Operations Officer-Rural Development, World Bank.

Government

H.E. Dr. Kao Phal, Director Deptt. Of Animal Health & Production, MAFF,
Dr. Holl Davun, Deputy Director, National Veterinary Research Institute (NaVRI),
Dr. Ren Theary, Senior Scientist, NaVRI,
Dr. Sok Daro, Vice Chief Office & Programme Coordinator, Takeo Province,
Dr. Ou Rossaran, Deputy Provincial Vety. Officer, Takeo Province,
Dr. Kay Wanthan, DVO, Kampot City,
Mr. Kong Lew, Village Chief, Kampongchrey,
Mr. Nhepsamnag, Village Chief, Banteay, Chichma Commune,
Dr. Kry Tanny, DVO Kandal,
Dy Soeuim, VAHW,
Mr. Chekseyla VAHW,
Mr. Chum Sarun, Commune Council.
Gov. Officers and farmers in Pursat province

NGO

Ms. Jacquelyn Pinat, Avian Influenza Coordinator, CARE Cambodia.
Mr. Khieu Borin, CELAGRID director

Private Sector

Sector 4 Farm (human case - 2005), Kear Tha Vong Leu Village, Bantheay Meas District
Sector 3 duck farm, Kear Thavong Krang Village, Bantheay Meas District; and nearby duck hatchery in Bantheay Meas District.
Sector 3 Duck Farm, Ms. Chayakhom, near Kampot City
Sector 4 poultry in Keal Romeas Trapiang Sangai Village, Kampot
Sector 3 chicken layer farm in Takeo City (outbreak farm)

Annex 2. Documentation Reviewed

World Bank (2008) Avian and Human Influenza Control and Preparedness Emergency Project – Project Information Document
World Bank (2009) Reports of Monitoring Missions of AHICPE project
TNS (2009) Impact of Avian Influenza Campaign 2008.
Burgos et al (2008) Poultry, HPAI and Livelihoods in Cambodia – A Review
OIE (2007) PVS Report of Cambodia
FAO (2007) Evaluation of FAO activities in Cambodia
Maria D. Van Kerkhove et al (2009) Poultry movement networks in Cambodia: Implications for surveillance and control of highly pathogenic avian influenza (HPAI/H5N1)
Epidemiology of Clade 1 Influenza A Viruses (H5N1), Southern Indochina Peninsula, 2004–2007
CARE (2009) Profile of Activities in Cambodia
CARE (2009) Community Based Avian Influenza Risk Reduction Project
Report Exercise on Highly Pathogenic Avian Influenza - FAO contribution to the UNSIC report (2008)
Sorath Ly et al (2007) Interaction Between Humans and Poultry, Rural Cambodia
J. Curry and Olaf Thieme (2007) Planning socio economic activities for HPAI control in Cambodia
Cambodia National Comprehensive Avian and Human Influenza Plan (2006)
UN Joint Programme for Addressing Avian Influenza and Pandemic Planning (2005)
J. Rushton et al (2005) Impact of avian influenza outbreaks in the poultry sectors of five South East Asian countries (Cambodia, Indonesia, Lao PDR, Thailand, Viet Nam) outbreak costs, responses and potential long term control
FAO (2004) Poultry sector country review

Plus more than 80 project reports, over 30 BTORs and end-of-contract reports, several monthly reports, etc.

Annex 3. Assessment of individual avian influenza projects

TCP/CMB/3002 “Emergency assistance for the control of avian influenza”

The primary objective of the project was to support efforts aiming at an immediate control of avian influenza outbreaks in all poultry species so as to stop the transmission of the disease from poultry to humans. Specific objectives were:

- To strengthen capacity of National Animal Health and Production Investigation Center (NAHPIC) to conduct investigation in the outbreak zones, to implement routine surveillance in the country and to perform reliable analysis in order to diagnose AI;
- To support spreading information to the Provincial Animal Health Offices, to the District Veterinarians and in the population with adequate information tools;
- To set up a control task force to conduct targeted culling and disinfection in a proper manner.

The project produced the following results:

- Capacity to control outbreaks of HPAI in a timely and safe manner has been strengthened through provision of personal protective equipment and targeted training.
- The national consultant and the national communication consultant have developed adequate information tools on avian influenza that have been distributed to provincial and district veterinarians, VAHW and farmers. One booklet providing technical information on AI (10 000 units printed) and a leaflet (300 000 units printed) were produced and largely distributed.
- The two consultants supervised production of an alert movie and radio spot (3 minutes) to raise awareness among the population on “Bird Flu” risks when a new outbreak is declared in the country. A documentary movie and radio spot (11 minutes) were also developed to inform population on bird flu risks. Both farmers and population became more aware of HPAI and the precautions to minimize the risk of disease spread and transmission.
- Assistance was provided to the NAHPIC by the international epidemiologist and GIS experts to conduct retrospective temporal and spatial analysis of outbreaks during the first wave of the disease in early 2004. This allowed tracing back all avian influenza outbreaks and making assumptions on the source and point of entry of the infection.
- The laboratory virology unit has the ability to detect AI group A virus and identify H5N1 antibodies.
- A draft national strategy was prepared with the assistance of two International Experts, in close collaboration with the DAHP and provincial authorities.

Whilst assistance through this project has contributed to containment of disease outbreaks with some success, the experience has reportedly identified serious institutional and technical constraints limiting the country’s capacity for effective control of the disease. The activities initiated through this project continue with funding provided by USAID, Japan and Germany.

OSRO/RAS/401/JPN “The Japan/FAO Joint Emergency Programme for the Control of Avian Influenza in Cambodia, Indonesia, Laos and Viet Nam”

The primary objective of the project was to enhance the capacity of Cambodia, Indonesia, Lao PDR and Viet Nam to control the HPAI outbreaks and to prevent the further spread of the disease within and out of these countries.

The project targeted farmers who had lost, or were at risk of losing, large parts of their flocks as a result of the disease and who were vulnerable to cross-infection from their birds/pigs, due to the intimate contact among their animals, local veterinary authorities, poultry producers and traders and the general public.

All project activities were implemented in coordination with other FAO projects for Avian Influenza, to avoid duplication and ensure the complementarity of the tasks achieved and an experienced national project coordinator was assigned to lead the project in each country. Project staff worked closely with various government ministries, and the national governments provided the project with local transport, office space and laboratories.

Expendable and non-expendable equipment, including four-wheel drive vehicles, were purchased in all four countries to provide essential transportation for the timely investigation of outbreaks and disease monitoring activities. In addition, 30 motorcycles were purchased in Cambodia for field surveillance by the government staff. Significant quantities of Personal Protective Equipment were procured to ensure the immediate and safe application of control measures, including culling and disinfecting. Laboratory equipment and consumables for diagnostic and surveillance activities were also procured and delivered to the main government laboratories.

In Cambodia, a three-day national training course was organized from 2-4 June 2004 for 30 provincial staff on the epidemiology of the disease including surveillance and sampling techniques. A series of computer training courses were held in December 2004 on data management using Access and Excel databases. A total of 13 participants from the NAPHC and DAHP attended.

The project provided basic equipment and materials for disease investigation, culling operations, cleaning and disinfecting of premises, and supported the coordination of disease control activities at the local level. The activities initiated through this project continue with funding provided by Japan and USAID.

OSRO/RAS/602/JPN “Strengthening the Control and Prevention of HPAI and enhancing public awareness”

The project, which was designed to strengthen the capacity of field veterinary services on strategic surveillance and proper implementation of related policies such as stamping out and vaccination, as well as to enhance public awareness raising and dissemination, has reportedly benefited smallholder farmers. Other direct beneficiaries were small livestock and poultry producers, government veterinarians, village animal health workers or volunteers and various government institutions working on animal health.

Overall, the project focused on improving disease surveillance and outbreak response capacities in provincial and district veterinary services as well as enhancing village animal health and public awareness toward safe handling of backyard poultry. Main activities were the provision of technical and human resources support, training, procurement and distribution of inputs, laboratory networking with other agencies and strengthening field coordination.

The activities carried out in Cambodia focused on promoting improved biosecurity, strengthening surveillance and response, reporting, public awareness and coordination. Trainings on surveillance and response and biosecurity were provided to village animal health workers (VAHWs) and village chiefs, while the staff of the Department of Animal Health (DAH) was given training on Transboundary Animal Disease Information System (TADinfo).

Knowledge, Attitude and Practice Surveys (KAP) were conducted to determine the general level of awareness and understanding of the disease as well as retention and adoption of messages. Public awareness of HPAI was improved by supporting production of TV and radio spots, community theatre, community forums, film documentaries and communication workshops. The project procured equipment and supplies to be provided to DAH and the Virology Laboratory at the National Veterinary Research Institute (NaVRI). The project also sponsored workshops, trainings and meetings to facilitate coordination among various stakeholders.

A total of 800 VAHWs and village chiefs in Cambodia were trained on AI control measures including surveillance, biosecurity, reporting and outbreak response; 126 provincial and district staff participated in a multi-sectoral outbreak response training course; and seven NaVRI laboratory staff were supported on having follow-up training on real-time PCR. Training on TADinfo was provided to 24 veterinary officers from 24 provinces. The main outputs achieved include:

- Conducted public awareness campaigns to deliver simple biosecurity measures to reduce the risk of introducing disease to the village flock. KAPs have indicated that messages through these campaigns have been well received and practiced by the majority.
- 126 provincial and district staff participated in a multi-sectoral outbreak response training course and veterinary training course in sampling and active surveillance for veterinarians and members of the rapid response teams from 24 provinces.
- A fully equipped mobile laboratory unit was procured and provided to NaVRI for rapid response and outbreak investigation.
- Laboratory capacity and supply of consumables and recurrent resources have been suitably upgraded to cope with increased throughput of samples resulting from the active surveillance of markets.
- Laboratory and diagnostic capacity to analyse samples for the possible presence of AI were upgraded.
- VAHWs totalling to 800 and 577 village chiefs were trained in AI control measures such as surveillance, biosecurity, rapid reporting and outbreak response.
- Provided FAO trained VAHWs with PPEs for use in case of outbreak.
- Two TV and nine radio spots were produced. The TV spots were shown 7 202 times from April 2007 – March 2008, while the radio spots were broadcasted 36 657 times. To complement the TV and radio broadcasts, nine public awareness marches on AI were held in high-risk provinces providing communities with knowledge and actions they could take to protect their families and birds.
- Studies to measure effectiveness of communication campaigns and improve communication strategies conducted such as: (i) post-test analysis of TV and radio spots; (ii) social analysis of cultural perceptions, attitudes, resources, capabilities and priorities on HPAI prevention and response.

- 54 drama performances and 25 shows promoting messages in HPAI prevention and control in the poorest and most vulnerable areas were supported by the project in collaboration with AED and UNICEF.
- The project sponsored three community forums organised by Medical Cambodia in remote districts that have limited access to mass media.
- Two film documentaries were produced: (i) 20-minute film ‘Bridging the gap between awareness and practice: participatory learning on rural beliefs and participatory learning practices on HPAI prevention and control in Cambodia’. Its eight-minute version ‘Are we listening? Community Perceptions and Avian Influenza’ have been shown in various conferences and meetings and was translated into French for showing at four regional workshops in French speaking countries, (ii) ‘Avian Influenza: A Country Responds’ which shows how the Cambodian Government and its partners fought back to contain HPAI outbreak after Cambodia’s seventh human case in April 2007.
- ‘Super chicken’ printed T-shirts numbering 1 299 and caps were distributed to nine teams of boat rowers participating in the three-day Water Festival held in November 2007. Leaflets, paper hats and other public awareness materials were produced and distributed to the public during community meetings organized by the Ministry of Health and the University of Research Co., Ltd (URC) in Kompongcham in November 2007.
- The project supported the National Communications Workshop jointly organised with AED and UNICEF. IEC materials based on the outcome of this workshop, findings of focus group, post-test analysis and other relevant studies were produced.
- The project supported the conduct of the national trainers’ course on HPAI surveillance and control for field veterinarians and paraprofessionals in collaboration with OIE. 24 District Veterinary Officer and 24 VAHW attended the training.
- Coordination meeting with NGOs active in animal health issues was supported to harmonize the training curriculum for VAHWs.

The main challenges identified for the control and prevention of AI in Cambodia lies in the fact that the great majority of poultry (over 90 percent) are raised as small-scale assets under scavenger systems of management. As such, they are largely beyond the need or reach of veterinary attention. Overall, the project was able to contribute to the international efforts of progressively controlling HPAI in the already affected participating countries. The project enhanced capacity for HPAI control, increased public awareness on HPAI prevention, improved rapid response to and control of HPAI incidence in the provinces where it was active. A major challenge for sustainability of results in Cambodia, as in other countries in the region, is the limited human resources and the very low pay offered in the Government Service. Also, to be able to achieve lasting behaviour change, the project was too short and required additional work particularly at grass-root levels to improve biosecurity and economic returns of poultry production, and at policy level to implement bold structural changes of the poultry sector.

OSRO/RAS/505/USA “Immediate assistance for strengthening community-based early warning and early reaction to avian influenza outbreaks in Cambodia, Indonesia, Lao PDR, PR China and Viet Nam”

The project was implemented in line with the global strategy and plans to control Highly Pathogenic Avian Influenza (HPAI), developed by FAO and the World Organisation for Animal Health in collaboration with the World Health Organization. The project conducted

field operations in five beneficiary countries in Asia – Cambodia, Indonesia, Lao PDR, PR China and Viet Nam – with the overall objective of countering HPAI threats posed to animals and people across the sub-region and restoring sustainable poultry production and associated rural and socio-economic development. The primary beneficiaries of the project included smallholder farmers, animal health workers, Government veterinary staff and local nongovernmental organizations (NGOs) involved in animal health.

The project reportedly enhanced the capacity of the beneficiary countries in early detection and early warning of HPAI by establishing informal networks for early warning and disease information flow, improving disease information and data management systems and strengthening the diagnostic capacity for field surveillance. Laboratories were upgraded to competently diagnose HPAI and participatory methods were used in training villagers and Government staff in surveillance and response. The capacity of beneficiary countries to respond effectively to the disease outbreaks was enhanced by providing technical and logistic support to ensure safe culling operations and disinfection activities.

In Cambodia project activities were carried out in the following provinces: Battambang, Banteay Mean Chey, Takeo, Kampot, Prey Veng, Kampong Cham, Stung Treng, Kratie, Kampong Chhnang and Kampong Thom. The activities focused on supporting field early detection and reporting system, effective outbreak containment and contingency planning, and improvement of bio-security for poultry production. Training was organized for farmers in bio-security measures and for VAHWs as well as provincial staff in early detection, reporting, sample collection and outbreak containment. In addition the project produced various communication materials and procured laboratory equipment and supplies. 444 farmers were trained in bio-security measures and good practices for avian influenza prevention, and 2000 VAHWs were provided with an equipment kit and trained in field early detection, reporting, sample collection and submission as well as outbreak containment. Training workshop on Transboundary Animal Disease information system (TADinfo) was organized. The following are the outputs produced throughout the project life:

- A training manual for VAHWs and a bio-security manual for farmers were developed;
- Laboratory equipment, supplies and Personal Protective Equipment (PPEs) were distributed to veterinary workers;
- HPAI hotline to be called to report mortality of poultry was established and 200,000 calendars showing poultry mortality and providing the hotline number were distributed in the field. As a result, the Communication Unit received approximately 4-5 calls/day;
- 4,500 posters on AI were distributed in the field to the VAHWs;
- 6,000 exemplars of the journal “Health Messenger” were financed by the project;
- The project supported the publishing of “AI Bulletin in Cambodia” in collaboration with WHO;
- The project supported Community theatre activities in collaboration with AED;
- TADinfo programme was installed at the National Animal Health and Production Investigation Centre (NAHPIC).

As highlighted in other projects, lasting impact and sustainability will depend on increasing the capacity of veterinary personnel to address HPAI and pandemic threat and upgrading the animal health regulatory framework in Cambodia. These issues cannot be solved in a short term, and would require long-term efforts and approach in collaboration with other stakeholders. As a result of the project activities, province and district veterinary staff reportedly gained more understanding on the disease, but more capacity building activities are needed in the field level. The implementation of activities initiated under

OSRO/RAS/505/USA continues currently under new regional and country projects (OSRO/RAS/604/USA), funded mainly by United States Agency for International Development.

OSRO/RAS/604/USA “Immediate Technical Assistance to Strengthen Emergency Preparedness for Highly Pathogenic Avian Influenza (HPAI)” – Ongoing

This project addresses short and medium-term actions that are to be undertaken by the Cambodian Government to strengthen its capacity to prevent the occurrence of HPAI and minimize its spread. The immediate objectives of the project will be to assist the Government of Cambodia in general and the Department of Animal Health in particular, in the areas of:

- 1) Surveillance;
- 2) Laboratory diagnosis;
- 3) Reporting and response;
- 4) Bio-security;
- 5) Public Awareness and Education;
- 6) Socio-economic and livelihoods studies related to HPAI; and
- 7) Supportive and protective legislative environment.

Specifically the project’s objectives are defined as part of FAO’s Avian Influenza programme in Cambodia in support of the Department of Animal Health and Production’s effort to fight against HPAI. The sevenfold approach of the FAO HPAI programme expects to attain the following outcomes:

- Strengthened national capacity in disease surveillance;
- Strengthened capacity to undertake laboratory diagnosis for HPAI;
- Reinforced capacity of the authorities in containment operations of HPAI outbreaks, and reporting;
- Promoted bio security in poultry and duck production at the farm level;
- Improved public awareness and information on HPAI (Animal Health);
- Better understanding of cultural attitudes and the socio economic impacts of HPAI (and of HPAI controls) upon the livelihoods of rural households. Using this knowledge policies and strategies for disease control and rehabilitation will be developed that are more appropriate and acceptable to this overwhelming majority of the poultry owning population, thus improving the overall control of AI, and other diseases, among the extensive poultry and animal husbandry systems of the country.
- Improved supportive and protective legislative environment in relation to HPAI;

This project is still ongoing (new NTE is December 2010) and has been throughout the years the main source of funding of FAO activities in Cambodia. Besides funding the procurement of office inputs and other materials, as well as the conduct of disease surveillance, bio-security and communication activities, the project has covered the cost of core (CTA, communications, operations and administrative officers) and national staff working on the integrated HPAI programme in Cambodia. The assessments made in the main text of this report largely correspond to the activities conducted through this and the German-funded project below.

GCP/CMB/027/GER “Building Capacity at the Grass-roots Level to Control Avian Influenza”

The development objective of this project is the containment of HPAI in Cambodia thereby contributing to the reduction and minimizing of the risk of a human pandemic, and promoting

healthy trade in poultry products for improving the livelihoods of the resource poor farmers and enhancing food security of the rural poor in Cambodia and also in the region. The immediate objectives and expected outputs of the project are:

Immediate Objective 1. Legal and regulatory framework capacity applied to carry out and enforce HPAI containment and control.

Outputs:

- 1.1. Effective national HPAI control and eradication policy, supported by legislation promulgated.
- 1.2. Legislative and regulatory requirements for HPAI and other disease control measures developed.
- 1.3. Contingency plan for HPAI control established.
- 1.4. Economic evaluation of the AI control programme completed.
- 1.5. Veterinary services restructuring study completed.

Immediate Objective 2: A sustainable disease control and surveillance system based on strong epidemiological services and grassroots veterinary services is working

Outputs:

- 2.1. Disease surveillance - an epidemiological information system established.
- 2.2. HPAI grass-roots level field surveillance by farmers groups, paraveterinarians and other extension workers activated.
- 2.3. National diagnostic laboratory at NAPHIC strengthened and providing effective support to field surveillance.
- 2.4. Disease control measures developed and effectively delivered.

Immediate Objective 3. Improved public awareness of the HPAI public health hazards amongst the rural and urban public leads to greater understanding of food safety and cooperation for reporting suspected HPAI cases.

Outputs:

- 3.1. Increased public awareness created and fostered
- 3.2. The poultry small holders and workers well informed on HPAI and biosecurity practices.

This project finished in March 2009 and till its end was together with OSRO/RAS/604/USA the main source of funding of FAO activities in Cambodia. The project developed strong linkages with the above USAID funded project as well as with other FAO initiatives funded by Germany (chiefly GCP /INT/010/GER) particularly for the review of veterinary legislation and allowed the strengthening of the technical base in Cambodia through the recruitment of a long-term expert and short-term consultancies on veterinary legislation, laboratory development, etc.

SECOND REAL TIME EVALUATION OF FAO'S WORK ON HIGHLY PATHOGENIC AVIAN INFLUENZA

COUNTRY REPORT: VIET NAM

22-27 NOVEMBER 2009

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I. INTRODUCTION

Viet Nam was one of 7 countries selected for the second real time evaluation of FAO's contributions to the preparedness and control of HPAI, as part of a purposive evaluation of the country level assistance provided to countries by FAO through regional and national projects managed by the organisation. The evaluation team visiting Viet Nam comprised Professor Brian Perry, Dr. Trevor Ellis, Mr. Shashi Kapur and Mr. Robert Moore. They arrived on Saturday 21st November and left on Friday 27th November. Their terms of reference and approach to the evaluation are set out in their inception report. The evaluation criteria specified in the inception report were applied to assess the relevance, efficiency, effectiveness, sustainability and – to the extent possible – the impact - of FAO's HPAI work.

Viet Nam was visited by the first RTE. Their report commented: *“FAO was criticised as being late to start providing assistance to Viet Nam by both UNDP and WHO. UNDP reported that in the early stages of the HPAI epidemic, leadership from FAO was not good; there were too many staff changes and FAO was locked into its own procedures rather than adopting local procedures. There was also a lack of sharing of its research outcomes. This may in part reflect poor relations between the UN agencies, as in fact, on examination of the documentation, the initial response was in fact quite rapid. A review mission conducted in November 2004 detailed that official communication of the HPAI outbreak arrived on*

January 13th, 2004, and a week later an FAO Regional Office officer was in Viet Nam to prepare a TCP proposal. WHO reaction was faster, although WHO benefited from the experience gained from the SARS epidemic. The first TCP was operational on February 1st, 2004, only two weeks after the outbreak, for a total amount of US\$ 390,000. However in subsequent months, there was intensive back and forth friction between the FAO representative, the FAO Regional Office and FAO-HQ. Unfortunately, this led to uneasiness with the relation between FAO and the Government of Viet Nam. The situation changed significantly for the better with the appointment of a new FAO Country Representative”. “Following the arrival of significant amounts of funding in autumn 2005, all those met from government, donors and other agencies concurred that FAO had had a significant impact on Viet Nam's ability to bring the disease under control by 2006, mainly through provision of sound technical advice, capacity building, technical assistance for the vaccination programme, and assistance with contingency planning and strategy design. FAO assistance played an important role in the rapid decrease in response time and increased effectiveness of government services”.

The second RTE evaluation team considers that there remains a very cordial and constructive relationship between FAO and the Government of Viet Nam, which in many ways has improved and matured over time, while acknowledging that it is a relationship which needs to be worked on all the time by both sides to maintain its functionality and transparency. FAO’s second Real Time evaluation is one of several monitoring and evaluation mechanisms set up in Viet Nam by different stakeholders. In the UN Joint Programme Project, the regular six-monthly and annual reports undertaken carry out significant monitoring and evaluation (see Figure 1 below).

Figure 1. Monitoring and evaluation schedules in 2008 and 2009 for different stakeholder in Viet Nam. From FAO, 2008¹

Monitoring and Evaluation Reporting Schedule				
Program	2008		2009	Reporting Schedule
DAH/DLP				A National Steering Committee was established in January 2004 as the national coordination mechanism and a national plan was approved in November 2005 (Decision No. 6719/VPCP-NN). DAH and DLP report progress to the committee on an on-going basis.
FAO				Project monitoring is a standard component of FAO project management. FAO has implemented a real-time evaluation program for its HPAI activities.
USAID (OSRO/RAS/604/USA)				Mid-term and final project reports.
Operational Plan (Green Book)				The results of relevant M&E activities in quarterly and annual progress reports. The fourth quarterly report of each year is an annual report. A comprehensive mid-term progress report will be prepared approximately half-way during the implementation period.
UN Joint Program				The development of the overall M&E framework for the JP was not completed in 2007 as planned. This has led to some challenges in monitoring and reporting which are expected to be addressed in 2008.
World Bank (VAHIP)				M&E reports form a standard part of the biannual project supervision reports, and are presented in standardized format. The fourth quarterly progress report of each year is an annual report, covering progress made during that year.

¹ eSys Development, Hanoi, 2008. Monitoring and evaluation framework for avian influenza control in Viet Nam. Report to FAO, 32 pp. OSRO/VIE/801/USA is not mentioned here, but it has mid-term and final project reports as for the OSRO/RAS/604/USA reporting schedule.

II. POULTRY SECTOR AND HPAI EVOLUTION IN VIET NAM

Characteristics of the Poultry Sector

The poultry sector of Viet Nam has been extensively reviewed by Desvaux et al (2008²). Poultry production plays an important role in the economy by contributing 19% of the households' incomes in rural areas, ranked second after pig production (DLP, 2006³). In 2006, the poultry population was estimated at around 214,565,000 (now probably around 250 million). Chickens account for 73% of total poultry population and waterfowl for 27% (DLP, 2006). There are estimated to be around 70 million ducks. The total poultry meat production (live weight) was estimated to be 321.89 thousand tons and the number of eggs produced was 3.9 billions (GSO, 2007⁴). The annual output value from poultry production was estimated at 3 619.3 billion Dong at constant 1994 prices accounted for around 13% of the total livestock output value in 2006 (GSO, 2007).

In 2006, the average poultry density of Viet Nam was around 650 birds/km² (450 / sq km for chickens and 180 for ducks). The Red River Delta, Mekong River Delta and North East regions are the agro ecological regions with the highest population of poultry in the country. Due to the HPAI epidemic, in 2004 the poultry population decreased by 26% in the South and 19% in the North compared to 2003. Before the HPAI outbreak (2000-2003), the global growth rate in poultry production was 9.1%, becoming negative for the period 2003-2006.

In total around 8 million households keep poultry from which:

- 65% of households keep chickens in small numbers⁵ (less than 200 heads/year)
- 25% of households keep waterfowl, mainly ducks;
- <15% are small scale commercial chicken farms with flock sizes ranging from 200 to 500;
- 0.1% are integrated industrial farms with flock sizes ranging from 2 000 to 30 000⁶.

There tradition of considering all flocks under the size of 200 chickens as basically the same sector has led to a number of difficulties in the early period of HPAI control, given that this includes both back yard and small scale commercial; this difficulty is only recently being addressed through better reporting of poultry data.

The poultry production in Viet Nam is mainly in the hands of small holders. However, medium to large scale poultry production is progressively increasing. According to an inter-ministerial circular issued in 2000 (69/2000/TTLT/BNN-TCTK), a poultry farm is defined as a farm with more than 2000 heads and an annual income of more than 40 millions VND⁷. The Department of Livestock (DLP, 2006) report 2,837 poultry farms meeting this definition in 2006 (this accounted for 17% of the total livestock farms in Viet Nam). Out of those 2, 837

² Desvaux, S., Ton, V., Thang, P., Hoa, P. 2008. A general review and description of poultry production in Viet Nam. Agricultural Publishing House, Hanoi, Viet Nam, 38 pp.

³ DLP - Department of Livestock Production. (2006). Report on commercial and industrial livestock farm development in the period 2000 - 2005 and orientation of development in the period, 2006 - 2010. Ministry of Agriculture and Rural Development, Hanoi.

⁴ GSO, General Statistics Office, 2007. Statistical yearbook of Viet Nam 2006. Statistic publishing house. Hanoi, Viet Nam.

⁵ Note that this consolidated grouping includes households with backyard scavenging chickens (mean of about 8-10 and a range of approx 1-30 birds) and households with some containment of chickens, and hence different risk factors for HPAI

⁶ These farms are often integrated with foreign feedstuff companies such as: the CP group, Japfa, Cargill, Proconco, etc. (DLP, 2006).

⁷ USD 1 = VND 19,000 (Nov. 2009)

poultry farms, there are 68.8% chicken broiler farms, 23.5% duck broiler farms and 7.7% breeder farms.

The commercial poultry production sector is fairly well developed in the Red River Delta, the Mekong River Delta and the Southeast regions, where it accounts for 68% of total number of (commercial) poultry farms in the whole country and is still limited in Northeast (2.7%), Northwest (1.5%) and High Land (Tay Nguyen) (4.5%). They are 219 breeding farms registered in Viet Nam, most of them with a flock size of 2,000 to 11,000 heads; only 5.5% have a flock size over 11,000 heads. The breeder farms are mainly concentrated in the Red River Delta and Southeast regions.

Chicken broiler farms with flock sizes of 2,000- 11,000 are common (93.5% of commercial flocks), chicken farms with sizes of 11,000-15, 000 account for about 3.4%, and there are 3.1% chicken farms with over 15,000 heads. Duck broiler farms with sizes of 2,000 to 5,000 are prominent (97.8%). There are about 2% farms with flocks ranging from 5,000 to 11,000 heads and 0.2% of duck farms having over 15,000 head.

HPAI status and evolution

Viet Nam was one of five countries in Southeast Asia affected in the first wave of the H5N1 HPAI epidemic in late 2003 and initially was one of the worst affected countries. There have been 112 human cases of H5N1 with 57 deaths (an overall case fatality of about 50%).

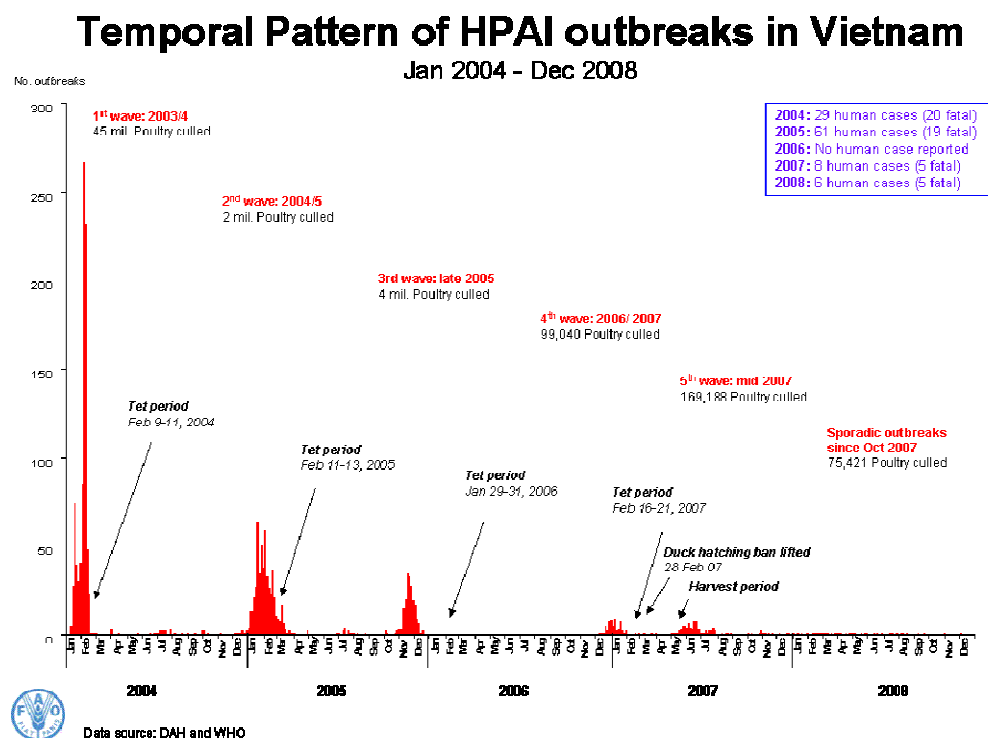
Between December 2003 and March 2004, preceding the Tet festival, 24 percent of Viet Nam's communes and 60 percent of towns were affected, in 57 out of Viet Nam's 64 provinces; 45 million poultry were culled and 27 human cases (of which 16 were fatal) occurred. At the peak of the epidemic in early 2004 around 17 percent of Viet Nam's poultry population died or were culled. Scattered outbreaks and a small number of human cases continued through November 2004. A second wave of outbreaks occurred between December 2004 and March 2005, again just prior to the Tet festival. This affected 670 communes, resulting in 2 million poultry being culled and 64 human cases (21 fatal). Scattered outbreaks and a small number of human cases were detected through the middle of the year. A third wave occurred between October and December 2005 in which disease was reported in 276 communes and resulting in 4 million poultry being culled and 2 human cases. Studies on the spatial and temporal patterns of the disease indicated that crop-livestock livestock farming systems involving domestic water birds and rice production in river delta areas are important for the maintenance and spread of infection (Pfeiffer et al., 2007⁸).

Mass vaccination of poultry was commenced in December 2005 and this remains an official national policy. However, it is understood that it is no longer being applied vigorously throughout the country in all eligible classes of poultry. After including mass vaccination with other control measures in late 2005, there appeared to be a measurable improvement for approximately 12 months with no H5N1 outbreaks in poultry or human cases detected, until late in 2006 when a fourth wave of HPAI occurred (from December 2006 to January 2007). However, this may well have reflected the seasonal variation in HPAI incidence. The fourth wave mainly affected 12 provinces in the South. A fifth wave of disease occurred from May to September 2007, affecting 22 provinces that were mostly in the North. Although there were minor epidemic peaks in February and March of 2008 and 2009, there were also sporadic outbreaks reported in 27 provinces in Viet Nam in 2008 (Ben Tre, Ca Mau, Can Tho, Dong Thap, Ha Nam, Hanoi, Ha Tinh, Hai Duong, Kien Giang, Lao Cai, Long An, Nam Dinh, Ninh

⁸ Pfeiffer, D., Minh, P., Martin, V., Epprecht, M., Otte, M. 2007. An analysis of the spatial and temporal patterns of highly pathogenic avian influenza occurrence in Viet Nam using national surveillance data

Binh, Nghe An, Phu Tho, Quang Binh, Quang Nam, Quang Ninh, Quang Ngai, Quang Tri, Son La, Soc Trang, Thai Nguyen, Tien Giang, Tra Vinh, Tuyen Quang and Vinh Long). There has been a progressive decrease in the number of outbreaks officially reported each year. From October 2007 to October 2009 there were a higher proportion of outbreaks occurring throughout the year, rather than just in the winter months, than had been the case in previous years (Minh et al., 2009⁹). Temporal and spatial analysis of HPAI dynamics suggests that infection is being maintained in the north and south of the country, and there is substantial variability in the dynamics within the country (Walker et al., 2009¹⁰). From 2007 to 2009 there were 18 human cases (14 fatal). The temporal distribution of reported H5N1 HPAI outbreaks and the poultry losses for the first five outbreak waves is shown in figure 2a&b, and the location of outbreaks in communes and the affected provinces in 2009 until the end of October is shown in Figure 3.

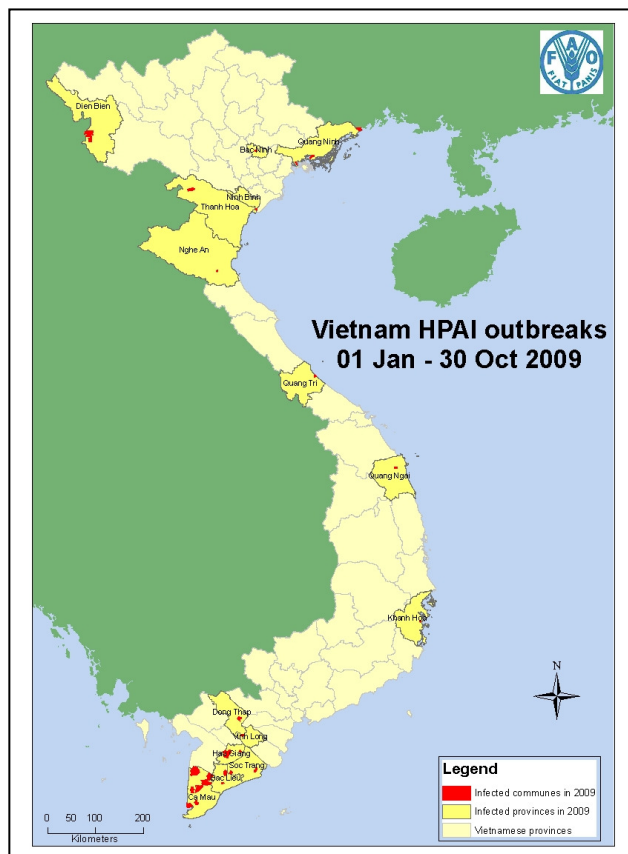
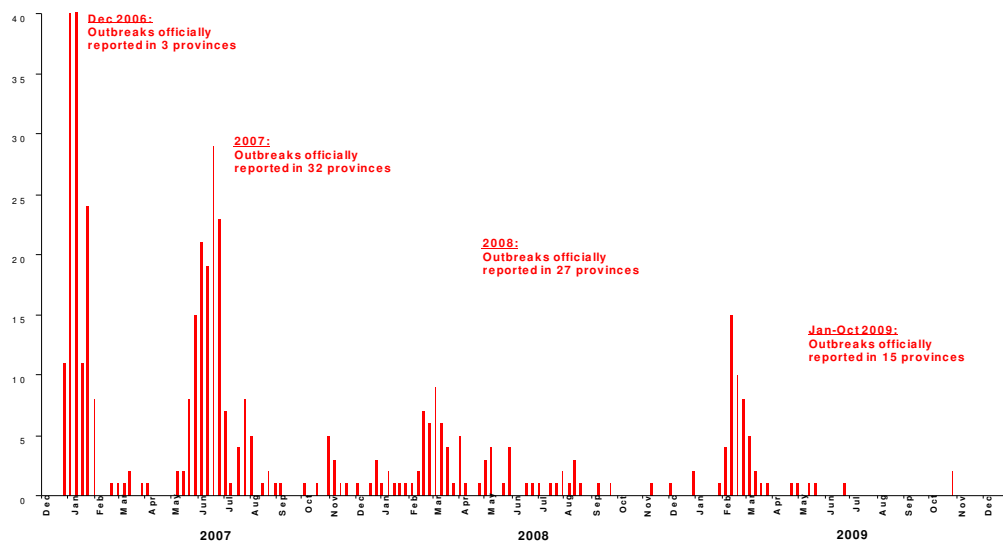
Figure 2a &b. Temporal pattern of HPAI outbreaks in Viet Nam, January 2004 – October 2009



⁹ Minh, P., Morris, R.S., Schauer, B., Stevenson, M., Benschop, J., Nam, H., Jackson, R. 2009. Preventive Veterinary Medicine, 89, 16-24.

¹⁰ Walker, P., Cauchemez, S., Metras, R., Dung, D., Pfeiffer, D., Ghani, A. 2009. Modelling the temporal and spatial dynamics of the spread of H5N1 in Viet Nam. HPAI Research brief No. 19, www.hpai-research.net

Temporal Pattern of HPAI outbreaks December 2006- October 2009



The initial H5N1 HPAI outbreaks in Viet Nam, Thailand, Laos and Cambodia were caused by Z genotype H5N1 viruses with clade 1 HA gene lineage. Phylogenetically these viruses are closely linked to viruses isolated in Yunnan Province, China in 2002 and 2003. There has been sporadic detection of H5N1 viruses from other clades (clades 3 in 2001, 5 in 2003, 0 in 2005, 8 in 2005 and 2.3.2 in 2005 to 2007) from surveillance samples. In 2007 and 2008 there was an incursion of clade 2.3.4 H5N1 viruses, closely related to those in southern China, and these caused a number of HPAI outbreaks in the north of Viet Nam and later some outbreaks in the south.

Virology studies have also demonstrated some re-assortment between clade 1 and clade 2.3.4 viruses in Viet Nam. In 2008 an incursion of clade 7 virus was detected in surveillance samples from the north of Viet Nam.

The HPAI outbreaks in Viet Nam have generally been associated with very high mortality in chickens and ducks for both the clade 1 and clade 2.3.4 viruses. However, virulence studies have shown a marked age related variation in virulence of these viruses in ducks, showing high mortality in ducks under 12 weeks, and very low mortality (but still with high levels of virus shedding) in ducks over 20 weeks of age. This may become further complicated with the clade 7 viruses which have been shown in laboratory studies to cause HPAI in chickens, but with a more protracted disease course, and in ducks do not cause death and result in minimal virus shedding.

The increase in outbreaks which occurred after 2006 was possibly associated with the lifting of the ban on duck breeding in 2007, with a consequent increase in susceptible, unvaccinated young ducks. However, the possibility of a loss in vaccine efficacy against evolving strains of H5N1 was also considered; this resulted in the initiation of vaccination efficacy studies. These have shown that the existing killed adjuvanted vaccine (Chinese H5N1 Re-1 vaccine) is still giving adequate protection against the 2007-2008 clade 1, clade 2.3.4 and clade 7 H5N1 viruses in chickens and ducks. FAO supported studies to evaluate the efficacy of a fowlpox recombinant vaccine (Trovac) used in day-old broiler chickens reportedly indicate that this vaccine is not effective for field use in broiler chickens in Viet Nam. The persistence of H5N1 HPAI outbreaks since 2006, despite the mass vaccination programme, raised concerns regarding the spatial and temporal consistency of vaccination coverage, as well as the dependency on vaccination without improvements in bio-security and movement control. The evaluation team was informed that part of the rationale for using vaccination was to allow for time to be made for improvements in biosecurity and movement control, but there is still a very large population of poultry (especially ducks) for which only minor improvements in bio-security can be made.

The H1N1 virus has been spreading in Viet Nam, and as of 10 December, Viet Nam's Ministry of Health has received reports of 11,040 laboratory confirmed cases, including 47 deaths¹¹. A recent model of H1N1 spread in the country suggested that a widespread epidemic would likely occur, and also warned that a large epidemic in a country with intense human-animal interaction and continued co-circulation of other seasonal and avian viruses would provide opportunities for H1N1 to acquire new genes (Boni et al., 2009¹²).

III. NATIONAL HPAI RESPONSE FRAMEWORK

In 2004 Viet Nam did not have a Preparedness Plan for HPAI. The initial contingency plan in late 2005 (Emergency Disease Contingency Plan for Control of Highly Pathogenic Avian Influenza in Viet Nam - Decision No. 3400 QD/BNN-TY) was approved by the Ministry of Agriculture and Rural Development (MARD) and constituted the basis for the National Veterinary Services to develop their own strategy to control HPAI.

¹¹ http://www.wpro.who.int/Viet_Nam/sites/dcc/h1n1/

¹² Boni, M., Manh, B., Thai, P., Farrar, J., Hien, T., Hien, N., Kinh, N., Horby, P. 2009. BMC Medicine, 7, 43: available at <http://www.biomedcentral.com/1741-7015/7/43>

A high-level National Steering Committee for Avian Influenza (NSCAI) was established by the Prime Minister in 2004 to supervise Viet Nam's overall response. The National Steering Committee developed three main documents outlining Viet Nam's medium- to long-term strategy and pandemic response plan:

- The Viet Nam Integrated National Plan for Avian Influenza Control and Human Pandemic Influenza Prevention and Response 2006-2008 (completed in January 2006) outlining the overall direction and estimated costing for this three-year period;
- A more detailed Viet Nam Integrated National Work Programme for Avian and Human Influenza 2006-2010 (OPI or Green Book - developed in May 2006) as a basis for coordinated national efforts and international support;
- Viet Nam has also prepared a National Preparedness Plan in Response to Avian Influenza Epidemic H5N1 and Human Influenza Pandemic, based on WHO's six stages of global pandemic alert.

The OPI (known as the Green Book) includes a range of activities relating to influenza pandemic preparedness for the human health and livestock sectors, as well as plans for supporting the restructuring of the poultry sector. These are in line with the “commercialisation” (or industrialisation) strategy proposed by the Department of Livestock Production (DLP) of MARD, but also are intended to preserve poultry farmers’ livelihoods and minimize environmental impacts. The policy measures adopted by MARD have incorporated relevant aspects of the FAO/OIE/WHO Global Strategy and propose medium to long-term aggressive control measures for Viet Nam through the deployment of conventional methods of culling, bio-security and movement control, combined with strategic vaccination of domestic poultry and ducks. Other measures include raising public awareness, strengthening diagnostic capacity, enhancing research capability, establishing compensation policies, and carrying-out epidemiological surveys to understand the route of transmission as well as the role of wild birds. The process and preparation of the Green Book had strong involvement of central ministries in close collaboration with the WHO, FAO, UNDP, UNICEF and the World Bank. The Green Book is currently under review to develop an updated document for the period 2011-2015.

The overall goal of the Plan is to progressively control and eradicate HPAI from poultry in Viet Nam. The specific short- to medium-term objectives are to:

- (a) strengthen veterinary services to control HPAI and other potential zoonotic disease threats;
- (b) control HPAI using a cost-effective phased approach that addresses each sector;
- (c) plan poultry sector restructuring so that it enables better control of HPAI while minimizing loss of livelihood and environmental pollution

As mentioned, a longer term objective is to restructure its poultry industry by improving bio-security and food safety along the market chain from producer to consumer, while protecting the livelihoods of poor farmers and safeguarding the environment. Initially the strategy adopted was to implement generic measures in markets that have worked well elsewhere, without knowing the precise risks to target. However long term success will require a major increase in the understanding of the market value chains and the epidemiology of H5N1 infection in all sectors of the poultry industries and live poultry markets, as well as strategic use of vaccination and development and adoption of effective but practical biosecurity procedures for small commercial farms and markets. This will likely require a risk management approach with coordinated planning and implementation from DAH/DLP/MARD plus, importantly, representatives of small and large scale poultry industries and NGO’s; FAO has started contributing to this through multi-sector

representation in the 'Biosecurity Working Group', with development of training modules on risk assessment and management, and has the potential to play a further role in facilitating the process. FAO can also contribute indirectly through the FAO-CTA input to VAHIP by baseline industry surveys in target provinces and by workshops and training of SDAH staff. Some changes to markets are already in place but the key issue is having incentives to implement measures (or disincentives if not implemented). However, other than for the incentive of likely production gains, many farmers will not invest in appropriate biosecurity measures and for certain farm types, such as grazing ducks, it is unlikely that the production system can be made biosecure without fundamental changes to the system itself.

Coordination mechanisms for HPAI control were set up at the central, provincial and district levels. Central coordination was provided by the NSCAI with strong government leadership to ensure that the efforts of donors and international NGOs are consistent with national priorities. The four activity areas involved are: (a) strengthening national coordination; (b) enhancing coordination at the provincial level; (c) strengthening overseas development assistance (ODA) coordination through the establishment of a government-donor Partnership for AHI Control (PAHI); and (d) establishing thematic working groups for public awareness and behaviour change, monitoring and evaluation, and capacity building. Steering Committees for Avian Influenza have also been established under the Peoples' Committees at the provincial (and in some cases district) levels.

The DAH is the lead technical agency for implementation of the national avian influenza operational preparedness and response programme in poultry, with responsibilities which include rapid response in outbreak areas, with focused culling of infected birds and the deployment of mass H5N1 vaccination. Response activities include: rapid response to reports of suspect cases; the formation of emergency response teams to investigate, collect and submit samples to laboratories; confirmation of laboratory diagnosis; notification of relevant agencies; declaration of outbreaks through the Minister; liaison and communications activities; the establishment of infected, control and surveillance zones; initiation of appropriate movement restrictions; coordination of poultry depopulation and disposal; outbreak and epidemiological investigations into the source and spread of infection; and close liaison with MoH to determine the public health risk. At the provincial level the SDAH takes a lead role in local liaison and coordination to implement control measures including vaccination, assisting with field investigations, culling teams, carcass disposal, movement control and managing public awareness at village, district and provincial level.

There is a compensation scheme, but the value given is considerably less than market value, does not compensate for losses before production returns, and the payments are reportedly often delayed, which in the past at least resulted in some people selling off sick birds or destroying birds and not reporting disease. The compensation paid by the GoV was at a rate of 70% of market value but was capped at 23,000 VND; some provinces top up this amount.

The mass vaccination programme commenced in December 2005 and has been conducted twice yearly (March-April and October-November). While many poultry were culled as a result of a stamping out policy, the measure was seen as highly destructive to the industry and livelihoods. There was also considerable public health pressure for vaccination. In 2005 the number of human cases was on the increase.

The programme did incorporate a system of post vaccine monitoring (PVM) and surveillance, as per FAO/OIE recommendations. The system monitors the effectiveness of vaccines in field

use (including vaccine variability, cold chain efficacy, vaccination protocol and techniques), but does not routinely attempt to measure the overall level of protection induced in the population as a whole, or the individual poultry sub-sectors. Some monitoring of birds one to two months after the first and second rounds of mass vaccination showed 67% and 60% of birds had H5 HI antibody titres respectively (Taylor and Sims, 2007¹³). Some regular random serological monitoring of population antibody levels would be a necessary component for evaluation of the overall effectiveness of the mass vaccination programme. FAO has been advocating such an approach.

Viet Nam is now considering a more strategic vaccination programme. The mass vaccination is expensive, and there has been a “burn-out” of personnel after four years of the twice yearly vaccination schedule. There is also substantial variation in vaccination coverage between provinces and production systems; in some provinces the strategic switch has reportedly already occurred, with national policy out of phase with provincial pragmatism. The evaluation team was informed that the recommendation to vaccinate widely in late 2005 was taken because the existing control measures (mass culling without clear information on the extent of infection) had failed to prevent human disease at village level, and because it was recognised that improvements in biosecurity, hygiene and movement controls were likely to take a prolonged period of time. The recommendations made were based on the FAO Guidelines on control of HPAI in Asia which stated that vaccination was one of the control measures that could be implemented in concert with other control measures available.

An FAO international consultancy on Avian Influenza Vaccination Strategy – Future Directions (Taylor and Sims 2007) in Viet Nam reviewed the results of the vaccination programme to date, highlighted the need to change the approach and made recommendations to the vaccination programme and post-vaccination monitoring and surveillance in Viet Nam from late 2007 onwards. Vaccination was likely to be required for an extended period and it was important that it was effectively targeted to areas of risk so that it was sustainable in terms of manpower and resources.

It has been recognised that the level of biosecurity and movement controls in poultry farms and live bird markets was a problem in Viet Nam and that changes would take time to implement and be adopted by the industry. Considerable communication efforts have been undertaken with farmers, animal health workers and live bird markets relating to improvement of biosecurity and industry practices. International consultancies through FAO and the World Bank have investigated and made recommendations on enhancement of biosecurity in small-scale farms and live bird markets, suggesting the need for structural changes in some sectors of the poultry industry (Thieme and Guerne-Bleich 2007¹⁴). At the current time there has been limited improvement or adoption of biosecurity practices, especially in sectors 3 and 4 of the poultry industry.

Case detection depends on a mixture of passive surveillance from farmers or AHW at the commune level, active clinical surveillance at the commune level supported by a network of commune Animal Health Workers (cAHWs¹⁵) who are partially funded by the Government of Viet Nam for surveillance activity (but also undertake private animal health work). This

¹³ Taylor, N., Sims, L. 2007. AI vaccination strategy: future directions. Unpublished FAO report

¹⁴ <http://www.fao.org/docs/eims/upload/239034/ai291e.pdf>

¹⁵ Denoted intentionally as cAHWs (*Commune* Animal Health Workers), to differentiate them from the volunteer *Community* Animal Health Workers (CAHW) prevalent in Laos, Cambodia and various African countries, for example.

surveillance is supplemented by active virological surveillance in markets and slaughterhouses/points, but only in some provinces (16 out of 63) and in some field research projects. Suspected outbreaks are reported to district or provincial veterinary offices or centrally via a hotline system. Investigation teams visit and take samples for laboratory testing. A considerable amount of disease awareness, biosecurity and personal safety training has been given at the AHW district and commune level and a series of SOPs and Job Cards for outbreak investigation, sample submission, outbreak response, reporting activities, etc. have been developed cooperatively between DAH and FAO for these activities. FAO is apparently not privy to all the outbreak information being gathered. However, the underlying concerns include whether the incentives, including the amount and timeliness of compensation payments are sufficient to encourage farmers, or even animal health workers to report suspect cases and also whether they have sufficient knowledge or ability to consider low level poultry mortality as suspect HPAI cases. Additionally, the virological surveillance data suggests that clinical cases currently represent a small proportion of the total burden of infection.

The laboratory diagnostic capacity for HPAI in Viet Nam has been greatly enhanced and has been well supported by FAO and partners (including USAID, World Bank and other donors). This support has contributed to improved facilities with good biosecurity and biosafety practices, equipment, training support and introduction of standardised SOP, PCR equipment and PCR and HI test reagents in the national laboratory (NCVD), 6 RAHO laboratories and 2 NIVR laboratories with a wide geographic spread throughout Viet Nam. Viral testing is conducted initially by real-time RT-PCR using primers for M, H5 and N1 genes; the central and regional laboratories also conduct serological monitoring for post-vaccinal antibody responses by HI testing. A proficiency testing system for H5N1 PCR and HI testing is conducted by NCVD; NCVD and RAHO 6 in HCM City participate in the proficiency testing conducted by the international AI reference laboratory (AAHL, Geelong). Performance in this testing appears to have been mostly sound, but some concerns have been expressed that laboratory diagnostic reagents (e.g., real-time PCR primers) are reportedly not uniform between the RAHO 6 & 7 and the rest of the laboratories. NCVD and RAHO 6 have the facilities, protocols and capacity to conduct virus isolation for H5N1 and receive samples from other regional laboratories to grow viruses for further virus characterization. Selected viruses are regularly sent to international reference laboratories (CDC, AAHL and HKU before 2008, since then viruses have been sent from NCVD to CDC and AAHL) for genetic and antigenic characterization and phylogenetic analysis. NCVD also has a support role to the regional laboratories and has established a laboratory network to look at proficiency testing and for information sharing. Apart from the HPAI testing, which is largely supported by donor money, funds are limited for other livestock disease surveillance testing and this needs to be considered for sustainable laboratory capacity development.

The weaknesses of the veterinary services in Viet Nam have been documented previously, including through an initial evaluation under the first World Bank project (an activity managed by FAO¹⁶); this was followed by the OIE's PVS report. Weakness in epidemiology was identified as a major concern from these evaluations. There is an Epidemiology Division within DAH and Epidemiology Units within the Provincial and S-DAH structure regionally. This Division receives and consolidates information from the regions and is responsible for updating national livestock surveillance data on the DAH website daily and preparing monthly and 6-monthly reports on disease activity. The epidemiology groups in DAH and

¹⁶ Report by Dr Bill Geering, WB-FAO

provinces have mainly focused on data collection from investigations and surveillance, but there has been less focus on further analysis and synthesis of data for policy and planning. Training in field epidemiology for disease investigation and surveillance is being developed through AVET programme, modelled largely on FETPV type training, and this will support epidemiology capacity building for broader disease surveillance. Other overseas post-graduate training in epidemiology is also underway. However, the overall concern at the national and international level at this time is that the disease control programme is working with an insufficient understanding of the overall epidemiological situation of HPAI in Viet Nam and it has meant that control and preventive measures had to be implemented based on imperfect information.

The Department of Livestock Production (DLP) within MARD has played a limited role in the HPAI response in the earlier years. This has meant a lack of adequate interface with Vietnamese expertise in poultry production and marketing at the central level, and although some value chain studies have been carried out by FAO, several gaps in knowledge and understanding of critical control points for HPAI surveillance and control remains.

With a focus on how to interpret and move forward with restructuring the poultry sector in a way that supports the growth in demand for poultry products, the need for more formalised systems of marketing, but at the same time protects the livelihood considerations of small scale producers, it is clearly important for the DLP to play a greater role in HPAI control. They currently have limited central capacity, and do not exist as an entity in the provinces. The World Bank's VAHIP project has a substantial commitment to training and equipping DLP for this role. Policies to continue and/or increase the involvement and reach of DLP will require ongoing advocacy from FAO and this has been promoted in the FAO submission for the Green Book revision.

HPAI in Vietnam have resulted in substantial morbidity and mortality caused in poultry populations, and major expenditures in control measures applied by private and public sectors (Burgos et al., 2008¹⁷). From December 2003 to March 2008 a total of 59.3 million poultry died or were culled. Including culling and disinfection costs, it is estimated that the total economic costs of the first wave of HPAI outbreaks reached US\$200 million. After the first HPAI outbreaks poultry prices plummeted and alternative meats experienced price fluctuations with periods of consumer anxiety followed by cycles of high demand and supply shortage.

Poultry continues to be marketed predominantly through traditional live bird markets but some increase in marketing of processed poultry products has occurred in large urban areas such as HCM City where there is strong provincial government and SDAH. Viet Nam's accession to the WTO opened trade opportunities which have led to a very considerable surge of importation of frozen poultry products from highly developed and competitive poultry industries such as USA and Brazil. This appears to have contributed to a decline of the chicken meat sub-sector, but duck production and chicken egg markets remain buoyant and are thought to be expanding modestly. Despite the development and extension of a considerable amount of technical materials targeted at commercial poultry farmers, the overall trends in adoption of improved bio-security and good poultry production practices are very low. Also the nascent commercial poultry sector lacks effective institutions to represent them, such as strong producer associations and marketing structures.

¹⁷ Burgos, S., Hinrichs, J., Otte, J., Pfeiffer, D., Roland-Holst, D. 2008. Poultry, HPAI and livelihoods in Viet Nam – A review. Mekong Team Working Paper No. 2, 50 pp.

There has been much discussion and many interpretations of proposals for the restructuring of the poultry industry, and the concepts among stakeholders, including the DLP and other branches of Government, have evolved over time. Initially it was taken by many to mean a centrally-planned system with drastic elimination of sector 3 and 4 poultry, and the development at the Province and commune level of very discrete and well planned commercial poultry enterprises. While there are still emerging plans for future safe poultry production, marketing and processing in Viet Nam, the vocabulary has changed to “encouraging people to scale up production capacity”, and “encourage households to practice appropriate hygiene and biosecurity”. Nevertheless the mission was informed about a new draft submission from the large scale poultry industry sector to MARD for funding of a progressive restructuring in the southern part of the country using the compartment concept for broilers, layers and hatcheries, creating integrated feed supply resources, and eventually associated processing plants. However, no indication of willingness to commit substantial public or private funds for this was indicated to the RTE team. FAO (through the country ECTAD team and with inputs from the Animal Production Service in Rome¹⁸) and the World Bank¹⁹ (through the Livestock Competitiveness and Food Safety project) have and will continue to support this process.

IV. DONOR, PRIVATE SECTOR AND TECHNICAL ASSISTANCE SUPPORT

NSCAI has been entrusted with the responsibility for government-donor coordination and has met on a regular basis with the International Community. Donor coordination meetings are organized with the assistance of the UN Resident Coordinator and Country Team, the World Bank and other donors. In particular, the DAH, with help of the International Cooperation Department (ICD) in MARD, has played a central role in government-donor coordination in the past few years (especially regarding the Joint Government-UN Program to Fight Avian Influenza, which receives funds from seven bilateral donors).

In November 2006 the Partnership on Avian and Human Pandemic Influenza (PAHI) was established by the Government of Viet Nam together with representatives of UN agencies, bilateral and multilateral donors, non-governmental organizations and research agencies. The main purpose of PAHI is “to facilitate implementation of the Green Book or OPI” by enhancing dialogue and monitoring resources and activities. In spite of the presence of these co-ordination mechanisms, various bilateral relationships continue among donors, international NGOs, and different ministries and departments, as well as the Peoples’ Committees at different levels. This engagement is not fully coordinated as yet, although information flows have improved recently, with increasing information available through the websites of PAHI²⁰, WHO and FAO, and the DAH and MOH.

At least 27 bilateral and multilateral donors have committed funds to the fight against avian influenza in Viet Nam, with USAID and the World Bank being the largest of these. About 13

¹⁸ FAO has provided funding support to DLP to hold national consultations to review draft questionnaires on poultry production structures and to develop a poultry training package to be used in field work of the poultry restructuring activities as part of the UN Joint Programme for HPAI prevention and control (OSRO/VIE/701/UNJ). For further information see Thieme O. 11 November 2008. Livestock Development Officer Back-to-office report on Country Visit Viet Nam 4 – 15 October 2008.

¹⁹ A World Bank project is supporting Viet Nam’s Livestock Competitiveness and Food Safety (LIFSAP) with the objective of improving the competitiveness of household-based livestock producers by addressing production, food safety and environment risks in livestock product supply chains in selected provinces.

²⁰ <http://www.avianinfluenza.org.vn/>

International NGOs and 11 UN Agencies are also supporting Viet Nam. The VUFO-NGO Resource Centre maintains a matrix of INGO responses to avian influenza, online resources, and an email discussion list on avian influenza programmes in Viet Nam.

USAID

Starting in 2005, USAID provided funds in support of Viet Nam's fight against HPAI, then threatening to reach epidemic proportions. USAID has contributed approximately US\$ 27 million since 2005 (\$10.5 million in FY 2008), of which about 50% of USAID funding contributes to programs managed by FAO and WHO. The program supports prevention, containment and preparedness measures as well as communication activities and capacity strengthening for the Government of Viet Nam's MOH and MARD. USAID, together with FAO and WHO, has helped Viet Nam develop and revise the national plans to control and limit the risk of H5N1 outbreaks, strengthen monitoring of the HPAI virus in bird populations, and enhance pandemic preparedness and planning for HPAI. USAID is working with the business community to increase the resources, expertise and financing to fight the spread of bird flu. In addition to funding technical assistance, USAID provided over 24,700 sets of personal protective equipment and 100 decontamination kits for rapid deployment valued appropriately at US\$ 230,000.

World Bank

The World Bank has provided assistance to the Government of Viet Nam from the earliest stage of the outbreak. At the request of the government, a World Bank/FAO Cooperative Program (FAO-CP) team was fielded in Viet Nam from March 3 to 26, 2004 to assist in reviewing the National Action Plan for the Control and Eradication of Avian Influenza, and subsequently to prepare the US\$ 5 million Avian Influenza Emergency Recovery Project (AIERP). This joint effort led to the WB project, the first operational supported by the Bank to address the threat of HPAI; the approach developed has substantively informed all subsequent activities underway world-wide. This project had a major biosecurity component, including the upgrading of biosecurity on state breeding farms, which was prepared with contributions from an FAO international consultant²¹.

The AIERP, which was implemented by MARD and received technical assistance from FAO, closed in June 2007. A follow-up project, Viet Nam Avian and Human Influenza Control and Preparedness Project (VAHIP) was designed and is being implemented by MARD and MOH, with the aim of assisting Viet Nam to move from an emergency response mode to medium- to long-term integrated disease control and prevention programs for both poultry industry and human populations. The follow-up project has a total cost of US\$ 38 million, comprising three components:

- (A) - HPAI Control and Eradication in the Agricultural Sector;
- (B) - Influenza Prevention and Pandemic Preparedness in the Health Sector; and
- (C) - Integration and OPI Coordination, Results Monitoring and Evaluation (M&E), and Project Management.

The project is co-financed by the World Bank (US\$20 million via the IDA Credit), the European Commission (US\$ 10 million via the Avian and Human Influenza Facility - AHIF), the Japanese Government (US \$5 million via the PHRD) and the Government of Viet Nam (US\$ 3 million of counterpart funds). This project receive high level technical assistance from

²¹ Report of Dr Larry Allen, FAO-WB

FAO by providing the CTA to this project, and staff employed by FAO (through the Investment Center) have played a critical role in the drafting of VAHIP, designed to cover a number of areas that were not being covered by other projects.

Project implementation had fallen behind the initial schedule but the CTA has reportedly played a crucial role in pushing to get activities off the ground, in working to improve the quality of disease surveillance, in conducting vaccine trials and in supporting DAH in epidemiological analysis. Implementation has improved recently with the appointment of a consultant on laboratory quality assurance, provision of FAO staff for spatial planning for poultry sector restructuring, along with a consultancy on biosecurity; agreeing to contracts for construction of Ha Vi market; and speeding up procurement activities for the project generally. Some progress was made in decentralization from the central to provincial level and from the Provincial People's Committee (PPC) to Department of Agriculture and Rural Development (DARD) and Department of Health (DOH) for approving procurement activities, and this has contributed to some streamlining of the government's procurement procedures. The baseline surveys and development of the project M&E framework for both the animal and human health components were completed. Meetings between the two Project Co-ordination Units (one in MARD and the other in MOH) with the local World Bank team were held twice yearly, and this resulted in more timely identification and addressing of issues affecting implementation, although some institutional constraints remain. The present level of disbursement of the project however remains low (at around 38%), but with recent improvements in implementation the project is expected to be on-budget by completion in December 2010.

Private Sector

There is a steadily growing private poultry sector in Viet Nam, catering principally for the expanding domestic market, although there is an export market for some duck products, notably duck eggs. Feedback from the Poultry Association of Viet Nam indicated their belief that the vaccination programme has gone a long way in helping to bring the disease under control and they expressed concern that the withdrawal of vaccination could lead to outbreaks in poultry and consequently a threat to human health. The Association believes, as do those Sector 2 & 3 farmers interviewed by the evaluation team, that a vaccination programme should continue and the farmers will be willing to pay for it.

V. ROLE AND ACTIVITIES OF FAO

FAO has been supporting the Government of Viet Nam in its efforts to combat HPAI continuously, since very shortly after the initial confirmed outbreaks in December 2003. As in many other countries affected by HPAI, the immediate response to the crisis was funded through FAO's TCP, as this is generally the quickest way to initiate action at country level. Subsequent support to Viet Nam on HPAI has been funded primarily by USAID and Japan, but FAO is also a partner in the UN Joint Programme on Avian Influenza and has provided the CTA to the World Bank-funded VAHIP project. Ireland also funded a project through FAO aimed at establishment of an effective cold chain for vaccines in selected provinces. The list of FAO-implemented projects in Vietnam can be found in table 1.

The initial responses to HPAI in Viet Nam were conditioned by the large number of outbreaks and relatively high number of human cases in 2004 and 2005. Since 2006, FAO's responses have been guided by the Integrated National Operational Programme for Avian and Human Influenza 2006-2010 (the "Green Book"), which FAO helped to develop. The vision

statement for the Programme is that by the end of 2010, Viet Nam no longer represents a risk for development of human pandemic influenza from the H5N1 virus. In response to the preparation of the Green Book, FAO produced its own Country Strategy and Work Plan for 2007-2010 to outline its expected contribution to the National Programme. The FAO Country Strategy, first produced in May 2007, was updated in November 2009. As part of the ongoing revision of the Green Book FAO, in close consultation with the GoV, has provided 11 major recommendations for the next phase of the national programme.

FAO's work on HPAI in Viet Nam has been focused in broad terms on providing support and advice to government in five areas: disease surveillance, communication, biosecurity, laboratory diagnosis and applied research. There has been limited funding until now for biosecurity (more has been allocated for post-vaccinal monitoring and cold chain) and little for communication; there has been considerable funding for outbreak response, vaccination strategy development and monitoring, cold chain, training and capacity building and support of SDAH and DVS staff and some AHWs. Operational projects are generally focused on selected Provinces for each intervention, with the choice of Provinces being made by the central Government. A detailed assessment of the main FAO Avian Influenza Projects in Viet Nam can be found in annex 3.

Table 1: FAO-implemented projects in Viet Nam as of October 2009

Project	EOD	NTE	Total Approved Project Budget	Total Expenditures under the project	Budget Allocated for Viet Nam through FBA	Expenditures and Commitments under FBA for Viet Nam
<i>National - (UTF /VIE/034/VIE)</i>	12/12/2007	11/12/2010	800,000	433,912	35,000	17,546
<i>National - (OSRO/VIE/701/UNJ)</i>	01/01/2007	31/12/2010	1,968,203	1,692,660	511,820	394,367
<i>National - (OSRO/VIE/501/UNJ)</i>	01/11/2005	31/07/2006	2,017,062	1,909,898	181,000	169,645
<i>National - (TCP/VIE/3003)</i>	04/02/2004	31/01/2006	359,039	359,039	170,347	170,347
<i>National - (OSRO/VIE/601/IRE)</i>	01/08/2006	31/05/2007	321,042	316,167	82,540	82,297
<i>National - (OSRO/VIE/801/USA)</i>	01/10/2008	30/03/2011	4,000,000	728,180	365,000	129,603
<i>National - (OSRO/GLO/504/MUL Baby 08)</i>	31/12/2005	31/12/2009	500,000	391,105	9,500	7,105
Total National Projects:			9,965,346	5,830,961	1,355,207	970,910
<i>Regional - (TCP/RAS/3004) – B01</i>	01/02/2004	31/01/2006	43,876	43,876	23,234	23,234
<i>Regional - (OSRO/RAS/604/USA)-B06</i>	01/08/2006	30/09/2010	8,400,000	5,657,946	2,711,200	1,988,155
<i>Regional - (OSRO/RAS/505/USA)</i>	01/09/2005	31/03/2007	6,000,000	5,959,835	537,958	506,178
<i>Regional - (OSRO/RAS/401/JP) – B04</i>	01/03/2004	30/11/2005	196,324	211,417	196,324	196,514
<i>Regional - (OSRO/RAS/602/JPN)</i>	01/04/2006	31/12/2009	11,400,052	11,004,407	753,850	753,874
Total Regional Projects:			26,040,252	22,877,481	4,222,566	3,467,955
Grand Total:			36,005,598	28,708,442	5,577,773	4,438,865

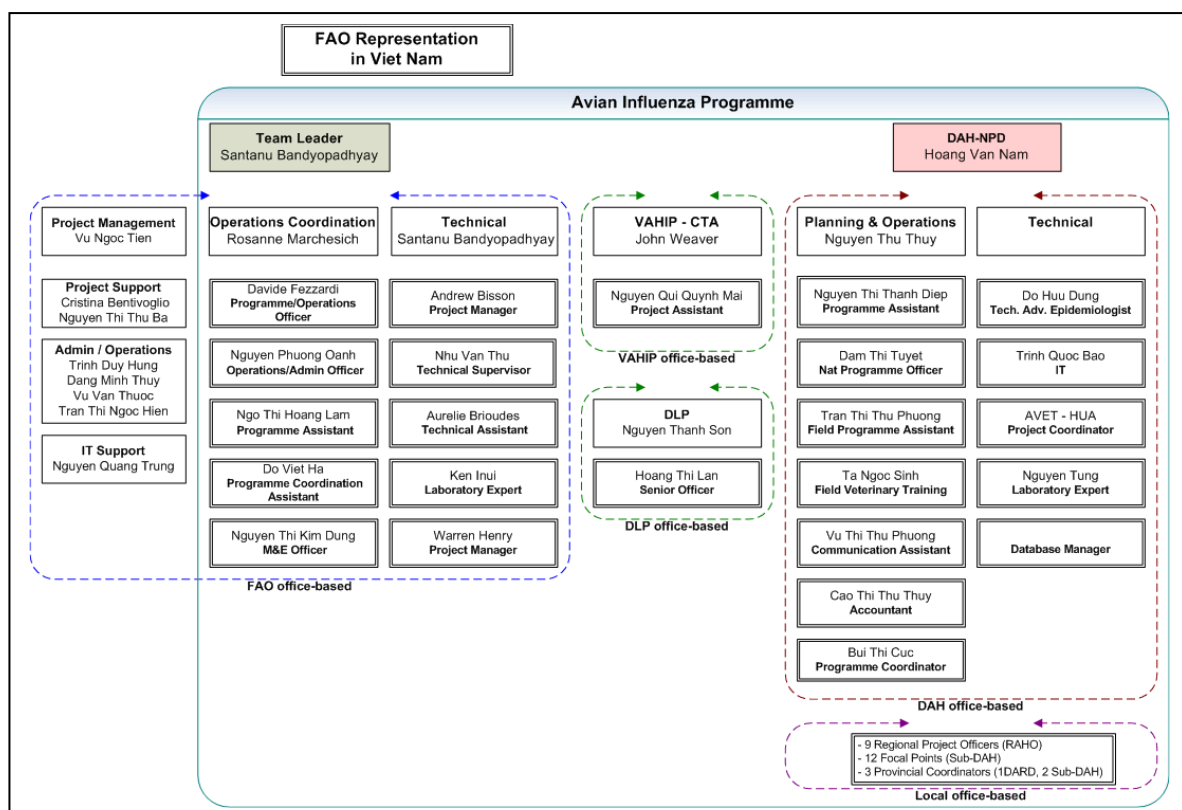
The FAO Country Team

FAO has wisely adopted a programme approach with the various projects it has implemented in Viet Nam, particularly the USAID-funded and UN Joint Programme (JP) projects, which have very similar objectives and are complementary in many ways.

FAO's activities in the country are largely implemented through an Avian Influenza Programme team, comprised of technical and operational staff, including international staff as the Team Leader, three CTAs/Project Managers, a laboratory expert, a technical assistant for surveillance activities supported by the French Government and two international Operations staff. A post of epidemiologist under the GETS project is under recruitment at the moment. VAHIP is trying to recruit an additional epidemiologist, although this is yet to be approved by GoV. National staff also serve on the Country Team, but with their commitments to DAH activities, their direct project related activities appear to be less than in other countries. GETS has three national staff that have minimal commitments to DAH activities. The involvement of national staff with these projects however does have a spin-off in general capacity building within DAH.

The FAO HPAI programme in Viet Nam has also benefitted from support by several short- and medium term consultancies mainly organized through ECTAD-RAP and FAO Rome. These consultancies²² have provided expert advice in several areas including strategy and policy development, vaccination, biosecurity, composting and disinfecting, etc.

The organigram of the FAO Avian Influenza Programme in Vietnam can be found below.



²² Experts involved include Tony Forman, David Hadrill, Nick Taylor, Les Sims, Astrid Tripodi, Peter van Beek, Larry Allen, Andrew Almond, Yoni Segal, Laurie Gleeson (former ECTAD-RAP regional manager), etc.

FAO's role as an implementer of projects and programmes in Viet Nam was appreciated by the Government as well as other donors. There did not appear to be any unusual shortcomings in implementation, although procurement delays relating to some vehicles and lack of information at field level about project budget status of UNJP projects were mentioned.

FAO's project international staff is housed within the FAO Representation in Hanoi, with the exception of the VAHIP project CTA who is located some 10 km away with the MARD Coordination Unit and the senior laboratory expert who sits in the NCVD Laboratory adjacent to DAH. Most of the national staff is based at NCVD or DAH. The project teams meet at DAH at least 2- 3 times per week or more, informally. The FAO Team Leader or the Operations coordinator arranges formal meetings with senior staff in MARD (including DAH and DLP) at mutually convenient times on a regular basis. DAH or FAO offices do not have sufficient office space to permit co-location. With increasing engagement with DLP, it is fortuitous that the FAO office is strategically located between DAH and DLP.

Thematic areas covered by the FAO programme

The various currently running FAO projects can be summarized into the following main thematic areas:

Policy level support; disease surveillance in the field; responses in the field (rapid response interventions and risk reduction through biosecurity; risk analysis and disease control planning at the Provincial level; risk reduction through biosecurity in live/wet markets; laboratory capacity development and networking; vaccine studies to support vaccine use in the field; post vaccination monitoring; the GETS project (gathering evidence for a transitional strategy); and poultry industry restructuring. These are undertaken by the set of projects indicated above. Below are some comments on some of these thematic areas.

In terms of policy advice, FAO is an important, but not sole, adviser to the Government of Viet Nam's National Steering Committee for Avian Influenza Control and Prevention and to the DAH. FAO has played a large role in contributing to the OPI. FAO's influence will be able to be measured by seeing how many of the 11 recommendations made will be incorporated into the revised Green Book. In response to requests for support FAO has been a major contributor to DAH in the development of operational policy. There was considerable support and influence throughout the period from 2005 to 2008. Moreover the measures used in Viet Nam, and their assessment, have reportedly contributed valuable information towards the development of the global strategy that was formulated at the technical meeting in FAO Rome in 2007. This global strategy was then fed back to Viet Nam and other countries. The strong influence by FAO probably relates to multiple factors, including the need for the Government to get a quick handle on what was at the time a new and very serious zoonotic disease with which it had no previous experience. More recently, FAO's influence may have been affected by the turnover in the CTA position between February and August 2009 and this was an issue with FAO's interlocutors in the Government and donor community.

For the other set of thematic areas, FAO's field work has taken place in what seems to the outside observer to be a curious patchwork of different provincial locations (see figure 6 on the next page). FAO does not have a say in which province is selected for a given project, these are apparently decided by the Government team on the basis of three factors, perceived risk of HPAI, provincial needs for assistance, and the presence of collaboration and they should also be distinct from the 11 VAHIP Provinces. While a variety of avian influenza

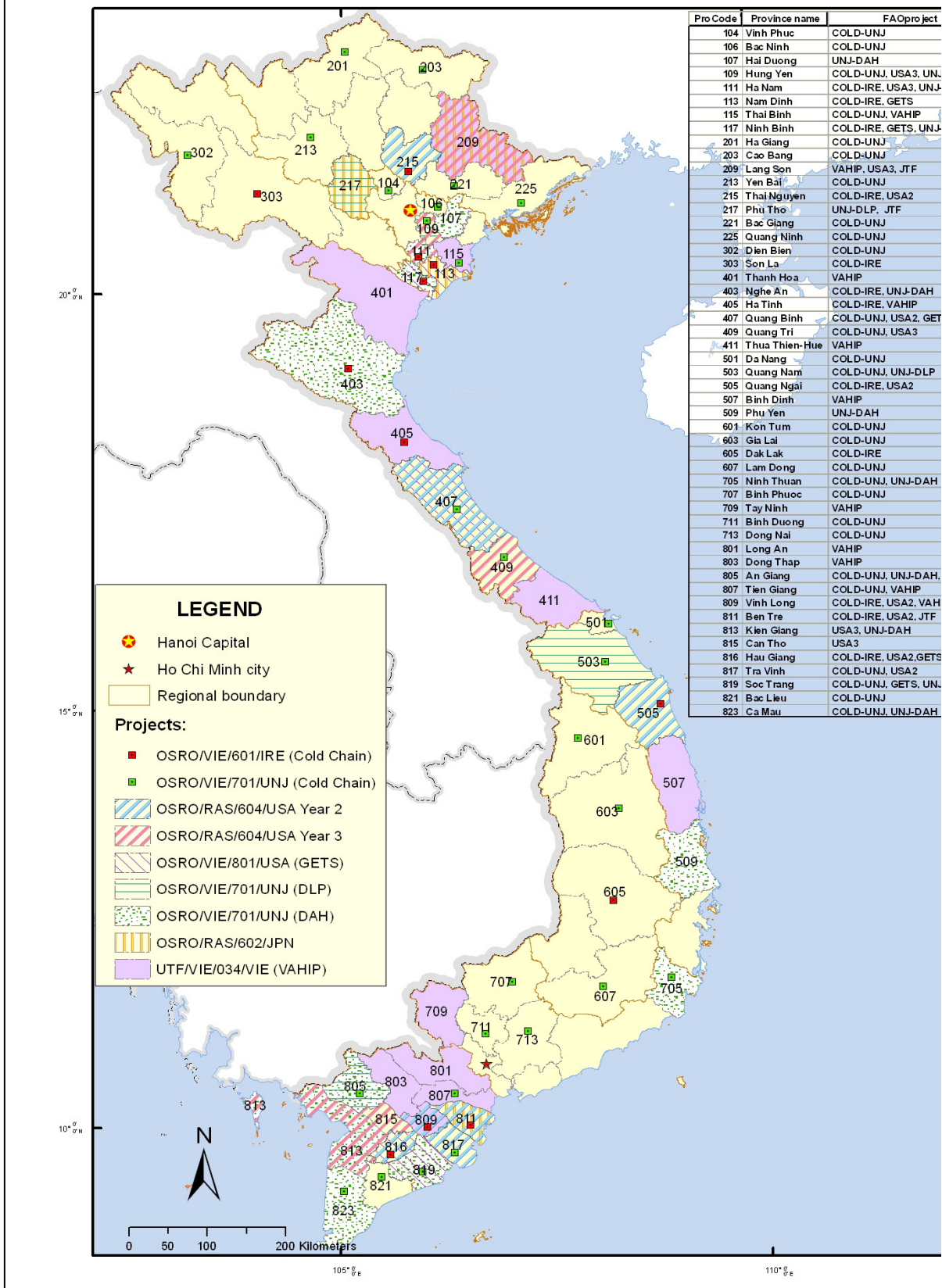
projects have been conducted in many provinces, which may have different production systems and risk profiles, the evaluation team was concerned that the work might have had greater impact if FAO would have been involved in the selection of locations from a scientific planning point of view.

In terms of *disease surveillance in the field*, given the previous patchwork of activities, a major contribution has been to develop the standard operating procedures, now in place in all provinces and the more recent revision and structuring of SOPs with appropriate Job Cards that are being tested in pilot provinces before adoption nation-wide. The passive surveillance, which has been in place for a few years, is steadily being improved, but the trace-back and follow-up is weak, despite the training in disease investigation and SOPs now in place. Implementation of the programme is clearly the role of the veterinary services, but the slow pace of improvement is something that needs continued input from FAO. Unfortunately apart from the payment of least one cAHW per commune to provide this type of service, the publicity/public awareness material in project provinces about hot line numbers, and the need for reports to help protect public health, there is an absence of effective incentives to farmers to support passive surveillance. This has been identified as an issue for investigation in the VAHIP project; there was considerable input into discussions on compensation by consultants involved in Viet Nam during a HQ e-conference on the issue; and there was an initial compensation review conducted by FAO during AIERP.

An active surveillance project is underway with a USAID identified partner (the Massachusetts based Abt Associates Inc.²³, operating in 5 pilot provinces). However, there is apparently inadequate communication and sharing of data by Abt. The high costs and sustainability of this active surveillance programme are also questionable.

²³ <http://www.abtassociates.com/Page.cfm?PageID=12605&CSB=1&OWID=2109769227>

FAO Avian Influenza Control Programme DISTRIBUTION OF FIELD ACTIVITIES (BY PROJECT) 2006-2009



Risk reduction through improved bio-security was recognised by FAO as a major target for control of HPAI in Viet Nam, and although vaccination was the dominant control tool used since late 2005, efforts have been made into concurrently improving biosecurity in farms and markets by FAO/DAH through international consultancies (on upgrading biosecurity in government grandparent farms and improving hatchery hygiene), communications and publications (training courses for cAHW, and farmers, market staff; distribution of VSF smallholder biosecurity handbook), consultancies to consider structural change as a means to improve biosecurity especially in small-scale commercial poultry industries, and including elements related to enhancement of farm biosecurity, enhancements of markets and slaughterhouses in selected provinces in the WB funded VAHIP.

Some training of SDAH, market and slaughterhouse staff, guidelines for market and slaughterhouse improvements, plans prepared for upgrading market and slaughterhouse facilities have already been implemented through the VAHIP programme. FAO supports a bio-security working group, a training module targeting district veterinary staff, value chain studies, a poultry atlas and other studies assessing bio-security standards. Despite all these efforts by FAO and other partners in awareness training and development of biosecurity enhancements, the evaluation team's observations were that uptake of biosecurity improvements was generally very limited and further implementation would require a stronger commitment from DAH, DLP and closer engagement with the poultry industry.

The components of risk analysis and disease control planning at the Provincial level, including risk reduction through biosecurity in live/wet markets, has been an on-going theme since 2005, but progress in this area has been slow. This is currently being followed up using external technical assistance in running courses *in situ* on risk analysis (one such course was being conducted in the north of the country at the time of the evaluation team visit). The protocols for post vaccination monitoring have been somewhat of a sensitive subject, with the level of coverage being a sensitive issue with Government. In addition, there is a difficulty for central Government in effectively controlling how vaccination is carried out in the different Provinces. In 28 out of 63 provinces, forty flocks are selected among those flocks known to have been vaccinated, which, while it should provide an estimate of seroconversion in vaccinated flocks, does not provide effective information on population immunity across the board. Even gaining access to the listings of vaccinated flocks is difficult for FAO. Recommendations for a more randomised study have been made by FAO to DAH (see for example Taylor and Sims 2007). For the VAHIP pilot provinces a more randomized sampling frame is being applied. For the other provinces FAO is in the process of developing a modified PVM sampling protocol.

The idea of the GETS project was very much driven by USAID, and has had a relatively long incubation in terms of project design. It is being piloted in 5 Provinces (two high risk in the north, two high risk in the south, and one apparently low risk in the central region). The aim is to target the higher risk duck populations, and also transfer certain responsibilities to private enterprise for vaccination. One concern in the pilot provinces is whether there will be an increased public health risk from reduced vaccination. The project will engage a new epidemiologist, and will incorporate socioeconomic impact assessments with technical support from FAO Rome. The protocols for the five Provinces are shown below.

GETS PROGRAM	Nam Dinh V2	Ninh Binh V2	Quang Binh V0	Hau Giang V2	Soc Trang V2
No GoV Vaccination in these production units, but vaccine available for private purchase	All Chickens (except one parent flock)	All Chickens (except commercial layer chickens)	All poultry in 4 districts (Bo Trach, Quang Trach, Minh Hoa, Tuyen Hoa)	All Commercial Chickens	All Chickens
Targeted Vaccination (meat ducks & replacement ducks) (GETS intervention)	Monthly vaccination -newcomers into duck flocks	Monthly vaccination -newcomers into duck flocks	Monthly vaccination -newcomers into duck flocks (Le Thuy, Quang Ninh, Dong Hoi)	Monthly vaccination - newcomers into duck flocks	Monthly vaccination -newcomers into duck flocks
Maintain twice yearly GoV Vaccination program as per GoV Directives	All ducks & One parent chicken flock	All ducks & Commercial layer chickens	All poultry in 3 districts (Le Thuy, Quang Ninh, Dong Hoi)	All ducks & Free ranging chickens <200	All ducks

The VAHIP project will be operational in 11 Provinces and involves 6 RAHOs, 2 laboratories of the National Institute of Virus Research, NCVD and 6 provincial laboratories.

The staffing has been reduced substantially from the original concept (from 26 to 5 international and from 36 to about 20 national staff) and has taken very long to become operational. There will be two additional consultants in 2010 on spatial risk and planning and biosecurity guidelines for larger commercial poultry systems. The delays have caused intense frustration on all sides (FAO, WB and DAH), the provinces targeted are all scattered, and it has been questioned whether greater value would have come from them being clustered.

The evaluation felt that the country team was highly engaged in its work and dedicated. However, there was understandably a heavy emphasis on carrying out operational tasks that were related to the emergency response mode. Work load and ongoing outbreaks have limited consideration of long-term sustainable activities, but there is an increasing engagement with DLP on investigation of sustainable structural changes in the poultry industries. Part of the problem has been that, until very recently, the reporting burden to FAO HQ in particular was deemed to be excessive to accountability requirements. This is expected to lessen in the future. The sum of factors, i.e. the strong role of Government generally, the fact that HPAI is now a more mature problem, high recent staff turnover and focus on operations, is that FAO may be less influential currently in the national policy debate than it is in other countries visited by the evaluation team. Given the remaining unresolved issues in Viet Nam regarding HPAI and animal disease control more generally, there is scope for further enhancing the policy advisory role for FAO in the country. To support this role FAO commissioned a consultancy to prepare a submission for the Mid-Term Review of the Integrated National Operational Program for Avian and Human Influenza (OPI), which was submitted by the consultant in October 2009²⁴. This submission has also drafted a comprehensive list of possible milestones that could be used for M&E in the revision of the Green Book.

²⁴ Sims, L. 2009. Submission for the Mid-Term Review of the Integrated National Operational Program for Avian and Human Influenza (OPI), FAO, 28 pp.

It has not just been the FAO in-country team that has provided support to Viet Nam. There has been substantial input from short to medium term FAO consultants and different groups in FAO, Rome, notably from the socioeconomic group, the animal production group, and the Pro-Poor Livestock Policy Group. In addition, some very valuable strategic contributions have been made by the members of the DFID-supported Pro-Poor HPAI Risk Reduction Project, which has involved several partners including the Royal Veterinary College, UK, and others.

The relationship between FAO and Private Sector is very limited, almost non-existent. This is clearly in part because the private sector itself is very poorly developed and organised in Viet Nam; there is no effective private sector association, so FAO is reduced to meeting the companies on an ad hoc basis. Even the Poultry Association of Viet Nam is managed by ex-academics, not private sector poultry people. There is no real estimation of the role and size of the private sector. However, a beginning is perhaps being made by contact with CP as representing large commercial farms and hopefully this will pave the way for other commercial entrepreneurs to come forward and eventually strengthen the private sector.

This lack of interface with a functional private sector in a country advocating poultry sector restructuring is of concern, and can be a major constraint to FAO's future effectiveness; the private sector has an important long term role in poultry development and needs to be engaged by all, including FAO.

Recognizing these limitations the FAO staff working on projects OSRO/RAS/604/USA, OSRO/VIE/701/UNJ and VAHIP projects have recommended processes that could progressively contribute to improved HPAI control, through more coordinated action between provinces as well as neighbouring countries through regional ECTAD activity; innovative approaches using focus groups of farmers and market chain intermediaries to try to understand barriers to adoption of biosecurity and good poultry production practices, exploring incentives which might improve uptake; and using surveillance data, epidemiological intelligence/analysis and understanding of market value chains to give an integrated risk management approach at provincial and central levels. These and other aspects have been considered in formulating the submission from FAO for the Mid-Term Review of the Integrated National Operational Program for Avian and Human Influenza (OPI).

VI. SYNTHESIS AND DISCUSSIONS OF FAO'S CONTRIBUTIONS AND ROLES

Relevance and Appropriateness of FAO's Strategy and Programme at country level:

- Adequacy of FAO's support vis-à-vis the national agenda and priorities, national development needs and challenges and decision-making processes;

FAO has been engaged with the Government of Viet Nam now for five years, and although there have been regular staff changes on both sides, the period has been characterised by a progressively maturing relationship, very much led by DAH. As a result, FAO has, on the whole, successfully interpreted GoV aspirations and ideals, and contributed to these a set of broad strategic technical contributions that have resulted in balanced and effective programmes. The integral link with the Green Book/OPI, and FAO's contributions to this (along with other independent contributors) have helped to cement this partnership.

- Extent to which FAO's field work is in line with the Organization's priorities (as described in programming documents such as the National Medium Term Priority

Frameworks, the FAO's Programme of Work and Budget, the FAO/OIE Global Strategy and the FAO Global Programme for the Prevention and Control of HPAI);

FAO's field programme is generally in line with the Organisation's priorities. Viet Nam is one of the few countries in which vaccination is a strategy in active use, a tool very much advocated by FAO in the early stages of the SE Asian outbreaks. It has played a strong role, and with the apparent reduction in human cases in the months after vaccination was started, perhaps the country was lulled into a false sense of security, and the need for a package of measures to be followed vigorously, beyond just vaccination, in which biosecurity was critical, received less institutional support. As Viet Nam moves to a reduced and more strategic use of vaccination, and concerns are expressed about changing risks of human disease, there is a need to reinforce the need for a package of surveillance and response measures. Beyond this, the programme has focused on the enhancement of capacity of veterinary services to conduct outbreak investigations, tracing and surveillance; trained cAHW in active clinical surveillance and biosecurity procedures; enhanced laboratory diagnostic capacity for rapid virus detection and reporting and other aspects of HPAI control as recommended in global strategies and programmes. The FAO experiences from the Viet Nam programme have reportedly helped to shape the latest iteration of the FAO/OIE global strategy and provided inputs to the technical meeting held in July 2007 at FAO HQ²⁵.

- Extent to which the various FAO activities at country level are underpinned by a strategy and form a coherent programme, with consistent approaches and common goals;

The activities conducted by FAO in Viet Nam are mostly underpinned by the OPI (*Green Book*) which outlines the activities to achieve the objectives of the Integrated National Plan for Avian Influenza Control and Human Pandemic Influenza Preparedness and Response (*Red Book*). One purpose of the OPI is to provide a framework for coordination and collaboration between the GoV and international partners in the fight against HPAI. In this regard, FAO has supported OPI implementation in full cooperation with the Government. The activities in Viet Nam are also consistent with and based on the recommendations from the technical meeting held in Rome.

- Coherence and integration of regional projects into country programmes/activities;

Close linkages were apparent between ECTAD regional activities and the country-level work in Viet Nam. Of particular note are the cross border studies in the area bordering China, and those in the Mekong delta region.

- Appropriateness of FAO interventions in terms of:
 - Approach: comprehensiveness;
 - Duration: short term inputs versus long-term technical assistance; and,
 - Focus: HPAI versus other Transboundary Animal Diseases

While funding dictates that the major effort in Viet Nam is focused on emergency responses to HPAI, it is clear that the disease is endemic and will not be controlled in the short term. In spite of the constraints of short term funding, a comprehensive improvement has occurred in surveillance, laboratory diagnostic and disease response capacity at central and provincial level. This capacity can be further developed if support and funding continues, and if it will

²⁵ <http://www.fao.org/avianflu/en/conferences/june2007/index.html>

be able to be demonstrably directed towards the control of other TADs and emerging infectious diseases (EIDs). The funding strategies now need to be directed to long term technical assistance for disease detection and control (HPAI and other EIDs) to build on existing gains. The GoV still ranks HPAI as its highest animal disease priority, and appears reluctant to slacken the strict focus it maintains on this, rather than exploiting the capacities to also address the control of FMD, PRRS and other national priorities.

Efficiency

- Timeliness of FAO's response to requests for assistance on HPAI prevention and control

The timeliness of provision of advice and support during the period from 2005 to 2008 was considered to be good. There have recently been several timeliness issues affecting the Viet Nam programme, and the reasons for them have been complicated and multi-institutional. The most serious relates to an extended delay in the work of the World Bank's VAHIP project, which is managed by the PCU of MARD, and FAO only provides the CTA who is not the Project Manager. Some frustration was also expressed by DAH on loss of continuity and momentum as a result of the need to appoint short term acting Team Leaders filling the extended gap between the departure of the previous Team Leader (February 2009) and the relatively recent arrival (August 2009) of his replacement.

- Adequacy of FAO's response, including human/financial resources, operational, administrative, monitoring and reporting arrangements

The office of the FAOR provides strong administrative support and guidance to the programme.

The location of the team in the FAO office provides them with appropriate support services. There is arguably a case for the team to be co-located with DAH and the laboratory facilities, but there are space constraints to this option.

The relatively recent (April 2009) appointment of an operations coordinator, previously in Rome, is considered a very constructive move. In consultation with the technical team, this person will also be developing a longer term strategic framework for ECTAD in Viet Nam, emphasising the need to broaden responsibility to other priority diseases. In addition, the operations coordinator attends interface meetings with the FAOR, potentially offering a channel of communication between emergency and development issues.

- Timeliness and adequacy of technical and operational support from FAO Headquarters (HQ) and decentralized offices (including ECTAD units and RAHCs) to country level activities, including:
 - quantity and quality of co-ordination and support from HQ, decentralized offices and Regional ECTAD/RAHCs (in terms of backstopping/supervision missions);
 - quantity and quality of country level work undertaken by the ECTAD national units and, where relevant, the FAO Representations

There has been substantial technical support from FAO Rome and from the ECTAD Bangkok over the years, in a variety of different fields. Viet Nam has been considered a priority country by FAO; it has been the main recipient of technical backstopping missions from ECTAD Bangkok for wildlife surveillance, strategy development, laboratory capacity building, some field epidemiology training, etc. FAO HQ has also fielded numerous missions

particularly in the programmatic/operational/administrative side, but also on strategy and policy development, vaccination, socio-economic impacts, industry restructuring and biosecurity issues.

- To the extent possible, determine whether the approach, duration and focus of FAO interventions at regional and country level have been cost-effective

The evaluation team has identified several areas where FAO inputs might have been very cost-effective, and others where it would very likely have been less. Empirically, it appears that FAO contributions including enhanced policy and strategic planning (chiefly through the national ECTAD Team Leader and the consultancy inputs), improvements of laboratory networks, improvements in HPAI disease detection and surveillance, and communication for awareness of transmission risk and personal protection were cost-effective interventions. FAO has conducted studies that show that targeting interventions (such as vaccinating only the commercial sector) will result in major savings (of about US\$ 16 m per year) provided that the changes being advocated do not increase the risk of human cases or overall control of the poultry disease in Viet Nam. A negative element noted by the team was the wide dispersion of activities over the country, with project sites not necessarily being chosen based on cost-effectiveness considerations.

In neither case however the evaluation team was able to provide definitive examples of cost-effectiveness. The issue faced by the evaluation team in Viet Nam and elsewhere was how to measure cost effectiveness for the whole FAO programme when valuation and attribution of effects is so difficult to do. The project reporting in terms of outcomes and impacts and the relationship of benefits-to-costs for project activities was not sufficient to actually allow the evaluation team to calculate if activities were cost-effective. This requires further attention to project documents and the monitoring of activities to enable assessment of outcomes, impacts and cost-effectiveness.

Effectiveness of individual country programmes

- Achievements in terms of outputs and outcomes, including:
 - development of effective national policies, preparedness measures, communication and public awareness campaigns, surveillance systems, laboratory capacities and contingency plans to deal with the disease;
 - new or strengthened institutional frameworks, organizational structures and processes, as well as knowledge, skills and competences acquired resulting in improvements in the performance of public and private veterinary services; and,
 - enhanced preparedness and response capacities of the poultry sector to deal with the risk of HPAI outbreaks, and of other animal diseases

There is a high level of respect from DAH/MARD and donors for FAO's emergency response support and coordination in the emergency phase from 2004 -2008. FAO has a good working relationship with DAH, and advice from FAO is usually heeded, although it apparently was not for some major issues, such as a compensation policy, in which FAO advocated a 100% scheme.

DAH/MARD are generally appreciative of the more recent response, but the major donors (WB and USAID) are concerned with slowness of the approval processes with the USAID and VAHIP projects. There is also a perceived lack of clarity on which approaches should be advocated for future responses to HPAI in Viet Nam. This may be related to the difficulties

associated with aspects of the current response of the GoV. First, sustainability of vaccination is an issue, which is draining financial and staff resources. Secondly, other measures being advocated, (i.e, risk-analysis, biosecurity, poultry sector restructuring, etc.) are difficult to implement in the short-term and will not produce instant results.

FAO has made substantial contributions to HPAI preparedness and responses in Viet Nam, including contributions to policy development, institutional strengthening and capacity development. The evaluation team qualifies this by saying that a) the FAO programmes have been generally supportive and strategic, with the DAH, principally in the front line implementing activities of disease control, and b) given the continued limited understanding of the epidemiology of the disease, it is difficult to directly attribute a cause effect relationship between actions taken and the current apparent reduction in HPAI incidence.

The number of outbreaks in the winter peak periods has fallen dramatically in the period 2006-2009, when compared with 2004 and 2005. Comprehensive vaccination commenced in December 2005. Despite the HPAI control programme since 2005, the proportion of outbreaks outside the peak winter period has apparently increased substantially, and the reason for this, if a real phenomenon, is not understood. This change in pattern, if it is indeed that, given the various confounding factors such as possible improved surveillance sensitivity, needs further investigation, based on better outbreak investigation, better understanding of the industry structure, as well as market value chain and associated epidemiological studies. Obtaining accurate information on this disease and on virus dynamics is difficult and will require an effective set of veterinary capacities and resources to undertake these investigations. Comprehensive training has been provided for cAHWs, and for District and Provincial Veterinary staff in outbreak investigation and this has been reinforced by preparation and distribution of SOPs and Job Cards to be used in the field. Sixteen SOPs and Job Cards have been developed collaboratively for outbreak investigation, sample submission, outbreak response, reporting activities, among other procedures.

The level of provincial system autonomy has made it difficult to get consistency across the 63 provinces and this probably also affects cross-province coordination in aspects such as outbreak investigation and reporting. Further advocacy from FAO for funding and support at the provincial, district and commune level to maintain a sustainable disease investigation and surveillance system will be needed.

From the relatively low skills level at present continued training and support for SDAH and DVS staff will be needed for some time to underpin a sustainable disease investigation and surveillance capability in Viet Nam.

There has been a comprehensive system of disease awareness, personal protection and biosecurity training, extended down to the grass roots level and including Provincial SDAH, DVS staff and cAHWs. The absolute number of cAHWs trained and the provision of funding for cAHWs for HPAI activities should act as incentive to improve passive and active clinical surveillance. However increased awareness has not resulted in significant behavioural changes, as manifest by outbreaks going unreported, a problem not just confined to Viet Nam. The whole question of incentives to report is extremely complex, and is one aspect that will be investigated in VAHIP.

Training for other AHW and Agriculture Extension Workers, and the development of incentives (such as more effective compensation) are probably necessary for other AHW and

farmers to report to cAHW or through the hotlines, if the sensitivity of the passive surveillance is to be improved.

Data on poultry populations, as well as on morbidity and mortality, is collected from communes and passed on to district, Province and central DAH on a monthly basis. Provinces and district offices have appreciated support from FAO and other donors in the form of computers and fax machines to facilitate data recording and reporting, but the main contribution has been building the capacity of human resources at both the provincial and central level for this process. However, good denominator data on poultry populations is an essential component of sound epidemiology and intervention programmes, and improvements in this presents an area for ongoing FAO support to DLP, which should form part of a seamless interface with DAH. Poultry census data from the General Statistics Office (GSO) is available but its accuracy, especially for sectors 3 and 4, may not be very sound. Using GSO data FAO has published a comprehensive atlas of poultry production in all the pilot provinces under UNJP, and two USAID projects covering a total of 13 provinces.

The effectiveness and efficiency of outbreak investigation, the completeness of investigation reporting, and the quality of data analysis and synthesis are difficult to assess because FAO is only given limited access to this data, but this clearly need to be kept under constant review. Outbreak investigations have been recognised as one of the weakest parts of the HPAI control system, and until this area is improved it will act as a block to understanding of and progressive control and elimination of the disease²⁶. The effectiveness of the TADinfo network across all provinces, and the ability to use its mapping and analysis functions, appears to be highly variable.

Training in field epidemiology for disease investigation and surveillance is supported through the Applied Veterinary Epidemiology Training (AVET) programme (modelled on FETPV type training). Nominal epidemiology units are set up in DAH and Regional offices. This activity potentially provides the basis for capacity building for a broader disease base than just HPAI. Furthermore, epidemiology groups in DAH have mainly focused on data collection from investigations and surveillance, but have undertaken limited analysis and synthesis of data collected.

The level of epidemiology expertise and experience in DAH and SDAH in the provinces will make it difficult to get effective mentoring for the A-Vet (FETPV) trainees in the short term. The Oxford University Clinical Research Unit in HCM City indicated its interest in assisting with mentoring for epidemiology training. FAO clearly needs to take a much more pro-active and aggressive approach to considering how epidemiology capacity can be enhanced in the country.

The comprehensive vaccination programme did incorporate post vaccination monitoring, as per FAO/OIE recommendations. The system was implemented by DAH and it monitors the effectiveness of the vaccine in field use (including vaccine variability, cold chain, vaccination protocol and techniques). But monitoring is selective (good farms which are tested at the optimal time). A system of post vaccination monitoring looking at the overall level of antibody (as a surrogate for population immunity) in all sectors of the poultry population is needed to guide planning decisions on vaccination policy (e.g. the level of antibody cover

²⁶ See consultancy reports from Les Sims (with Taylor in 2007 and in October 2009).

across provinces, in ducks, layer flocks etc.). This has been introduced in VAHIP provinces and has had moderate uptake with better quality information available from some provinces.

An expanded network of paid cAHWs now conducts active clinical surveillance in communes as part of their duties, which should enhance case investigation in chicken flocks. However active clinical surveillance in duck flocks is problematic, due to the low sensitivity of clinical assessment in ducks. Targeted virological surveillance in ducks will be necessary and is underway in the GETS project. Innovative approaches based on findings from FAO/DAH surveillance projects, but which also evaluate data from other projects (such as those of NZAID and ACIAR), should be considered to improve sensitivity of the active H5N1 infection surveillance in ducks.

The competency and skills of the veterinary services need to be further reinforced, particularly at the local level, and particularly in conducting outbreak investigations that include comprehensive tracing to ascertain source of infection and potential spread of infection to other districts and provinces but this is difficult to assess because FAO is only given limited access to this data. One critical factor is the lack of legislation regarding veterinary services and control of supply of drugs and vaccines to livestock. FAO has provided support for legislation review but this will require legislative changes that are likely to take some time.

From data on the level of vaccination coverage and variation between provinces it appears that the national vaccination programme is not being consistently applied in all provinces. Informal information indicates that coverage in small chicken flocks is reduced and there is, or is proposed to be, more effort on vaccination of ducks with better vaccination protocols for ducks, especially grazing ducks. The USAID funded FAO/DAH GETS Project is one project that might provide background evidence to support a transition from a very expensive mass vaccination programme to a more targeted vaccination approach. The project also has a component on assessing cost-effectiveness and impacts of these approaches, and will have close links with MARD in the monitoring and evaluation process. The project has a complex design and a lot of effort has gone into selection of target provinces. They are pilot provinces, and there is some risk that the virus dynamics in poultry systems of the trial provinces may differ from other provinces, and these variations may present different challenge pressure on vaccinated flocks.

There are other ongoing research studies undertaken collaboratively by NCVD, RAHO and NIVR laboratories with other partners (eg NZAID and AUSAID projects) looking at duck vaccination and its role in HPAI control in Viet Nam. It will be important that FAO/DAH also consider information from all these projects when going through the process of modifying the vaccine campaign in Viet Nam.

The laboratory diagnostic capacity for HPAI has been greatly enhanced and has been well supported by FAO and partners. This has been in terms of improved facilities with good biosecurity and biosafety practices, equipment, training support and introduction of standardised SOPs, PCR equipment and PCR reagents in the national laboratory (NCVD), in 6 RAHO laboratories and 2 NIVR laboratories. The table below provides a wide geographic spread throughout Viet Nam.

Activities	Outputs	Implementation in 200X				
		6	7	8	9	10
Lab designing and supply essential equipment	Improvement of lab facility and work flow with installment of essential equipment	x	x			
Laboratory techniques	Introduction of real-time PCR for H5N1 diagnosis	x				
	Preparation and revision of SOP for H5N1 diagnosis	x	x	x	x	x
	Preparation and revision of SOP for differential diagnosis		x		x	x
	On-site trainings for total of 44 staff at all 9 animal health laboratories with continuous follow-ups	x	x	x	x	x
Quality control	Introduction of internal quality control	x				
	Proficiency test (4 th round completed with good results)	x	x	x	x	x
Biosafety	Installation of Biosafety cabinet class II installed	x				
	Preparation of Biosafety guideline and manual		x		x	x



Networking of the various central and regional laboratories appears sound and there is an ongoing process of inter-laboratory proficiency testing nationally (NCVD organised) and from international panels for NCVD and RAHO 6 (organised by AAHL in Australia). There is regular submission of viruses to international influenza reference laboratories for virus characterization. Regular laboratory assessment is carried out of the efficacy of current vaccine strains against recent H5N1 viruses, including molecular epidemiology studies. A new activity supported via the VAHIP project is implementing a quality management system in all DAH labs and associated provincial labs.

The next challenge is to broaden the role of veterinary laboratories into true diagnostic laboratories, not just laboratories testing for HPAI, to build on the capacity developed from the H5N1 epidemic. This includes funding for testing, training and development for other significant livestock and zoonotic diseases and enhancing disciplines other than just virology (eg. bacteriology, pathology, parasitology). Two laboratories (NCVD and RAHO6) have BSL3 equivalent facilities and are approved for HPAI virus isolation. The cost of running and maintenance of such facilities is high. Capacity building would be enhanced by not building further BSL3 capacity and using funds saved in general diagnostic capacity building.

Advocacy by FAO for internal GoV funding to support ongoing laboratory capacity for disease diagnosis rather than just HPAI is recommended.

The NCVD, RAHO and NIVR laboratories are involved with various field research studies relating to H5N1, H1N1 in Viet Nam with other partners (eg NZAID and AUSAID projects with RAHO 7; Oxford University Clinical Research Unit with RAHO 6). It was not clear how effectively information was shared from these projects with other members of the laboratory network or with FAO but it is important that information is shared to build up and strengthen the laboratory network. .

Project work relating to “industry restructuring” needs strong involvement of DLP, with support from FAO, but there is limited funding available in the HPAI project budgets. The involvement of DLP has been late in starting but has recently been boosted by the awarding of the WB funded LIFSAP project with the objective of improving the competitiveness of household-based livestock producers by addressing production, food safety and environment risks in livestock product supply chains in selected provinces. FAO facilitated collaboration and cooperation between DAH and DLP on the development of the poultry (and soon pig) production atlas. FAO has also facilitated collaboration between DAH and DLP in matters relating to biosecurity, through the Biosecurity Working Group, and the introduction of market value chains approaches to both departments. These collaborations should all have sustainable benefits for poultry production in the country.

Several acting CTAs, and other international technical staff movements, as well as the heavy administrative workload, has meant that there is reduced “thinking-time” for strategic project planning and analysis by senior technical staff. However, the team was informed that considerable strategic project planning support has been provided by short term consultants over the past 5 years. Some of these consultants have developed a good working relationship with DAH and other parts of FAO, which will be very valuable for the incumbent CTA when tabling strategic and policy issues for discussion.

- Extent to which improvements in these areas have contributed to increasing national capacities to prevent and control future outbreaks of HPAI and of other transboundary and zoonotic animal diseases

Clearly there have been some spillovers to the capacity to detect and respond to other diseases, but given the apparent GoV reluctance to divert attention from HPAI, and the specificity of much of the funding to HPAI, it must be emphasised that this capacity is probably quite weak.

Effectiveness of global/regional programmes at country level, in particular the extent to which the:

- GLEWS information, analysis and technical expertise have improved disease response and understanding of HPAI epidemiology

Reports are regularly made to GLEWS and the regional and international data reported via GLEWS is scrutinised by the Technical Unit on a regular basis and considered valuable.

- OFFLU scientific data exchange and technical expertise have improved national capacity for laboratory diagnostic, vaccine efficacy and development

Selected viruses are regularly sent to international reference laboratories (CDC, AAHL and HKU before 2008, since then viruses have been sent from NCVD to CDC and AAHL) for genetic and antigenic characterization and phylogenetic analysis.

- Regional networks have contributed to national capacity building and information-sharing

The NCVD and other Vietnamese laboratories are members of, and have participated in, the Southeast Asia Regional HPAI Surveillance and Laboratory Network, and they will be involved in the coordinated laboratory proficiency testing programmes.

Sustainability and Impacts

- The *likely* effect of FAO's work on the institutional, organizational and human capacity of affected and at-risk countries beyond HPAI

There are undoubtedly areas of impact of FAO's contributions that will be sustained over time, providing that effective follow-up institutional support from GoV, and appropriate levels of funding, are made available. It is difficult to evaluate to what extent the work done so far has contributed to a reduction in the prevalence and circulation of the virus, but it seems highly likely that it has contributed.

- Sustainability of the strengthening taking place in public and private veterinary services

There is an apparent trajectory of veterinary services in the right direction, and the FAO programme is undoubtedly contributing to the steady improvements. However the broad needs for inputs to serve this goal extend way beyond the scope of HPAI preparedness and response mechanisms contained within FAO's projects, and so the sustainability of any strengthening taking place is fragile unless other supportive measures are taken. The need for on going support for strengthening the capacity of the DAH in the field is particularly crucial.

- Extent to which disease surveillance and control interventions have likely contributed to reducing HPAI prevalence

Due to the lack of a full understanding of the dynamics of HPAI in Viet Nam, and only a relatively superficial understanding of the risk factors, while the investment in surveillance and control measures have almost certainly benefited the country, it is impossible for the evaluation team to specify how, and to what extent, they have influenced the apparent reduced prevalence of HPAI. It is recognised that considerable efforts were and are being made in current FAO projects via supply chain analysis activities and case studies on the meat trader system as well as monitoring the movements of mobile duck flocks to identify these linkages.

- Likely macro-economic, livelihoods and food security impact of FAO's strategy and response to HPAI

Given that HPAI is endemic in Viet Nam, and that Viet Nam has many other unaddressed constraints to its poultry enterprises at both industry and smallholder levels, FAO is arguably not reaping the macro-economic and livelihood returns that it could by taking a broader, more encompassing and development-orientated approach to livestock production and health, which incorporate the specific disease emergency elements of donor interest as specific components. The evaluation team also considers that FAO has a role to engage with the industry restructuring programme at a higher level, given the important role of sectors 3 and 4 to the livelihoods of so many rural Vietnamese people, and the potential drastic impacts that sudden restrictions on their capacity to have poultry in their inventory of livelihoods strategies might have.

Partnerships

- The clarity of FAO's role, based on its comparative advantages and capacities, as well as the degree of complementarity, co-ordination and collaboration with regional and national partners

Generally FAO has a clear role as the lead UN institution engaged in HPAI preparedness and response issues. It has collaborated with several local partners, chiefly DAH and DLP from the GoV. The FAO HPAI activities have so far not been part of the One UN programme of work. In 2010 efforts will be made to incorporate the regional strategy into the PCG 11 of the One UN, and finalise an Animal Health National Medium Term Priority Plan (AH-NMTPP) for Viet Nam in consultation with Government authorities.

- FAO’s contribution to the preparation of partners’ HPAI regional and national strategies

FAO’s contributions to partners’ strategies is arguably less now in Viet Nam than in other countries visited by the evaluation team, possibly because there are so many actors engaged in supporting Viet Nam’s preparedness and responses, and because of the complexities of the divested responsibilities of the provinces.

In conclusion, the evaluation team have summarized the strengths and weaknesses of the FAO avian influenza programme in Viet Nam as follows:

Strengths	Weaknesses
High level of respect from DAH/MARD and donors for FAO’s emergency response support and coordination in the emergency phase from 2004 -2008	DAH/MARD generally appreciative of the response but some key stakeholders are concerned with slowness of the processes with the USAID and the World Bank’s VAHIP projects (although the latter is not managed by the FAO CTA).
The number of outbreaks in the winter peak periods has fallen dramatically in 2006-2009 compared with 2004 and 2005. Comprehensive vaccination commenced in December 2005.	Despite the vaccination program since 2005 the proportion of outbreaks outside the peak winter period has increased substantially and the reason for this is not really understood. Needs good outbreak investigation , industry structure, market value chain and epidemiology studies to unravel. Repeated requests by FAO to be involved with outbreak investigations have not been successful.
There is a comprehensive national plan for avian and human influenza called the Viet Nam Integrated National Operational Programme for Avian and Human Influenza 2006-2010 (OPI also referred to as the Green Book). This has been complemented with FAO’s Country Strategy and Work Plan for 2007-2010 to describe FAO’s continuing collaboration with GoV and other implementing partners in meeting objectives outlined in OPI. FAO will be a partner in the review and preparation of the revision of the OPI to	Good relation with DAH and advice from FAO is usually heeded but was initially not heeded for the major issue of compensation policy (although they did increase compensation after the FAO review) A system weakness is present in the lack of registration for veterinarians and limited control of drug and vaccine supply to livestock industries. FAO supported legislation review and draft legislation has been prepared. However, legislative change in any field is slow in Viet Nam, with an approximate 2 year lead time.

<p>cover the period after 2011-2015 and has provided 11 major recommendations for this review.</p>	
<p>Comprehensive training for cAHW and District and Provincial Veterinary staff in disease outbreak investigations was provided and was reinforced by distribution of and collaboratively developed SOPs and Job Cards for outbreak investigation, sample submission, outbreak response, reporting activities, etc.</p>	<p>The level of provincial system autonomy has made it difficult to get consistency across the 63 provinces and this probably affects consistency of these activities and cross-province coordination in aspects like outbreak investigation and reporting. Further advocacy for funding and support at the provincial, district and commune level from FAO may be needed.</p> <p>Continued training and support for DVO staff will be needed to underpin a sustainable disease investigation and surveillance capability in Viet Nam.</p>
<p>There has been a comprehensive system of disease awareness, personal protection and biosecurity training extended down to the grass roots level and including District Veterinary staff and cAHW in this.</p> <p>The absolute number of cAHW trained and provision of funding for cAHW for HPAI activities should act as incentive to improve passive and active clinical surveillance.</p>	<p>Awareness has not had major impact on behavioural change when outbreaks are not reported, but this is complicated by other disincentives. This challenge has been faced by all UN agencies in Viet Nam. FAO has provided technical support to UNICEF, Abt and AED for behaviour change/awareness related findings during field mission.</p> <p>Training for other AHW and Agriculture Extension Workers and incentives like more effective compensation are probably necessary for other AHW and farmers to report to cAHW or via hotlines and improve the sensitivity of the passive surveillance.</p>
<p>Comprehensive collection of data on poultry population, morbidity and mortality from commune to district to Province to DAH is undertaken on a monthly basis.</p> <p>Provinces and district offices have appreciated support in the form of computers and fax machines from FAO and donors to facilitate data recording and reporting.</p>	<p>Effectiveness and efficiency of outbreak investigation, completeness of investigation reporting, then data analysis and synthesis needs to be kept under review.</p> <p>The effectiveness of the TADinfo network across all provinces and ability to use mapping and analysis functions appears very variable.</p>
<p>Support training in field epidemiology for disease investigation and surveillance is supported through AVET programme modelled on FETPV type training. (Nominal epidemiology units are set up in</p>	<p>Epidemiology groups in DAH have mainly focused on data collection from investigations and surveillance but limited analysis and synthesis is conducted. The level of epidemiology expertise and</p>

<p>DAH and Regional offices). This activity supports capacity building for a broader base than HPAI.</p>	<p>experience will make it difficult to get effective mentoring for the A-Vet (FETPV) trainees in the short term. (Oxford University Clinical Research Unit in HCM City indicated interest to assist with mentoring for epidemiology training). FAO needs to take an ongoing role in enhancing epidemiology training.</p>
<p>The comprehensive vaccination programme did incorporate post vaccinal monitoring as per FAO/OIE recommendations. The system used monitors effectiveness of the vaccine in field use (including vaccine variability, cold chain, vaccination protocol and techniques).</p> <p>Marked improvement in cold chain for vaccine delivery to District level and commune level in the GETS project.</p>	<p>But monitoring is selective (good farms tested at optimal time), A system of post vaccination monitoring looking at the overall level of antibody in all sectors of the poultry population is needed to guide planning decisions on vaccination policy (e.g. level of antibody cover across provinces, in ducks, layer flocks etc.)</p>
<p>Increased network of paid cAHW now conduct active clinical surveillance in communes as part of their duties which should enhance case investigation in chicken flocks.</p>	<p>Active clinical surveillance in duck flocks is problematic due to low sensitivity and for further improvement of detection and control targeted virological surveillance in ducks will be necessary. Innovative approaches based on findings from FAO/DAH surveillance projects but also examining data from other projects (like NZAID and ACIAR) should be considered to improve sensitivity of the active H5N1 infection surveillance in ducks.</p>
<p>The FAO/DAH GETS Project is a positive approach to move from a very expensive mass vaccination program to a more targeted vaccination approach as a step towards long-term removal of vaccination</p> <p>It also has a solid focus on assessing cost-effectiveness and impacts of these approaches and will have close links with MARD in the monitoring and evaluation.</p>	<p>The risk may be that the virus circulation in poultry systems in the trial provinces may have different dynamics and interactions than other regions that alter the challenge pressure on vaccinated flocks. This was recognized in the design of the GETS project and it is why the provinces were chosen specifically to represent different regions such as red river delta, Mekong delta and central region But it will still needs to be considered in moving to the next stage of withdrawal of vaccination.</p>
<p>The laboratory diagnostic capacity for HPAI has been greatly enhanced and has been well supported by FAO and partners in terms of improved facilities with good biosecurity and biosafety practices, equipment, training support and</p>	<p>The next challenge is to broaden the role of veterinary laboratories as true diagnostic labs not just testing laboratories for HPAI to build on the capacity developed from the H5N1 epidemic. This includes funding for testing, training and development for other</p>

<p>introduction of standardised SOP, PCR equipment and PCR reagents in the national laboratory (NCVD), 6 RAHO laboratories and 2 NIVR laboratories with a wide geographic spread throughout Viet Nam.</p> <p>Networking of the various central and regional laboratories is sound and there is an ongoing process of inter-laboratory proficiency testing nationally (NCVD organised) and from international panels for NCVD and RAHO#6 (AAHL organised)</p> <p>Regular submission of viruses to international influenza reference laboratories for virus characterization</p> <p>Regular laboratory assessment of efficacy of current vaccine strains against recent H5N1 viruses and molecular epidemiology studies are conducted.</p>	<p>significant livestock and zoonotic diseases and enhancing disciplines other than just virology (eg. bacteriology, pathology, parasitology).</p> <p>Two labs (NCVD and RAHO#6) have BSL3 equivalent facilities and are approved for HPAI virus isolation. Cost of running and maintenance of such facilities is high. Capacity building would be enhanced by not building further BSL3 capacity and using funds saved in general diagnostic capacity building.</p> <p>Advocacy by FAO for internal GoV funding to support ongoing laboratory capacity for disease diagnosis rather than just HPAI is recommended.</p> <p>There should be more sharing of information within the network and FAO on H5N1, H1N1 research studies undertaken collaboratively by NCVD, RAHO and NIVR laboratories with other partners (eg NZAID and AUSAID projects with RAHO #7; Oxford Univ. Clinical Research Unit with RAHO #6) to build up and strengthen the network.</p>
	<p>Project work relating to “industry restructuring” needs strong input from DLP but limited funding was available in the FAO project budgets. Involvement of DLP has been late in starting but FAO has recently facilitated collaboration and cooperation between DAH and DLP on matters relating to poultry demographics, biosecurity and market value chain approaches. These links have been recommended in the submission to the Green Book, and are part of the LIFSAP and VAHIP projects.</p>
	<p>Several changes of Team Leader and increased workload on other international technical staff plus increased administrative workload has meant reduced “thinking-time” for strategic project planning and analysis by senior technical staff. Strategic thinking has been an on- going activity for a range of consultants brought in to assist the CTA previously.</p>

Based on the above, the evaluation team recommends nine priority actions to FAO. Some of these recommendations complement and/or supplement advice that has been provided previously by FAO to MARD or DAH (and that has not as yet been acted upon), or has also been recommended in the current FAO submission for the review of the Green Book. Pilot studies relating to evaluation of some of the recommendations have been commenced as part of the VAHIP activities.

1. Continue to support and advocate for DAH to improve the consistency and quality of outbreak investigations at district and provincial levels with more effort in tracing to identify source and spread of outbreaks between district and more cross- province investigation and reporting. In this regard, FAO should advocate at senior country level with counterparts in the GoV that FAO ECTAD staff are permitted to be involved in the M&E of the quality and capacity of disease outbreak investigations.
2. Support the capacity development of epidemiology units to analyse and synthesise surveillance data so that it contributes in a transparent manner to planning of further surveillance activities, and provide advice on management and control of HPAI based on risk analysis.
3. Consider means to increase the understanding of market value chains within the country and cross-border to identifying risks and critical control points that can be targets for practical and sustainable improvements in biosecurity.
4. Explore innovative approaches, including those promoted under VAHIP, to improve the levels of adoption of biosecurity and good poultry management practices by proactive engagement with the various representatives of the poultry industry private sector.
5. Advocate the development of a system of post vaccination monitoring that determines the overall level of immunity in all sectors of the poultry population, not just in “model farms”, as a more robust guide to planning decisions on future vaccination policy.
6. Support the interface between DAH and DLP on developing quality poultry demography data, and greater understanding of the diverse market value chains in the country. It should also advocate and support involvement of DLP with DAH in considering industry restructuring that also considers the needs of commercial and smallholder producers dependent on poultry enterprises for their livelihoods.
7. Consider improving the sensitivity of the active H5N1 infection surveillance in ducks by innovative approaches based on findings from FAO/DAH surveillance projects and also other projects (like those funded by NZAID and ACIAR)
8. Consider improving the sensitivity of the passive surveillance system by continued awareness training for other AHW and Agriculture Extension Workers (AEW) and examine incentives for AHW/AEW and farmers to report to cAHW or via hotlines.
9. Advocate to GoV to support and fund ongoing laboratory capacity for broader disease diagnosis for TADs, emerging zoonotic diseases and differential diagnosis of other endemic diseases, rather than just HPAI.

Annex 1. List of People Met

FAO

Mr. Andrew Speedy, FAO R,
Dr. Santanu.K. Bandyopadhyay, Team Leader, AI Programme,
Mr. Andrew Bisson, Deputy Team Leader & Technical Advisor,
Dr. John Weaver, International Chief Technical Advisor,
Dr. Warren Henry, International Veterinary Consultant,
Dr. Ken Inui, Laboratory Expert,
Dr. Aurelie Brioude, AI Technical Assistant (Epidemiology).

Government

Mr. Diep Kinh Tan, Vice Minister, Ministry of Agriculture & Rural Development,
Dr. Hoang Van Nam, Deputy Director General, Deptt. Of Animal Health,
Dr. Nguyen Thu Thuy, Chief of Planning Division, Deptt. Of Animal Health,
Dr. Mai Van Hiep, Deputy Director General, DAH, Southern Provinces,

Dr. Hoang Kim Giao, Director, Deptt. Of Livestock Production,
Dr. Trang Trong Trung, Officer, DLP,
Ms. Lan, Head of Poultry Production,
Ms. Nguyen Thi Tuyet Hoa, ICD Deputy Director General,
Mr. Nguyen Huu Hung, Project Officer, Pandemic Preparedness, Ministry of Health.

Dr. Hieu, Director AH Nam Dinh Province,
Dr. Hien, Sub Head, AH Nam

Dr. Lee Tan Huu, Director AH, Ben Tre Province,
Dr. Nguyen Van Be, Vice Director, Ben Tre Province,
Dr. Phan Trung Nghia, Head of Epidemiology,,
Dr. Ms. Le Ngoc Thuan, Project Coordinator,
Mr. Phan Hoang Tien, Vice Chairman, Lung Hoa Commune.

International Agencies & NGO's

Mr. Jonathan Ross, Director, Office of Health, USAID,
Dr. Kim Thuy Oanh, Public Health Specialist, USAID,

Mr. David Payne, PAHI (Partnership for Avian & Human Influenza),
Mr. Bui Van Truong, Technical Director, Abt Associates Inc.

Associations

Dr. Tran Cong Xuan, Chairman Viet Nam Poultry Association,
Dr. Nguyen Thien, Vice Chairman Viet Nam Poultry Association,
Dr. Pham Sy Lang,
Ms. Phan Thi Thuy.

Private Sector

Mr. Ky Tran, Sector 2 farmer 10,000 layer birds in cages, Vu-Ban District, Nam Dinh.
One Sector 3 duck and one chicken farm at Ben Trey' several sector 4 holders.

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Annex 3: Assessment of FAO Avian Influenza Projects in Viet Nam

TCP/VIE/3003 “Emergency assistance for the control of avian influenza”

The primary objectives of this project was to support efforts aiming at an immediate control of avian influenza outbreaks in all poultry species so as to stop the transmission of the disease from poultry to humans. After the first wave of outbreaks the focus of the activities shifted towards more technical assistance (studies, and training) for the mid term recovery and for the prevention of further outbreaks. A budget revision was made and the specific objectives of the assistance became: improved epidemiology capacity of key veterinary staff, improved information flow and reporting system, pilot surveillances for large farms, and the development of a contingency plan for HPAI.

The project was implemented by DAH from February 2004 to end of January 2006. To smoothly implement the project, seven international and seven national consultants were hired to assist in carrying out the HPAI control activities. The collaboration between FAO and other main stakeholders as MARD, other UN agencies as the WHO and other institutions as the WB was reportedly good. Two main collaborations were signed and implemented during the project duration with the World Bank-funded AIERP project and with the Joint UN-Government Programme (OSRO/VIE/501/UNJ).

In accordance with the project objectives and strategy, the following outputs were achieved in the first phase (February 2004 to August 2004):

- Production of awareness material (booklets and leaflets) in collaboration with WHO
- Improvement of the national HPAI surveillance strategy.
- Improvement of the national AI reporting system.
- In depth assessment of laboratory equipment needs.
- Technical assistance to the epidemiology division of DAH.

In the second phase after the budget revision (September 2004 to January 2006), the following outputs were achieved:

- Pilot surveillance study for commercial farms conducted.
- Biosecurity in poultry farms evaluated.
- Emergency contingency plan developed.
- TAD Info introduced to Viet Nam.

Epidemiology training was carried out for a total of 95 participants in three locations: Hanoi (17- 21 May and 23-27 May 2005), Danang (30 May – 3 June 2005) and Ho Chi Minh City (6-10 June 2005). Training contents included outbreak control and investigation, principles of surveillance, data collection and data management inclusive one field visit for practical exercises. Four workshops for contingency plans have been held in 4 provinces (Bac Ninh, Ha Tay, Long An and Tien Giang). During the visit (31 May to 10 June 2005) of two Chinese vaccine experts workshops to introduce the HPAI vaccine and results of vaccination in China were carried out in Ho Chi Minh City (40 participants from the SDAHs and RVCs) and Hanoi (41 participants). The Chinese mission also visited two provinces (Tien Giang and Ha Tay) to assess the field situation in Viet Nam. This mission was said to be instrumental to the Government’s decision to step into a mass vaccination campaign that followed few days after.

The project terminal report contains a number of recommendations that were followed up in successive projects. Also, a few lessons learnt were identified which were reportedly incorporated in the FAO HPAI Country Strategy 2007-2010.

Japanese-funded projects: OSRO/RAS/401/JPN “The Japan/FAO Joint Emergency Programme for the Control of Avian Influenza in Cambodia, Indonesia, Laos and Viet Nam” and OSRO/RAS/602/JPN “Strengthening the Control and Prevention of HPAI and enhancing public awareness”

Japan moved very quickly after the initial outbreaks to support HPAI-related control activities in Southeast Asia, and Viet Nam was a major beneficiary. The first project (401) supported a series of strategic field studies and investigations, including:

- Field training in reporting and disease investigation;
- Pilot study on serological surveillance;
- Analysis of spatial and temporal epidemic patterns of HPAI;
- Biosecurity surveillance for village produced poultry;
- Evaluation of laboratory procedures and standards;
- Training of VRL staff;
- Evaluation of veterinary services;
- Biosecurity evaluation for poultry farms; and,
- Study for the establishment of a national strategy for the rehabilitation of farmers.

The project was implemented through a Technical Support Unit, coordinating all HPAI activities in the country (including FAO’s TCP/VIE/3003 and the World Bank’s AIEVC project) in collaboration with DAH. The project employed 6 short-term international consultants. A series of training courses on field reporting and disease investigation were held in April-May 2005 and two staff from the virus reference laboratory were sent to the FAO/OIE reference laboratory in Geelong, Australia for hands-on training in virus manipulation in November 2005.

Project activities were delayed until information and detailed technical justifications were provided regarding the budget revision and allocation of funds. However, the no-cost extension granted by the Donor enabled all activities to be satisfactorily completed. The activities initiated through this project continue with funding provided by Japan and USAID.

The second project (602) was designed to strengthen the capacity of field veterinary services on strategic surveillance and proper implementation of related policies such as stamping out and vaccination, as well as to enhance public awareness. As both FAO and OIE were benefiting from Japanese Trust Fund support, the project was to be implemented in close cooperation with that organization. It focused on provincial and district veterinary services as well as enhancing village animal health workers’ and general public awareness about safe handling of backyard poultry. It included provision of technical support, training, procurement and distribution of inputs, laboratory networking with other agencies and strengthening field coordination.

Activities were included in the following areas:

- Preventing Incursion of Disease: These activities were specifically aimed at quarantine and movement control. Training was provided, protective equipment (PPE) and disinfectants were supplied; in addition operational support was provided to the quarantine stations in three northern provinces;
- Emergency Preparedness & Response: An international consultant advised on emergency preparedness. Workshops were arranged to provide information on AI preparedness and response to Avian Influenza Steering Committees at province and district levels of the four pilot provinces (Ben Tre, Phu Tho, Vinh Long, Nam Dinh);
- Endemic Disease Control: Training was provided to veterinary staff, paravets and farmerse. This included disease outbreak investigations, active surveillance, bio-security, IT, and

Training-of-trainers (ToT). The field surveillance model – ‘CADS’ (Community Active Disease Surveillance) – was developed and piloted. The project also supported operational costs for investigation of suspect outbreaks that were reported to veterinary authorities. A bio-security pilot study was conducted in Nam Dinh province, farmers received training and equipment. Bi-annual national mass AI vaccination campaigns were ongoing throughout the project cycle, and both pre-vaccination & post-vaccination surveillance components were supported. The project assisted with OIE’s training on “HPAI Surveillance for Field Veterinarians and Paraprofessionals”;

- Applied Research: The Royal Veterinary College London undertook several ‘rapid rural appraisals’ (RRA) to review the patterns of farm gate trade; an expert conducted a mission to review the progress of Influenza A/H5N1 vaccine production for poultry in Viet Nam;
- Socio-economic Aspects of Disease Control and Production Systems: A pilot system of electronic tagging was designed by Royal Veterinary College London in collaboration with local consultants. However this could not be completed;
- Public Awareness and Communications: A communications consultant provided regular coordination with HPAI stakeholders, communication materials were produced and updates on latest AI outbreaks were disseminated. The national toll-free Hotlines at DAH and in 4 pilot provinces were supported;
- Strategy Development, National Coordination and Programme Management: Technical and operations staff posts were supported, at both the FAO Representation and in DAH. Two delegates from the MARD were supported to participate in the ASEM Workshop on Avian Influenza Control;
- Policy and Legislation: A manual on HPAI prevention and control was drafted and distributed nationwide.

The project was a key part of FAO’s early contribution to HPAI control in Viet Nam, with its effects probably most evident in the 4 pilot provinces. Communication and information exchange with OIE were said to be inadequate although the evaluation could not reliably determine why. Originally, the project was to have focused on 10 pilot provinces, but the level of inputs was insufficient which led to a decision with the Government to focus on four pilot provinces only.

USAID-funded projects: OSRO/RAS/505/USA “Immediate assistance for strengthening community-based early warning and early reaction to avian influenza outbreaks in Cambodia, Indonesia, Lao PDR, PR China and Viet Nam”; OSRO/RAS/604/USA “Immediate Technical Assistance to Strengthen Emergency Preparedness for Highly Pathogenic Avian Influenza (HPAI)” and OSRO/VIE/801/USA “Gathering Evidence for a Transitional Strategy for HPAI H5N1 Vaccination in Viet Nam (GETS project)

These projects represent the largest donor contribution to FAO’s HPAI programme in Viet Nam. The first project focused on building capacity for community-based disease surveillance to support the disease control programmes. Training activities for provincial and district staff were undertaken in order to recognize and report the disease in a timely manner, carry out disease outbreak investigation, collect specimens and disease history information, submit specimens to laboratories, and undertake measures necessary to prevent the disease from spreading. Public awareness and training activities were implemented to ensure that poultry premises were adequately disinfected and culling operations were conducted in an environmentally safe manner.

A major issue during implementation was the coordination between the large number of stakeholders and international agencies working on HPAI. The situation eventually improved and the improved

cooperation within the national HPAI framework has continued in the follow up phase (OSRO/RAS/604/USA). The project carried out the following activities:

- TADinfo software was adapted and is now set up as a web-based reporting system for Viet Nam;
- A training video for vaccinators was produced in Viet Nameese with English subtitles which was also adapted for use in other countries, including in Africa;
- In order to test the efficacy of the use of heterogonous vaccine on day-old ducks in field conditions in Viet Nam, a field trial was carried out using a novel timing for vaccination versus current two rounds injections to provide adequate immunity against H5N1;
- FAO supported the Government of Viet Nam in its AI vaccination strategy and continuous risk assessment. Further technical assistance for analysis of the data from vaccination and post-vaccination surveillance was also provided;
- Socio-economic technical backstopping provided from FAO HQ on gender and rural livelihoods was provided into an ongoing market chains evaluation study.

The second project (604) is still under implementation. The project continues to support much of the FAO Avian Influenza Programme in Viet Nam, including staff positions. As with other projects, many activities are focused on pilot provinces, which included Thai Nguyen, Quang Binh, Quang Ngai, Vinh Long, Ben Tre, Hau Giang, Tra Vinh in the period March-August 2009, and Hung Yen, Ha Nam, Quang Tri, Kien Giang and Can Tho from Sept. 2009-Sept. 2010.

To date, the project has supported a wide variety of activities related to animal surveillance and response, and policy support to Government. Disease surveillance, investigation and reporting activities were supported by providing equipment and training for improved communication of information from the field and database development for transmission, collation and analysis of disease information from field and laboratory sources. The project reviewed the national vaccination strategy and concluded that surveillance data reconfirmed that the vaccination policy has met meaningful targets and supported effective control of HPAI. However, virus surveillance demonstrated that the AI virus is circulating widely throughout the national flock. The review made recommendations that have been incorporated into the national plan for 2009-2010.

HPAI vaccination and outbreak response has been strengthened by training vaccinators, assisting in plans for national vaccine production, developing policy on users paying for vaccination and in assisting with the development of Standard Operating Procedures (SOPs), to improve the rigour of field activities. The project has conducted a number of studies, including on vaccine efficacy, an epidemiological model for H5 N1 transmission dynamics, cross-border trade and cold chain appraisal.

Government staff (diagnosticians, heads of laboratory, virologists, epidemiologists and researchers have enhanced capacity from various training activities and meetings during the implementation of the project. The upgraded database systems, IT and communications equipment and other laboratory consumables and technical assistance provided by the project have significantly contributed to a more efficient laboratories and enhanced capabilities of provincial and district offices. The supply of PPE to the users in high-risk areas has decreased the exposure to possible threat to human health. The capacity created can be correlated to an enhanced capacity of the Government to combat the threat of AI as well as other animal diseases.

HPAI control in Viet Nam still remains a daunting process. Capacity development requirements remain high at all levels, especially at provincial, district and sub-district levels. Planning of capacity building activities was compromised by the time limitations of USAID's annual cycles of funding support. HPAI prevention and control has global and national objectives that are difficult to promote to farming communities so that there is continual disappointment in community compliance with disease control initiatives, even when they are well communicated. The late signing of project document caused delays

in many activities and the timely placement of required technical consultancies for field activities became a challenge. USAID's forbearance in allowing funding to be carried over between budget cycles has alleviated some of the problems in maintaining continuity of support and permitting its support to be integrated into a country programme.

Technical training of animal health personnel, communication for improved public awareness, improved laboratory diagnostic capacity and enhanced support tools including disease reporting systems and information management, have all contributed to a much improved HPAI situation and disease control capability. However, the current situation is still of concern, as viruses continue to circulate, poultry outbreaks are sporadic but widespread, and occasional human infections are still identified.

Operating in five pilot provinces (Nam Dinh, Ninh Binh, Quang Binh, Soc Trang and Hau Giang), the two-year GETS project (OSRO/VIE/801/USA) began operations in April 2009. The USD 4 million project is intended to provide field data on several alternative targeted vaccination strategies in both high- and low-risk provinces to enable MARD to make informed choices about a targeted vaccination strategy for HPAI. If successful, such targeted vaccination strategies would lead to establishment of disease-free zones, followed by complete removal of vaccination and eventually, eradication of HPAI. Project field activities include cost-effectiveness analysis, determination of risk factors for outbreaks, policy analysis and sociological studies in each pilot province. Initial intervention strategies have been developed for each pilot province. As the project is at its early stages, assessments of its effects and impact cannot be made yet. However, there are questions as to whether information needed for establishment of the initial baseline data is actually available, and this could very much complicate the development of the envisaged vaccination strategies.

The UN Joint Programme: OSRO/VIE/501/UNJ and OSRO/VIE/701/UNJ “Strengthening the Management of Public Health Emergencies in Viet Nam – with focus on Control of Diseases with Epidemic Potential including Highly Pathogenic Avian Influenza”

The UN Joint Programme has been implemented in two phases: an initial emergency response programme (501), and a subsequent 4-year programme of capacity building support (701). The 501 project included logistical support to the first vaccination campaign (cool boxes, refrigerators, automatic syringes) in 47 provinces, support to post-vaccination surveillance, and support to research on different vaccination protocols in ducks.

The 701 project has been managed to be largely complimentary with the Viet Nam component of the 604/USA project. It is part of an overall UN programme with a total budget of USD 16.2 million. The programme is funded by Finland, Australia, Canada, Luxembourg, New Zealand and Switzerland via UNDP as Administrative Agent for pooled funds, with parallel funding being provided by Japan via UNICEF, and by UNDP.

The Agriculture Component is being implemented by MARD's Department of Animal Health (DAH) and Department of Livestock Production (DLP) with technical and other support from FAO. Key activities include:

- review of the National Strategy for the prevention of highly pathogenic avian influenza (HPAI) in the agriculture sector,
- joint review of the Veterinary Ordinance by MARD DAH and FAO as a basis for developing a draft Veterinary Law, and development of draft standard operating procedures (SOPs) for rapid disease outbreak response and disposal of animal carcasses,

- provision of training and refresher courses to selected high risk provinces and border control stations on rapid response to outbreaks, vaccination cold chain system, international border control, customs, market management and border enforcement,
- provision of training and allowances to district and commune animal health workers in 10 high risk provinces for improved outbreak report and investigation,
- provision of facilities and equipment for improved reporting and outbreak investigation in 10 provinces, for the vaccination cold chain system in 27 provinces, for provincial and international quarantine border controls, and for the AI Risk Assessment Technical Working Group,
- review of the animal production and marketing regulations, and creation of a legislation database,
- enhanced mapping capacity and development of a poultry production atlas, and,
- establishment of the Biosecurity Working Group led by MARD DLP, as well as a range of field assessments and surveys conducted jointly by DLP and FAO on biosecurity practices in different types of farms as well as hatcheries.

The Joint Programme is a significant initiative bringing together key national departments and UN agencies in support of the national HPAI control strategy (Green Book), with harmonised funding from a number of bilateral donors. However, there have been considerable inefficiencies in the programme administrative structure, largely the result of the complex funding and implementing arrangements set-up, which were underestimated by the stakeholders at the time of project design. The Programme is viewed by some members of the Government and some FAO staff as a bureaucratic, with cumbersome and inefficient managerial and operational arrangements that have not been sufficiently challenged by the donors and organizations involved. A consequence of these operational issues has been the relatively slow delivery achieved and delays in project implementation.

UTF/VIE/034/VIE “Viet Nam Avian and Human Influenza Control and Preparedness Project” (VAHIP)

The World Bank –funded VAHIP project (USD 38 million, including USD 20 million IDA grant and co-funding from EC, Japan and the Government of Viet Nam) includes three components: HPAI Control and Eradication in the Agricultural Sector; Influenza Prevention and Pandemic Preparedness in the Health Sector and Integration, Coordination and Project Management. The Agricultural component, which constitutes slightly under half of the total project (USD 17.2 million), is implemented in 11 Provinces (Lang Son, Ha Tay, Thai Binh, Thanh Hoa, Ha Tinh, Thua Thien-Hue, Binh Dinh, Tay Ninh, Long An, Tien Giang, and Dong Thap). The project includes sub-components for the following areas:

1. strengthening veterinary services (needs and capacity assessment for labs undertaking HPAI testing, portable BSL-3 unit for RAHO No. 6 in Ho Chi Minh City, capacity building for animal disease reporting by CAHW in 90 districts);
2. enhanced disease control (rehabilitation of Ha Vi live poultry market near Hanoi, development of SOPs for movement between farms and slaughterhouses, pilot disease monitoring for large poultry farms, vaccination-related activities and improvement of quarantine in Long San Province on the border with China);
3. surveillance and epidemiological investigations;
4. preparing for poultry sector re-structuring (plans, development of biosecure farm models, upgrading biosecurity in selected small farms); and
5. emergency outbreak containment plans, including disinfectants, disinfection equipment, protective clothing, training, emergency contingency funds, simulation exercises, telephone hotline charges, vaccination consumables and equipment, vaccine pools, contract services to support emergency workers and vaccinators, technical assistance, and compensation funds.

FAO has recruited the Chief Technical Adviser for the project, who works from the office of the Project Management Unit.

The project has been slow in its implementation. Although implementation began in August 2007, the CTA was not on board until March 2008. Delivery has been slow; by July 2009 implementation was only 12% but most recently has ratcheted up to 38%, largely by some “big ticket” spending.

A mid-term review of the project resulted in a recommendation that FAO should implement two additional consultancies under the project: one on spatial risk and planning as part of poultry sector restructuring efforts and the other on bio-security guidelines for larger producers. This will bring the total FAO component of the project to USD 1.05 million.

OSRO/VIE/601/IRE “Emergency assistance for control of highly pathogenic avian influenza in Viet Nam”

This project, implemented from Aug. 2006-May 2007. The project provided cold rooms, generators and cool boxes for vaccine storage and transport in 12 Provinces and included technical assistance (national consultants) in procurement. The Provinces assisted were Nam Dinh, Ha Nam, Ninh Binh, Thai Nguyen and Son La in the north (Red River Delta), Nghe An, Ha Tinh, Dak Lak, Quang Ngai in central Viet Nam, and Ben Tre, Hau Giang and Vinh Long in the south (Mekong River Delta). In addition to the Irish assistance, and as noted above, the cold chain for vaccine storage was strengthened in 27 other Provinces through the UN Joint Programme.

SECOND REAL TIME EVALUATION OF FAO'S WORK ON HIGHLY PATHOGENIC AVIAN INFLUENZA: REGIONAL WORKSHOP FOR AFRICA

**AFRICAN STAKEHOLDER'S MEETING HELD AT SAFARI PARK HOTEL, NAIROBI, KENYA
26TH AND 27TH OCTOBER 2009**

Introduction

The workshop took place over a day and a half, preceded by a half day of closed discussion between the independent evaluation team members and FAO staff. During the closed discussion, FAO participants discussed with the evaluation team selected issues that had emerged during the team's visits to Nigeria, Cote D'Ivoire and Egypt, and to the regional ECTAD units in Bamako and Nairobi. A check-list was used to review FAO's roles and the quality, relevance and timeliness of its contributions to HPAI preparedness and responses in Africa. The review team focused on the countries that they had visited as part of the RTE in Africa, and FAO participants commented on observations made by the team, and complemented these with information from other countries in the region with which they were familiar.

The workshop proper started after lunch on the first day when the non-FAO participants joined the group. After an official opening by the FAO Representative in Kenya, and an introduction to the background to the RTE and process to be followed over the next day and a half, participants went straight into group work. Participants were allocated amongst two FAO and two non-FAO staff groups.

Task for the two FAO groups: *building on this morning's discussions, tease out up to 10 key issues to be taken forward for discussion tomorrow; issues that are essential to the consolidation of work on HPAI, major gaps, opportunities, etc*

Task for the two non-FAO groups: *identify the five major constraints, as of today, to HPAI preparedness and responses, using as a starting point the following list but adding to it as needed:*

- Avian flu awareness at different levels
- National and regional preparedness strategies
- Surveillance mechanisms
- Laboratory capacity
- Vaccination strategies
- Biosecurity strategies for different sectors
- Culling and compensation strategies
- Outbreak traceback strategies and procedures
- Risk-based surveillance and response strategies
- Targeted communications strategies for interventions
- Planning, oversight and coordination between key stakeholders
- Private poultry sector engagement

Group work outputs: *the issues/constraints*

Non-FAO group 1

Additional points to be added to the list presented:

1. link to human health
2. vet services governance
3. PVS outcomes (GAP analysis) should guide funding
4. sustainability: exit strategy from HPAI towards TADS
5. absence of vet services at grassroots level

5 major constraints (not in order):

- outbreak traceback /traceforward strategies and procedures & risk-based surveillance and response strategies
- public-private partnerships: capacity building, training
- vet services governance (PVS)
- sustainability (exit strategy) post- HPAI funding
- biosecurity strategies for village poultry (sector 4)

Non-FAO group 2

5 priorities (in order)

- biosecurity – failure to implement at field level (farm, market, transport)
- surveillance: not risk-based; no actual surveillance activities; low involvement of private sector; lack of funding/operation
- partnership: weak public-private partnerships in poultry health sector
- culling and compensation: lack of funding; questionable guidelines/protocols; mistrust/cooperation low
- awareness/ communication: decreased interest; shift to H1NI; decrease in public vigilance

FAO group 1 (in no particular order of importance)

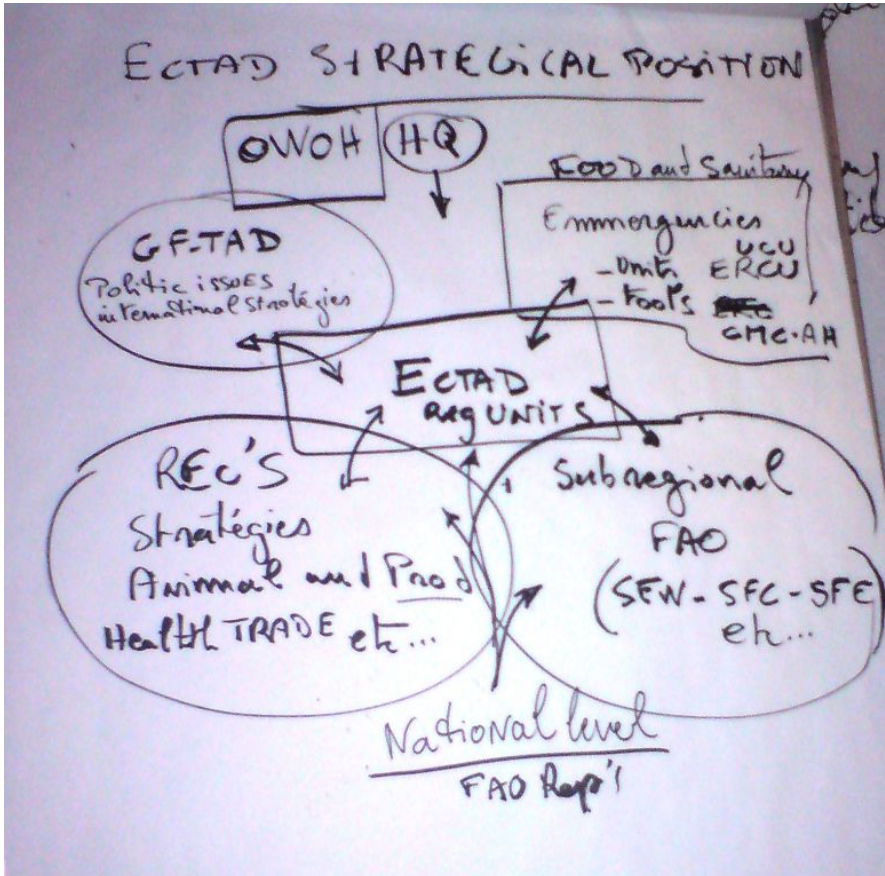
Achievements made by FAO /areas for consolidation:

- strengthening the capacity of vet services (overall)
- laboratory capacity and networking
- epidemiology units capacity (risk analysis; tools; simulations)
- preparedness and response planning
- partnership and networks
- biosecurity (production and uptake)

Gaps:

- sustainability: funding; anchoring institutionalisation of ECTAD outputs into national systems/budgetary allocations; outputs
- communications and public awareness: institutionalisation; assessment of impacts
- influencing national and regional animal health policies
- streamlining within FAO institutional arrangements

Schematic diagram of ECTAD's strategic position prepared by FAO group 1:



FAO group 2

- Our partners should tell us what our achievements are, not us
- Issues: some are weakness, for other changes are in progress

1. Monitoring & Evaluation:

- measuring impact
- sustainability of outcomes
- national partnership ownership
- validation of database

2. Partnership: lots of partners

- one world, one health

- collaboration with RECs
- operationalizing the relationship between AU-IBAR, OIE and FAO
- relationship with national institutions for sustainability purposes

3. Sustainability of ECTAD;

- align ECTAD to FAO Strategic Objective I;
 - preparedness
 - response
 - transition from emergency to development
- funding strategy (relationship between animal health and livelihood)
- ECTAD as a structure with minimal critical size with multidisciplinary team within one FAO vision/structure
- improve procedures, i.e. procurement
- increase portfolio to other TADs and food security disease prioritization

Main points arising from ensuing discussion:

It was felt that saying that 'no surveillance was occurring', as reported by one of the working groups, was too strong a statement, although it was agreed that the level of surveillance varied between countries.

In Southern Africa, for example, there is both active and passive surveillance at high-risk points such as large water bodies, border points, etc. Where possible, surveillance activities are linked to Newcastle disease vaccination to provide an incentive for compliance. This surveillance is also looking for low pathogenic avian influenza strains.

Countries which have not had HPAI outbreaks tend to have less funding for surveillance operations.

In Egypt it was noted that failure to provide any subsequent response acted as a disincentive for surveillance.

Differential pricing of poultry across national borders acted as an incentive for local people to transport birds to neighbouring countries.

There was an opportunity to use OIE's PVS tool: could peg achievements in relation to HPAI to country's improvements in relevant PVS scores.

There is a clear need to spell out the role and mandate of the RAHCs.

RAHCs can be mandated by RECs to carry out specific functions on their behalf, for which they lack the capacity.

HPAI can be viewed as a 'blessing': it has brought benefits in terms of improved laboratories, begun to instil a culture of biosecurity, enhanced communications etc.

But in most countries and in most sectors, the biosecurity status is 'business as usual', i.e. there has been no substantive improvement.

In regard to sustainability, cost-effectiveness of measures is very important.

For effective partnerships, need effective coordination of activities at all levels.

Syntheses of group work outputs

These raw group outputs were synthesized overnight by the workshop facilitators and RTE team. Four key issues and three cross-cutting issues emerged (see below). These were used to form the basis of the next stage of group work, which focused on what needs to be done to build on the work achieved by FAO and others in enhancing HPAI preparedness and response capacities, both for HPAI, broader disease surveillance and pandemic preparedness. This next step focussed on the *what* (the step after this considered the *how* and the *who*).

Four groups, each made up of mixed FAO and non-FAO participants, considered *what* needs to be done to address these issues: two groups tackled issues 1 and 3 (see below), and two groups tackled 2 and 4, and all groups were asked to consider the following cross-cutting issues: gender, communications and the environment.

What needs to be done?

1. **BIOSECURITY.** How can biosecurity measures be realistically and sustainably improved along the key poultry value chains, in particularly those involving sectors 3 and 4?
2. **PRIVATE SECTOR ENGAGEMENT.** What measures need to be taken to foster functional, mutually beneficial and economically viable partnerships between public veterinary services and
 - a) Large, medium and small scale poultry producers
 - b) Private animal health service providers?
3. **SUSTAINABILITY.** How can appropriate levels of awareness, preparedness and response capacity be maintained to respond to animal diseases which threaten human health and livelihoods?
4. **LESSONS LEARNED.** What are the key lessons emerging from the HPAI projects, and how can these be captured, shared and applied to influence improved policies and practices for sustainable disease control in a broad development context?

Cross-cutting issues: Gender, environment and communication

Group work outputs: *the what*

BIOSECURITY: Group 1

Sector 3:

Production:

- physical isolation
- time barrier
- effective footbath
- effective cleaning
- movement limitation (within and between farms)
- clean water and feed

Transportation:

- clean formites (vehicles etc)
- avoid recycling

- control movement of vehicles on farm

Markets:

- section the market (compartments) to allow cleaning
- linking biosecurity to the hygiene of products: food safety
- separation of wet markets

Processing:

- encourage slaughter slop with water and disposal facilities

Sector 4:

- isolate birds from markets and new birds
- avoid wooden crates: use metal or plastic
- education, education, education:
 - rely on women's association
 - teach about hygiene
 - link waste disposal to environmental and waste disposal
 - Farmer Field School: farmers try out measure and judge for themselves the benefits, including increased profitability
- simple clear messages

BIOSECURITY: Group 2

Definition: key words- exclusion/containment at appropriate levels

Measures:

1. Critical biosecurity gap analysis sectors 3 and 4
2. Develop biosecurity guidelines and SOPs
3. Develop and implement communication strategy;
 - key messages
 - target audiences: gender, environment, behaviour change
 - awareness
4. Develop and implement biosecurity audits:
 - fine-tuning and reinforcement

Gap analysis:

- marketing chains
- husbandry
- mindset/culture
- gender
- processing
- transportation

SUSTAINABILITY: Group 1

- Link capacity to profit
- Maintain institutional capacity:
 - public partnerships – MoL, MoH
 - PPP
 - link vet work to trade and food security
- well defined exit strategy: life cycle of projects getting shorter and shorter: when design a project, need to think what the exit strategy is and what happens after the project is gone.
- to think what the exit strategy is and what happens after the project is gone.

SUSTAINABILITY: Group 2

1. Joint teams multi-disciplinary approach
2. Continuous education, awareness and advocacy (e.g. at political level)
3. Bottom-up approach to ensure ownership at grassroots level
4. Institutionalisation of private and public sectors
5. Institutional capacity:
 - retention of critical mass
 - adequate budget
 - appropriate work environment (structure, work culture, etc)

PRIVATE SECTOR ENGAGEMENT: Group 3

Understand roles and responsibilities in HPAI epidemiology of private and public sectors:

Public

- Define policy and legal framework
- Define collaborative structure within the framework
- Provide public infrastructure for marketing and processing
- Create public-private awareness
- enforcement of legal framework
- Promote establishment of stakeholder associations
- Provide microcredit
- Provide quick and free diagnostic
- Provide continuous education on emerging disease to private animal health service providers
- Sub-contract private vet for vaccination

Private:

- Form associations
- Create public awareness

- Contribute to public infrastructure

PRIVATE SECTOR ENGAGEMENT: Group 4

- impact of biosecurity on incomes should be measured and made clear to farmers
- how to access credit?
- make bigger picture clearer (threat to sector 1 and 2 still there if disease in 3 and 4)
- give producers greater role in compensation and certification
- link HPAI to ND activities to ensure cooperation

LESSONS LEARNED: Group 3

1. Benefits of multi-sectoral partnerships: animal-human health; ministries-NGOs...
 - already applied for other diseases
2. Communication is a critical disease control tool
 - proper communication and strategy can avoid economic losses
3. Socio-economic data is an important tool for disease control advocacy
 - more data needed
 - mainstreaming results within departments
4. Limitation of single disease effort;
 - integrated disease control approach
5. Building diagnostic networks give direct benefits on disease control, but raise the issue of sustainability
 - need governments commitment to share information and support their structures

LESSON LEARNED: Group 4

Awareness:

-ve

- animal health specialists inadequately involved
- communication methodology not strictly followed – no pre-testing
- messages not disseminated to grassroots
- no publicity on policies
- messages stress human health at the expense of animal health

+ve

- awareness improves in crisis – socio-economics
- journalists/scientists collaboration
- risky behaviours identified
- inter-institutional collaboration

Preparedness:

+ve

- preparedness plans developed, operationalized
- adequately and timely compensation, sustainability challenge
- national compensation plans for other diseases
- border control, traceability, biosecurity, surveillance and prevention

-ve

- no emergency funds
- plans not operationalized
- endorsement by local governments

Response

- sample collection possible
- command chain critical:
- culling/stamping out
- compensation plans, communication to farmers
- collaboration between medics and vets
- Livestock insurance, micro-credit- plough back taxes from poultry

The main points to emerge from the following discussions were:

Linking biosecurity measures to profitability can be done by encouraging experimentation at farm level, e.g. through Farmer Field School or similar approaches: farmers can determine for themselves whether some biosecurity measures also improve profitability

Women who process and sell poultry should be trained in biosecurity measures

Care is needed in disposal of waste from poultry processing and marketing

The real challenge is to communicate the biosecurity measures to the appropriate risk groups

Need to carry out a census of sector 4 poultry: important to respond to the actual risks on the ground affecting farmers, traders, etc and to use the appropriate tools to respond to these risks

It is unrealistic to expect a woman selling one chicken to invest in a plastic transport cage to take it to market, but traders dealing in many birds might

There is little or no information on the role of cages in HPAI virus transmission. The issue is actually about cleaning, not the cage material

In Togo, an HPAI outbreak was traced to movement of eggs, and in Nigeria an outbreak was caused by movement of chickens in cages

On biosecurity you should respect what the poultry keepers already knows: listen to the community first and then see if you can improve on the situation on the ground

We don't understand sector 4 enough to restructure it. Study sector 4 first to understand it, and then suggest practical measures

We still lack even the basic statistics of poultry populations

How can we target live bird traders? Through associations, by providing credit etc

Lots of biosecurity guidelines have already been developed and they are at different levels, but assessments have not been done. But we are not starting from zero

The solution to creating a bigger role for the private sector lies in having functional producer groups

With regard to biosecurity it would be good to generate evidence of additional benefits, including for other diseases

For public-private partnerships there is currently a huge gap. We need to create a platform for dialogue: currently there is mistrust between the parties. It is necessary to identify their respective needs from each other and to deliver mutual benefits to both parties

Very few people present at this and other similar meetings are from the private sector: the balance between representation of the public and private sectors needs to improve closer to parity

The OIE should invite the private sector to help develop standards

Interventions developed without the private sector tend to fail: they should be involved from the design phase onwards

In West Africa, the private poultry industry has been deeply involved in intervention design, compensation etc. Good communication is the key

Regarding sustainability it is important to know who benefits from whatever we are doing. Socio-economists need to work out the costs and benefits and show how these are distributed – so people understand why they should be involved

Synthesis of group work outputs by facilitators and RTE team

BIOSECURITY

- Critical biosecurity gap analysis
- Develop biosecurity guidelines & SOPs
- Develop & implement communication strategy
 - Key messages
 - Target audiences; gender, environment behaviour change
 - Awareness
 - Approaches (e.g. farmer field schools, etc)
- Develop & implement biosecurity audits
 - Fine tuning & reinforcement

LESSONS LEARNED

- Promote multisectoral partnerships (animal/human health, ministries/NGOs, etc)
- Exploit various communications tools and approaches
- Seek stronger socioeconomic impact tools that identify benefits (evidence base) to different partners: advocacy & impact (including biosecurity)
- Adopt multiple disease control approach, not single

- Exploit new diagnostic and epidemiology networks as services to private sector
 - Need for government commitment
- Compilation & sharing of lessons across countries, regions, etc

PRIVATE SECTOR ENGAGEMENT

- Define public & private sector roles and responsibilities (including legal framework): incentives to dance together
- Promote establishment of stakeholder associations
- Access to credit, insurance schemes, etc.
- Articulate the joint responsibility better; corporate social responsibility?
- Link HPAI to Newcastle disease to ensure cooperation & demand
- Greater role for producers in compensation & certification

SUSTAINABILITY

- Establish and articulate different markets for animal health services (market access, vulnerability, food security)
- Diversify products emerging
- Define needs at grass roots level to ensure ownership and demand driven
- Institutionalize the private sector interface with key identified marketable preparedness and response products
- Provide continuing education and network capacity for staff and clients
- Develop a well defined exit strategy
- Incorporate the lessons learned

Group work task: *The How and the Who*

Two FAO groups consider *what is the role of FAO in these activities* while two non-FAO groups consider *how can it be done and by whom, with consideration of the potential roles of FAO?*

Group work outputs

Non-FAO groups consider how can it be done and by whom, with consideration of the potential roles of FAO?

BIOSECURITY

1. Critical biosecurity gaps:
 - develop guidelines
 - in-depth analysis along value chainsWho: Governments, FAO and others, STOP AI (pilot)
2. Develop guidelines and SOPs
 - collate existing guides

- re-adapt to meet local situations

Who: FAO, OIE, AU-IBAR

3. Develop and implement communications strategy:

- existing strategies
- repackaged: ownership, gender, ethnicity/fitness

Who: government, FAO, UNICEF, etc

4. Develop/implement biosecurity audit mechanisms/guidelines

Who: stakeholders with development partners support

PRIVATE SECTOR

Central role for farmer/stakeholder associations

- Public sector roles: lead in policy and ensure involvement of sector 3 and 4
- Private sector: lead on dialogue
- Credit and insurance schemes: differs per country; ideally grassroots level; often cooperatives are solutions
 - roles: banks, farmers associations, cooperatives, FAO – facilitating role in assessing risk of different activities
- corporate social responsibility: role – large-scale farmers; how – could support training
- link HPAI to ND (other poultry diseases): multi-disease approach; role RECs, FAO, OIE
- Compensation: stakeholders associations; certification- follow OIE guidelines

SUSTAINABILITY

- Establish and articulate different markets for animal health services: clear regulations, licensing and regulation of vets; in some countries CAHWs under supervision of vets. Role = private sector
- Diversify products emerging: role - private sector (pharmaceutical companies, GALVmed, feed companies)
- Needs will be driven by stakeholders: use participatory rural appraisal techniques to involve community
- Develop exit strategy: role – all stakeholders; FAO-in project drafting stage

LESSONS LEARNED

1. Multisectoral partnerships:

- integrated national disaster management strategy/policy (enactment)
- co-implementation of activities
- multisectoral taskforces/committees (regular meetings)
- incorporation in school curricula

Who: governments

2. Communications tools and approaches for the above

Who: FAO, donors

3. Strengthen socio-economic impact tools: studies and assessments

Who: FAO, ILRI, IFPRI, AU-IBAR, governments

4. Multiple disease approaches:

- contingency planning (generic and disease specific)
- associate other diseases in funded activities (piggy backing)

Who: FAO, governments

5. Diagnostic and epidemiology networks:

- incorporate private sector in existing networks/reporting systems
- training

Who: government

6. Compilation/sharing lessons:

- workshops
- cross-border collaboration/meetings
- strength of RECs

Who: FAO, AU-IBAR, RECs

FAO Groups: what is the role of FAO in these activities?

BIOSECURITY

1. Provision of relevant technical and backstopping expertise support
2. Reviewing, testing, updating and validating already produced guidelines and SOPs
3. Resource mobilization and advocacy
4. Harmonization and coordination of activities of various players
5. In collaboration with other partners, provide technical support to develop effective communicate strategy for biosecurity
6. Assist member countries to develop baseline biosecurity audit protocols

PRIVATE SECTOR

1. Define roles/responsibilities in reference to service delivery (biosecurity, surveillance, markets)
2. Evidence-based studies to support: legal framework, policy framework, quality control and standards
3. Advocacy and support for legal and policy framework based on international standards
4. Facilitate relationships between public and private sectors through meetings, e.g. social responsibility
5. Promote associations at regional and national levels
6. Access to credit/insurance schemes:
 - feasibility study on possibilities

- link credit providers/producers through meetings
 - risk assessment studies, e.g. insurance
7. Link with HPAI:
 - gains on HPAI work, e.g. disease diagnosis
 8. Compensation feasibility studies/advocacy

SUSTAINABILITY

1. Role in articulating the drivers; primary mandate
2. Diversification: technology diversification, e.g. diseases; capacity building
3. Needs at local level: ownership, PA, CBA
4. CE/network in collaboration with governments
5. Projects to contribute to long term strategy
6. Lessons learned: weakness/gaps; strengths

LESSONS LEARNED

1. Take leading role for multi-sectoral partnerships in the context of OWOH
2. Reviewing and streamlining existing communication tools and dissemination
3. Advocate for multiple disease prevention and control strategies
4. Play a lead role for the promotion and adoption of socio-economic impact tools to influence evidence-based policy decision making
5. Consolidate the already started institutional capacity building efforts in epi units, diagnosis etc in collaboration with relevant partners
6. Provide suitable platform for information and knowledge sharing on best biosecurity practices

The main points to emerge from the following discussions were:

Regarding CSR, need to make case that measures are in the companies' long-term self-interest, e.g. protecting their own biosecurity by helping neighbouring small-scale farmers

One way to encourage companies to participate more would be for governments to provide incentives, e.g. tax breaks

Pharmaceutical companies have their own structure to reach producers at all levels. These same structures can be used to deliver biosecurity messages. Large poultry companies want to get rid of HPAI as they are amongst the main losers – they are therefore happy to collaborate and cooperate

Private companies know where their markets and interest lie: is it the role of government or FAO to interfere and help them to make more money 'to help the poor'

Implementation should be left to national partners with FAO backstopping and addressing areas where they enjoy comparative advantage, e.g. in lesson sharing

FAO has already adopted a multiple rather than a single disease approach, but donors have driven the focus on HPAI alone

When implementing any activity, e.g. training, other diseases should also be taken into consideration
Veterinary- medical partnerships have improved over past 10 years or so, so there is no need for FAO to lead on this

There are similarities between sector 4 for HPAI and other diseases affecting the poor, e.g. PPR and ASF. Biosecurity measures developed for HPAI could be expanded and adapted for other diseases. This fits with a multiple disease approach and is also more acceptable at village level

In Nigeria, screening is simultaneously carried out for HPAI and for other likely diseases such as Newcastle disease

Shouldn't give too many responsibilities to FAO - there are many other players. To ensure capacity building, at some point there should be takeover by national and regional bodies. Technical guidance should be provided by FAO, but leadership should come from national governments

At country level it is easy to get confused which international organization is responsible for what

For FAO, support and facilitate are the key words

In West Africa, ECOWAS is an important organization for advocacy to effect change. Countries have sense of belonging to ECOWAS, more so than FAO. So, FAO should work closely with ECOWAS

FAO aware of usefulness of RECs in advocacy processes –which ultimately will be coordinated by a continental body such as IBAR with technical backstopping by FAO

The facilitator and leader of the RTE team summed up the previous two days

The workshops outputs will contribute tremendously to the on-going evaluation, so thank you to all the participants.

The final session revealed some interesting differences in perceptions as to the roles of FAO. In general the non-FAO groups saw greater roles for national bodies and RECs in the implementation of follow-up actions, and limited roles for FAO. The FAO groups saw a much wider range of roles for FAO. The importance of RECs and of developing national capacities emerged strongly. The FAO groups advocated well for FAO's role - which is healthy - and this was tempered and balanced by the non-FAO participants.

LIST OF PARTICIPANTS

RTE WORKSHOP, NAIROBI

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Second Real Time Evaluation of FAO's work on Highly Pathogenic Avian Influenza

26 - 27 October 2009 - Safari Park Hotel - Nairobi, Kenya



SECOND REAL TIME EVALUATION OF FAO'S WORK ON HIGHLY PATHOGENIC AVIAN INFLUENZA: REGIONAL WORKSHOP FOR ASIA

ASIA STAKEHOLDER'S MEETING HELD AT MILLENNIUM HILTON HOTEL, BANGKOK, THAILAND, 30TH NOVEMBER AND 1ST DECEMBER 2009

Introduction

The workshop was held to contribute to the second real time evaluation of FAO's contributions to avian influenza preparedness and response in the Asian region. It was designed to bring together FAO staff from the region, together with representatives of FAO's partner organisations and institutions, to review progress made and to discuss future opportunities for better control of avian influenza and preparedness for other priority diseases.

The workshop took place over a day and a half, preceded by a half day of closed discussion between the independent Real Time Evaluation (RTE) team members and FAO staff from the region¹. The workshop proper started after lunch on the first day when the non-FAO participants joined the group. After an official opening by the FAO Deputy Regional Representative for Asia and the Pacific, Dr Konuma, and an introduction to the background to the RTE and process to be followed over the next day and a half, participants went straight into group work. The 45 or so participants were allocated amongst three FAO and three non-FAO staff groups (see appendix for list of participants).

First group work session: *the issues and constraints*

Task for the three non-FAO groups:

- Identify the 5 major impediments (as of today) to effective control of HPAI in your country/region within the next 5 years, with justification
- Assign priorities to these

Task for the three non-FAO groups:

- Building on the morning discussions, identify up to 10 key issues of importance to your country and/or the region that are essential in order to bring HPAI under control within a 5 year period.
- Identify the top 5 priorities amongst these, with justification

¹ During the closed discussion, FAO participants discussed with the evaluation team selected issues that had emerged during the team's visits to Bangladesh, Cambodia and Vietnam, and to the regional ECTAD unit in Bangkok. An evaluation framework based on one developed by FAO in Bangladesh was used by the RTE as a tool to illustrate and review their preliminary observations on FAO's roles and the quality, relevance, timeliness and sustainability of its contributions to HPAI preparedness and responses in Asia. The RTE team considered that the Bangladesh framework provided a useful model, and they had made minor amendments to better suit the purposes of the workshop review. The review team focused on the countries that they had visited as part of the RTE in Asia, and FAO participants commented on observations made by the team, complementing these with information from other countries in the region with which they were familiar.

Group work outputs: *the issues/constraints*

Non-FAO groups' outputs

Group 1:

1. Political commitment/good governance
2. Insufficient vet services/public health services: governance, legislation, silo approach to animal disease
3. Poverty: in country and farmers: market orientation
4. Lack of human resource
5. No pressure from the consumers

Group 2

1. Move from emergency to sustainable responses:
 - a. funding allocation/mobilisation issues
 - b. prevention strategy –including vaccination and surveillance/monitoring
2. Political commitment to control HPAI
3. Technical capacity: quantitative and qualitative
4. Public awareness - behaviour change especially in sectors 3 and 4
5. Public-private partnerships to be further enhanced

Group 3:

1. Apathy and or lack of willingness at community level:
 - a. non-reporting
 - b. vaccination
2. Farming systems: lots of smallholders, free-range ducks, biosecurity
3. Resources:
 - a. human- skilled workforce e.g. vets/animal health workers
 - b. financial – reducing donor interest
4. Government authority and ability to implement:
 - a. particularly decentralization (Indonesia)
 - b. commercial industry (Indonesia)
 - c. movement control
5. Lack of validated information on control measures

Main points ensuing from following discussion:

Poverty is the big issue, e.g. if only they could afford to buy chickens from supermarket, but this is not attainable within 5 years.

The 'lack of validated information on control measures', especially on biosecurity, is debatable. There are documented examples; how much more information is needed?

With regard to the interface between 'ideal' biosecurity and measures that people can realistically attain: we have little empirical evidence of what those at the interface will do in terms of control of broader disease.

For vaccination, compensation etc, need to look at operations and management capacity: is this embedded as a cross-cutting issue? Managers would have put this as a high constraint.

FAO groups' outputs

The FAO groups each initially defined what they considered as "HPAI under control" before prioritizing issues/constraints

Group 1:

Definition of 'control': complicated from countries represented: some free, sporadic, endemic. Free – maintaining freedom and rapid containment; sporadic – to increase number of disease-free areas and rapid containment; endemic- reducing incidence throughout year and increase disease free areas.

Top 5 issues:

1. Epidemiological analysis and capacity building
2. Disease control and response networks including control programme management
3. Laboratory strengthening
4. Compensation: functional and appropriate
5. Communication and advocacy with private sector for improved biosecurity
6. Clear vaccination policy and strategy

Group 2:

Definition of control: endemic country – progressive control: endemic to sporadic to eradication; non-infected country: early detection/stamping out,

Top 5 issues:

1. Biosecurity:
 - a. public awareness
 - b. behaviour change
 - c. coordination
 - d. restructuring of market chain:
 - i. improve vaccination in sector 3
 - ii. ducks
 - iii. wild birds
2. Long-term financial and political commitment:
 - a. commitment from donors/governments
 - b. legal framework
3. Capacity building:
 - a. epidemiological knowledge (better understanding)
4. Cross-border /regional approaches
5. Surveillance

Group 3:

What control means: Endemic countries:

- progressive reduction of cases
- better understanding of the epidemiological situation including distribution of infection

Free countries and areas: Maintenance of free status

Top 5 issues:

1. Sustainability:
 - 5-year financial commitment
 - Ensuring sustainability of what has been done by institutionalizing ECTAD at national and regional levels
 - Keep donor and country interest by expanding the breadth and scope to other infectious and economically important diseases
2. Epidemiology:
 - Answer key epidemiological questions e.g.
 - factors impacting on generation of pandemic strains
 - Analysis of existing data
 - Framework of implementation of epidemiologic studies, e.g. cross border
 - Improve the quality of risk assessment by generating better quality field data for planning disease control
 - Sharing virus sequences
 - Creating critical mass of trained and experienced veterinary epidemiologists in epidemiology units
3. Strengthening veterinary systems:
 - Epidemiology & laboratory capacity
 - Reporting systems
 - Sustaining human resources
 - Disease control planning
 - Strengthen legal framework
4. Engage private sector:
 - restructuring
 - biosecurity
5. Maintaining public awareness

Main points ensuing from following discussion:

There was consensus on what control means.

Is zonal freedom within a country in areas without islands possible? A: Yes - if use OIE meaning. For example, within Cambodia there are zones that cover more than one country. In Indonesia, it is possible to have zones within the country. Zones need to be defined by epidemiological criteria not geo-political boundaries.

Movement of wild birds and cross-border movement of poultry must be considered with respect to zoning and zoning is likely to be ineffective if it depends on stopping people from trading across borders or between zones.

Zoning could start in more isolated areas first.

There were similarities within FAO and non-FAO groups, but also a distinct difference in approach between the two: e.g. epidemiology and laboratories were mentioned by FAO; non-FAO focused on government commitment. Non-FAO groups looked at broader constraints, including those outside our control.

Both groups-considered financial issues for sustainable responses, etc in a situation of reducing donor interest.

FAO has succeeded in raising the issue of HPAI and the wider importance of veterinary services; but it shouldn't think about controlling HPAI and other diseases on its own. FAO has other partners and needs to rely on their services and skills.

The next step is to tease out what needs to be done for these issues, after the emergency funding phase. For example, regarding political commitment- how does one gain this when the disease is of marginal impact? How does one regain the political commitment to avian flu after the impact of the H1N1 pandemic? Very few governments reacted to HPAI until it came to their country.

We have not invested enough resources to advocacy at the level of ministers: we need greater effort targeted at ministers of finance, planning etc. Other relevant partners are needed; e.g. WHO to talk to ministry of health.

Can also have peer pressure from neighbouring countries for a regional approach. We need to look at ways to work with the public health sector from a regional perspective, to maintain control against other zoonoses. A regional response can strengthen national-level control.

The FAO groups looked at what we can do within our organization, including with partners, to move forward.

The facilitation team considered the 6 sets of outputs and looked for complementarities so that they could be distilled these down to a smaller set for consideration by the whole group on Day 2. On day 2 core items were considered under the perspective of "*what* needs to be done" in the morning; and in the afternoon "*how* and the *who does it*".

Syntheses of group work outputs

These raw group outputs were synthesized overnight by the workshop facilitators and RTE team. Four key issues and three cross-cutting issues emerged (see below). Minor changes were made to the draft wording of the four issues to accommodate suggestions from the participants resulting in the following four challenge questions:

Overcoming the identified challenges

1. Creating and promoting incentives for appropriate behavioural change along poultry value chains; what needs to be done?
2. Building on the capacities developed for HPAI control, what needs to be done to re-ignite funding streams and political commitment for a smooth and uninterrupted transition from emergency responses to longer term development?
3. What new measures are required to build effective and demand-driven veterinary services that incorporate standards of epidemiology which support internationally-recognised evidence based decision making?
4. What measures need to be taken to foster functional, mutually-beneficial and mutually-appreciated collaboration and partnership between public veterinary services and a) large,

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medium and small-scale poultry producers, and b) private animal health service providers, and to promote wider multi-sectoral collaboration?

These questions were used to form the basis of the next stage of group work, which focused on *what* needs to be done to build on the work achieved by FAO and others in enhancing HPAI preparedness and response capacities, both for HPAI, broader disease surveillance and pandemic preparedness. The step after this will consider the *how* and the *who*.

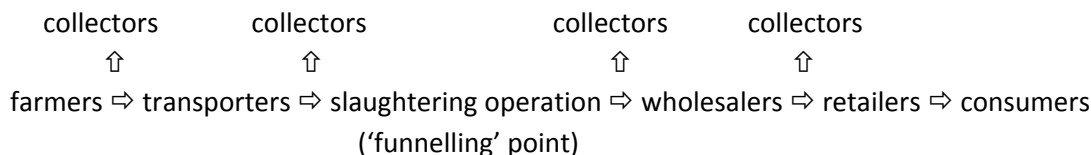
Six groups, each made up of mixed FAO and non-FAO participants, considered *what* needs to be done to address these issues: two or three groups tackled each issue (see below), and all groups were asked to consider the following cross-cutting issues: gender, communications and the environment.

GROUP WORK OUTPUTS: *THE WHAT*

Q1: CREATING AND PROMOTING INCENTIVES FOR APPROPRIATE BEHAVIOURAL CHANGE ALONG POULTRY VALUE CHAINS; WHAT NEEDS TO BE DONE?

Group 1 output:

Identification of actors in the value chain:



Level of poultry and other production systems:

- backyard, smallholder ⇒ local consumption
- medium-large scale production
 - i. Consumer ⇒ 'consumers demand driven'
 - education/awareness for food safety through: school, housewives, related associations, food preparers ⇒ need to also be aware of increased price
 - ii. Slaughtering point ⇒ promote good slaughtering practices; lead to certification system (minimal requirements); waste management
 - iii. Market place ⇒ inspection certification
 - iv. Farm (backyard, smallholder):
 - accredited system for premium
 - promote 'public good' concept
 - communities, associations, cooperatives
 - v. National poultry production improvement plan

Group 2 output:

1. Hatcheries:
 - motivation towards registration and certification
2. Live bird markets:
 - traceability
 - handler safety
 - market hygiene
3. Producer:
 - biosecurity
 - motivation for disease reporting
 - recording; traceability of their input-output poultry
4. Consumer;
 - food safety awareness
 - Consumer associations to demand standards
5. Backyard poultry (sector 4)
 - Consumer food safety standards applied to backyard farm produce

Group 3 output:

The value chain was broken down into a series of steps and incentives and controls for behavioural change were identified for the different steps:

- breeders and commercial producers:
- backyard producers
- primary collectors
- secondary collectors , traders and transporters
- slaughters, vendors
- consumers

At the breeder/commercial producer level: incentives identified included tax breaks, price stability, certification linked to registration leading to increased demand, new markets and export markets.

Control measures included government's role in regulatory matters.

At the backyard producer level, incentives included provision of veterinary services by government and private animal health providers.

At the consumer level, incentives included high quality certified and branded products, which would create demand thereby creating incentives for producers to meet these standards.

For the poultry collectors, measures could include certification and communal collection points, and the incentives were financial, convenience and enhanced reputation.

Q2: BUILDING ON THE CAPACITIES DEVELOPED FOR HPAI CONTROL, WHAT NEEDS TO BE DONE TO RE-IGNITE FUNDING STREAMS AND POLITICAL COMMITMENT FOR A SMOOTH AND UNINTERRUPTED TRANSITION FROM EMERGENCY RESPONSES TO LONGER TERM DEVELOPMENT?

Group 1 output:

1. Increase FAO's engagement/participation to gap assessment process for veterinary services conducted by OIE using PVS tools
2. Strategic planning to address the gaps
3. Joint FAO/OIE advocacy strategy for government, donor focusing on food and nutritional security as well as food safety using One world, One health approach:
 - impacts of disease/pandemic at global and regional levels
 - IMPACI – ministerial agreement and signatures as commitment for national government involvement
4. Mechanisms to set up and utilize regional trust funds (SAARC & ASEANS) that are funded from national membership fee and donor funds
5. Technical assistance between trading partners on capacity to control TADs.

Group 2 output:

This group used the metaphor of the flame, considering the emergency 'valve' (controlling the flow of fuel to the flame) and the long-term development 'valve'; the former was driven by H5N1 and focused on EID, surveillance and response preparedness. For long-term development this needed to be refocused towards:

- food safety
- 'One World, One Health' public health partnerships:

- H1NI
- joint proposals
- joint publications/presentations
- advocacy to national and regional bodies
- public communication
- animal health, public health and ecosystem health

Under the banner: *healthy animals, healthy people, healthy communities*:

Advocacy:

- appoint representatives to global, regional and national governance bodies
- presentations focused on successes achieved with respect to *healthy animals, healthy people, healthy communities*
- Communications and awareness creation:
- joint communications campaign
- joint presentations and publications

Coordination and leadership:

- working group focused on *healthy animals, healthy people, healthy communities*
- joint project proposals to demonstrate implementation of *healthy animals, healthy people, healthy communities*

Group 3 output:

1. Collate and provide evidence of reduction in disease and pandemic risk to funding partners
2. Risk of sporadic cases leading to large outbreaks if control not sustained must be fully explained to governments and funding partners
3. Advantage of improvement in veterinary services on reduction of low pathogenic diseases that impact on poultry production.
4. Advocacy for public good aspects of improved food safety generally other than just for HPAI
5. Overview and collation of research on market value chains and socio-economic research from region to be available to support funding applications.

Q3: WHAT NEW MEASURES ARE REQUIRED TO BUILD EFFECTIVE AND DEMAND-DRIVEN VETERINARY SERVICES THAT INCORPORATE STANDARDS OF EPIDEMIOLOGY WHICH SUPPORT INTERNATIONALLY-RECOGNISED EVIDENCE BASED DECISION MAKING?

Group 1 output:

1. Reassess the value and importance of livestock
2. Economic analysis of benefit of investing in effective veterinary service
3. Paradigm shift from disease control to health promotion and livestock development
4. Convince the international community to invest in veterinary services
5. New business model which includes all levels of producers
6. Improve veterinary curriculum – undergraduate & graduate
7. Applied vet epidemiology training (mentor-based)

8. Operational research to support evidence based decision making

Group 2 output:

Broke down questions into 4 parts:

- i) effective veterinary services
systems:
 - systems analysis (PVS)
 - coordination (within division of Ministry of Agriculture)
 - chain of command/clear responsibilities
 - Develop or refine and implement clear animal health legislation
 - planning for disease control**players:**
- ii) strong collaboration with other sectors (academic, health, NGO, private sector demand-driven services:
 - relevance to farmers (including animal production not just health)
 - know your client & be responsive
 - allied industries (feed, drugs, vaccines, equipments)
 - availability of funds (credit)
 - stronger interface (vets, animal health workers)
 - private vet services (increased utilization)
 - certification/reward (increased price, consumer demand)
- iii) epidemiology capacity
 - information management
 - surveillance
 - laboratories

FETPV but broader --

 - Training needs analysis
 - Functions needed to be done
 - Gaps
 - Training
- iv) evidence-based decision making
 - following strengthening, capacity
 - define the questions, literature review, commission study, analyze results
 - consensus (even if not unanimous)
 - guidelines (giving options if not unanimous consensus)

Group 3 output:

- long-term commitment to funding
- strengthening capacity (human, infrastructure, etc)
- long-term planning for training epidemiology (national, regional), including eco-system health approach
- cross fertilization between countries on expertise and technical skills
- additional vets and paravets needed
- reinforcement of the links between the field/provincial/central
- Incentives for CAHWs (Vietnam and Indonesia)

- Identify other sources of technical training from other partners (human health, international veterinary epidemiology groups)

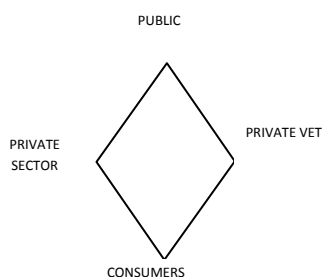
Q4: WHAT MEASURES NEED TO BE TAKEN TO FOSTER FUNCTIONAL, MUTUALLY-BENEFICIAL AND MUTUALLY-APPRECIATED COLLABORATION AND PARTNERSHIP BETWEEN PUBLIC VETERINARY SERVICES AND A) LARGE, MEDIUM AND SMALL-SCALE POULTRY PRODUCERS, AND B) PRIVATE ANIMAL HEALTH SERVICE PROVIDERS, AND TO PROMOTE WIDER MULTI-SECTORAL COLLABORATION?

Group 1 output:

1. Appropriate legislation and standards
2. Promote farmer associations
3. Veterinary councils
4. National public and private partnership programs in conjunction with national development plans
5. Engagement of private animal health service providers
 - a. Rural community animal health service providers (CAHWs)
 - b. Accreditation of private vets to conduct certain tests, e.g. export testing
6. Wider multi-sectoral collaboration
 - a. Integrate approach to multidisciplinary training
 - b. Promote One World One Health concept
 - c. Demonstrate collaboration among international agencies

Group 2 output:

Knowing your client:



Public vets:

- What are their priorities
- Commonalities- matching priorities; develop common goals
- Knowing what commitments are possible (each stakeholder)
- Can incorporate rewards/incentives

Key interface:

- Vaccination
- Biosecurity
- Compensations
- Compartmental isolation

- diagnosis

Possible interventions:

- financing
- rewards/incentives

Private sector:

- Dialogue and trust
- Understand their priorities
- Developing common goals
- Knowing what commitments are possible (each stakeholder)
- Knowing each sector capacity

Key interface:

- Vaccination
- Biosecurity
- Compensations
- Compartmental isolation
- diagnosis

Possible interventions:

- financing
- rewards/incentives

Private vets:

- Dialogue and trust
- Official delegation of specific responsibilities
- Disease reporting
- Include community based animal health workers

Consumers:

- Food safety
- Consumer associations/advocacy groups
- Information
- Quality versus cost

Group 3 output:

Public and private sectors:

- More communication/discussion
- Possible arrangements for better information exchange/collaboration
- Joint training/workshops/meetings/production of communication materials
- clarification of roles and responsibilities and mutual confidence building

Multi-sectoral collaboration:

- continued and enhanced participation between relevant stakeholders

Cross-cutting issues for all groups:

Gender:

- RTE team should have male & female members
- Involve women in education in disease control program and education
- Micro-financing women in livestock enterprises

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- Integrate communication and advocacy in all aspects
- must have female representation in decision making positions & advocacy groups;
- woman more likely to consider health aspects important ;
- key importance in small holder production & backyard;
- ensure adequate representation in training
- woman networks very important for communication
- Selection of vet/paravets with focus on women

Environment:

- legislation – consider environment; social aspects (e.g. – culling)
- training/teaching in disposal of carcasses & manure; management of sick animals/birds
- understanding disease in its environmental context (soil, elevation, climate)
- better farm management
- Promote generation of alternative energy from livestock
- Promote organic farming and reduce chemical use

Communication:

- key to successful management
- different levels/target audiences
- ensure appropriate messages
- communicate to all levels of targets
- different communication methods- media, one-on-one' small groups, games, songs, print, broadcast
- socialization (after decision)
- advocacy
- feedback loop
- more communication/discussion
- possible arrangements for better information exchange/collaboration
- Joint training/workshops/meetings/production of communication materials
- clarification of roles/responsibilities and mutual confidence building

The main points to arise in the ensuing discussions were:

Compensation: Donors and Governments need feedback data or evidence on the value of compensation, such as effectiveness of HPAI control with and without comparisons from within the region. However the risk of creating perverse incentives is recognised if compensation modalities are not well designed.

Risk of creating perverse incentives if compensation modalities are not well designed.

Incentives to improve biosecurity vary for different players: need 'carrot and stick' approaches, with right balance between the two elements.

For sustainable funding, there are broader funding opportunities, such as focused on food safety and ecosystem health, and also for building on broader partnerships.

The positioning of slaughterhouses in value chains varies: sometimes it occurs after the retail point in the chain (live bird markets).

With regard to re-igniting funding streams: we didn't hear what new strategies, what work we need to do to identify new funding streams, and what level of funding was needed. To re-ignite funding

streams there is a need to communicate successes from the field to Governments and donors who control future funding: need to show we have touched many people's lives and demonstrate these impacts.

Funders fund due to impacts on human health and also financial aspects. This includes positive impacts and also negative ones, e.g. responding to situations which are pushing more people into poverty.

A recent World Bank paper (Minding the Stock; bringing public policy to bear on livestock sector development) indicates rethinking of the position on structural adjustment programmes(SAPS); e.g. the huge impact of H1N1 on Mexico's national economy was recognized.

Donors are now funding other agencies rather than FAO. Why is this? What are we doing right and wrong? Why are they choosing other partners to implement their programmes? But is this true? Isn't it a case that some donors are spreading their risk by investing in a range of suppliers?

With regard to building and diversifying partnerships - FAO needs to identify its role and comparative advantage within these.

Success measure for effective veterinary services include how much the livestock sector contributes to GDP: budgetary allocation often depends on revenue generated by that sector.

Partnerships are a means to an end. The answers to this question (Q4) tended to be more theoretical than other three. It is necessary to define the objectives desired from a partnership.

Partnerships are often portrayed from the view point of 'we, the vets'; but what are the producers' incentives and attitudes to 'us vets'? FAO's public-private partnership project is considered by some to be taken from a veterinary perspective rather than treating both partners as equals.

THE HOW AND THE WHO

Group work task:

The group work outputs for the four questions considered above were initially synthesized by the facilitation team with a view to capturing all the major points that the various groups had contributed. Participants then made suggestions as to how the initial syntheses could be improved. From this process emerged the issues and questions listed below, which form the basis for the next and final step in the workshop - the *how* and the *who*.

For this task, two sets of working groups were created: one set of FAO personnel and one set of non-FAO personnel.

1. Behavioural change in the value chain:

Innovative development of quality along the poultry value chains: a carrot and stick approach to developing, understanding and exploiting incentives (\$\$\$, convenience & reputation) and regulatory requirements at different levels.

- What mechanisms are required to move this forward?
- Who should be the players involved in the different mechanisms?

2. New funding streams and political commitment:

With a focus on food security, vulnerability, poverty reduction, food safety, and animal, public and ecosystem health, and through multi-institutional partnerships:

- What mechanisms are required to initiate new national, regional and international funding proposals
- Who should be the players involved in different mechanisms?

3. Towards more effective and demand-led veterinary services:

What mechanisms are required to further each of the following vet service outcomes?

- Improved efficacy
- More demand driven
- Greater capacity
- More evidence based decisions
- Who should be the players involved in the different mechanisms?

4. Public private partnership and multi-sector collaboration:

- What mechanisms are required to achieve the following outcomes?
 - Operationalizing the 'One World, One Health' paradigm
 - Improved policy and practices for functional and harmonized compensation, relief and other schemes
 - Implementation of practical and effective biosecurity measures in sector 3 and/or live bird markets?
- Who should be the players involved in different mechanisms?

Group work outputs:

One of the FAO groups first reviewed **FAO's comparative advantage**, which they summarised as consisting of:

- technical advice:
 - animal health
 - legal
 - socio-economic
- bringing partners together:
 - broad relationships
 - partnerships
 - multinational/neutral
- quality control
- training

1. BEHAVIOURAL CHANGE IN THE VALUE CHAIN:

Non-FAO group 1:

How?

- Demand-driven
- Certification: safety; welfare (good farming practice)
- Community education
- Consumer protection (advocacy)
- Restrict focus to sector 3 and 4
- Mechanisms: stick (regulation: city, international) and carrot (farms)

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- slaughterhouses and wet markets – stick= regulatory; carrot= better prices
- certification, e.g. 'Q', MoA , Thailand = series of inspections ⇨rejection
 - traceability
 - accreditation
 - special breeds/production systems (free-range)
- farmers groups/cooperatives –stick = self-regulation; carrot = coordination, representation, training in marketing etc
- traders/collectors (respond to \$\$, convenience, reputation issues)
- collection points

Who?

- producers associations
- standard setting and enforcing: government, SPS (ASEAN, SARC)
- accreditation: different government departments, or non-governmental organizations (international)
- consumer protection agency
- communications: NGOs, Ministry of Education, MoH
- retailers set standards (organic)
- regional/global setting standards, guidelines, best practice: FAO/OIE/WHO

FAO group 1:

- coordinate: FAO supporting governments, bilateral implementing agencies, NGOs, farming associations
- design:
 - developing M&E framework: FAO
 - facilitating programme design: FAO
 - training material development: FAO
- implementation: government and private sector partners, NGOs
 - training of trainers (ToT) biosecurity practices, monitoring: FAO
- M&E: on-going technical advice
- Review and share regionally: FAO

Design and implementation: role of FAO and other actors

Value chain actor	Role	Who
Producer	Guidelines: facilitate development by bringing stakeholders together	FAO
Processor/market (stakeholder associations)		
Consumer (consumer association)	Training	Governments; technical advice FAO
	Regulation	Governments; technical advice FAO
	Quality control	Governments; technical advice FAO
	Accreditation	Governments; technical advice FAO

Incentives: loans, rewards, entitlement to full compensation

FAO-group 2

Innovative development of quality along the poultry value chains: a carrot and stick approach to developing, understanding and exploiting incentives (\$, convenience and reputation) and regulatory requirements at different levels.

Producers:

- Voluntary registration
- Biosecurity standards
- Tax incentives
- Compensation scale based on compliance with registration
- Free veterinary services and medication
- Marketing assistance
- Price stabilization through consultation
- Establish producer association trust funds

Collectors:

- Designated collection points
- Standards for biosecurity consistent with government branding/labeling along the market chain and consumer demand
- Cleaning and disinfection of crates and vehicles

Traders/transporters/markets follow best practices:

- Involvement of public health agencies to enforce standards
- Cleaning and disinfection of markets
- Separate slaughter area
- One way flow of poultry
- Separate poultry species

Consumers:

- Determine consumer preferences
- Consumer education regarding labeling
- Marketing "branded" food product
- Processors/Slaughter House
- Tax Incentives
- Public health standards

Players and roles:

- FAO
- National Ministry of Agriculture
- National Ministry of Health
- Producer Associations
- Local Authorities
- Consumer Associations
- WHO
- Veterinary Association

2. NEW FUNDING STREAMS AND POLITICAL COMMITMENT:

Non-FAO group one:

With a focus on food security, profitability

What mechanisms are required to initiate new national, regional and international funding proposals?

Need to know:

- Where you are and where you want to go?
- How you want to get there?
- How to budget and source funds?

1. Government needs to take control at country level (regional bodies at regional level):

- Government to have a strong plan or strategy
- Obtain in principle agreements from key funders (e.g. Hanoi Meeting).
- Coordinate different government players and
- Ensure widespread buy-in from government, private and non-government sectors

2. Need strong advocacy or persuasion skills:

- Analyse demand
- Understand government or donor agency priorities (but not blindly)
- Phrase objective or project with priorities of funder
- Simple and clear advocacy for importance of EIDs (human health) and food security (GDP, poverty exacerbation)
- Benefits of long term approach

3. Must have good projects with clear outcomes monitoring (success brings success):

- Skills in managing donors
- Ability to say no if the project proposed is unsound on a scientific or socio-economic basis

4. How to get money to desired beneficiaries:

- Good policy and bureaucratic procedures (e.g. between MOF and MOA)
- Coordinate different internal players
 - i. Ministry of Health
 - ii. Agriculture
 - iii. Natural Resources and Environment
 - iv. Education
 - v. Information
 - vi. Planning
 - vii. Finance

Who should be the players involved in different mechanisms?

- Government or regional bodies should take lead
- Independent advice (e.g. OIE, USDA, DAFF)
- FAO, donors at technical or implementation level

Non-FAO group two:

What mechanisms are required to initiate new national, regional, and international proposals?:
loan, grants, co-funding

National:

- national government develop or update clear strategic plan and for foreign aid policy and invite donors to learn of plans
- establish working groups with multi-ministry and donor representation
- research groups; academic; and universities
- private sector

Regional:

- ASEAN/SAARC work group develop plans and invite donors
- FAO/OIE develop regional plan and get country buy-in

International:

- embassies learn about policies and areas for assistance
- constant dialogues between donors and host countries to understand priorities and opportunities
- donors develop country strategy papers
- country and regional offices of the IO work closely with local government to develop proposal and implementing mechanisms

Political commitment:

Pressure groups to create support and obtain funding for efforts (non-government)

Associations, cooperatives

Who are the players: UN (FAO, UNICEF), OIE, World Bank provide technical assistance to develop proposals; other in-country technical support (USDA/USAID, AUAID, JICA, etc)

FAO group one:

- One World, One Health – overarching strategy: OIE, FAO, WHO, UNSIC, UNICEF, WB, donors & countries
- Identification of key thematic areas: OIE, FAO, WHO, UNSIC, UNICEF, WB, donors & countries, academia & research institutions
- Identification of country specific strategies and priorities: national government agencies, e.g. health, agriculture, forestry environment, research and the private sector
- Strengthening of veterinary & public health services
- Identification of “hot spots” and drivers of disease emergence and spread
- Surveillance
- Identification of key players with defined lead agency & partners (including donors, countries, regional organizations etc)
- Development of proposals with quantitative analysis of cost benefits (timing– April 2010 for concept notes): UN agencies to facilitate and national governments to lead
- Preparation of project proposals in consultative way: UN agencies as above to facilitate, NGOs
- Political commitment from government & regional organizations (INCAPI Hanoi 2010): government, regional organizations, donors
- Resource mobilization – initiatives and actions: jointly done by UN agencies, government, regional organizations, donors

3. TOWARDS MORE EFFECTIVE AND DEMAND-LED VETERINARY SERVICES

Non-FAO group one:

What mechanisms?

Improved efficacy:

- PVS tool (OIE)
- Strong internal performance tools (pressure from Govt to departments)
- Establishing external bodies such as government accounting office
- Assistance in reducing bureaucratic procedures and management skills
- Government to Government assistance (USDA)
- Involving other bodies as appropriate eg Academia, Industry

Players:

- Government
- OIE
- Other Governments
- Academia and Industry

More demand driven:

- Defining and understanding customers, e.g. consumers and industry
- Ensure government listens to clients
- Export industry
- Create mechanism to allow consumers to promote their priorities
 - Empower advocacy groups and NGOs
- Need socio-economic studies, analyse websites to expose demand etc

Players:

- Government
- Consumers and industry
- Advocacy groups and NGOs
- External agencies including FAO, academia, international research agencies for studies

Greater capacity:

- OIE PVS for baseline
- Workforce and training needs analysis by government
- Training programs
- Scholarships and fellowships
- Iterative process

Players:

- Government
- OIE
- FAO key implementing agency
- Donors for funding

More evidence based decisions:

- Greater emphasis on risk analysis
- Good cooperation between government and academia
- Good linkage between risk assessment and risk management
- Decide first what questions need answering
- Research commissioned to inform decision making

Players:

- OIE PVS (each 5 years)
- Internal Government Evaluation
- Government agencies from trading partners (USDA, DAFF)
- International organizations (ILRI, ACIAR, FAO)

FAO group one:

Mechanisms for improved efficacy:

- PVS & gap analysis
- Good governance:
 - transparency,
 - Accountability
 - legislation
 - SOPs
 - Quality assurance

Players

- Governments, OIE, FAO, donors

Mechanisms for more demand-driven:

- Identify client groups
- Engagement and consultation appropriate to each client

Players

- Farmers, private sector, NGOs, governments, development agencies

Mechanisms for greater capacities:

- Education & training and curriculum development
- Human resource development
- Career development & incentives
- Better infrastructure

Players

- veterinary schools, university, government, NGOs, relevant UN agencies & OIE

Mechanisms for evidence based decisions:

- Generate good quality data
- Good quantitative analysis & required skills
- Support targeted research
- Operational research
- Information systems at national, regional, global
- Socioeconomics, anthropology & gender experts
- Disease control managers, epidemiology unit,
- research institutions, GLEWS (FAO/OIE/WHO), WAHIS/ARAHIS (OIE, ASEAN)

FAO group 2:

Improved efficacy: (National governments- local government; ASEAN/SAARC; donors)

- clear policies
- assessment of the services; focus on gaps
- clear strategy & roles & responsibility for each layer of the people involved

- good governance
- increased # of vets
- funding
- continuing education, training and research (universities; FAO/OIE)

More demand driven: (government & private sectors; trading partners)

- community capacity (NGO)
- resulted oriented services
- Guaranteeing transparency
- appropriate pay system
- public-private partnership
- communication

Greater capacity: (Government; university, donors, NGO, ASEAN/SAARC)

- political support
- continuing education, training, and research
- funding
- community based services
- expand laboratory & epidemiology capacity

Evidence-based decisions: (Government; university, donors, ASEAN/SAARC)

- surveillance
- database
- training
- risk analysis
- collaboration with university and research institution
- transparency
- peer review
- attending technical workshops
- time allocation/part of duties

Players involved:

- Public Sector- Minister of Agriculture, Health, Science & Technology, Education, Finance, Development, Labour, Forestry (Wildlife Service); Minister of Home Affairs
- Private sector - vet related industries
- NGOs
- International organizations - FAO, OIE
- Development partners
- ASEAN and SAARC

4. PUBLIC PRIVATE PARTNERSHIP AND MULTI-SECTOR COLLABORATION:

Non-FAO group 1:

Mechanisms:

- One World, One Health:
 - series of consultations (workshops) to build on HPAI
 - One World, One Health at national, regional (FAO) and global (UNSC)
 - public-private partnership: major producers
- compensation:
 - regional: best practices and lessons learned (FAO)

SECOND RTE OF FAO'S WORK ON HIGHLY PATHOGENIC AVIAN INFLUENZA: REGIONAL WORKSHOP FOR ASIA

- insurance schemes (FAO)
- sectors 1 and 2 support for sectors 3 and 4
- endemic v newly infected
- biosecurity:
 - sector 1 and 2 support
 - PPP: feed companies, hatcheries
 - model market/farm
 - contract farming

FAO group 1:

	Players involved	FAO roles
One World, One Health	MoH FOR local government MOA WHO WCS health care providers (human and animal) research funding agencies private sector associations local NGOs	Develop action plans for animal health Capacity building (short and long term) Wildlife interface Disease response Vet epidemiology Technical advice and leadership Animal health Operational support
(rehab/relief) Compensation policy and practice	Private sector/farmer Government Finance: banks, insurance companies World Bank Associations	Facilitate policy design Assessing and monitoring Sharing experiences Travel to Nigeria and Egypt to study compensation outcomes
Improve biosecurity for sector 3 and 4	Local government Private sector Local community Environmental agency Human health services	Model for biosecurity Training Protocols Monitoring

FAO group two:

Operationalizing One World One Health paradigm:

- Participate in Scientific forums
- Joint steering committees
- Joint publications
- Information sharing
- Joint funding proposals
- Consultative meetings

Improved policy and practices for functional and harmonized compensation, relief and alternate schemes:

- Formal consultation between government and industry
- Mechanism for payment should be timely, verifiable and accurate
- Includes relief and rehabilitation mechanisms
- Formal consultations to address harmonized compensation rates among neighboring countries

Implementation of practical and effective biosecurity measures among sectors especially in sector 3 and related traders and in live bird markets:

- Monitoring and auditing program for biosecurity: poultry associations will implement with government input
- Continuous quality improvement approach to improve biosecurity including targets and timelines for improvement

Players and roles:

- Poultry associations
- National Ministry of Agriculture
- National Veterinary Council
- Ministry of Environment
- FAO – Technical recommendations; facilitation among stakeholders; coordinate practical field research (operational research)

Comments by workshop facilitator:

This session has produced some contrasting approaches: non-FAO groups tended to come up with broader thinking, considering mechanisms, processes and players more strategically.

There was a 'shopping list' approach from some groups: listing organizations/people without assigning them specific roles.

But perhaps these issues are largely matters of presentation rather than substance?

Comments by participants:

In defence of a 'shopping list' approach, a lot of discussion took place about specific roles, and FAO roles within this in the working group sessions. The One World One Health strategic framework was developed, but for implementation this requires different mixes of partners from resource mobilisation to implementation and onwards.

There was in fact a lot of concordance in the mix of partnerships that emerged: the regional level was identified as being important by both FAO and non-FAO groups for example.

FAO's role is becoming more of a facilitator, and not just an implementer, and this is now increasingly recognized.

Two donor representatives present noted that the FAO groups did not mention the role of donors in providing funds! Donors also want to be technical partners not just passive funders –and this trend is increasingly being appreciated.

Wrap up comments by Brian Perry

The RTE team consider that this workshop is an important part of the evaluation process. During the one-and-a-half-day workshop we deliberately did not discuss issues that emerged during the RTE team's country and regional visits. This is because this is a continuing process and we have not yet come up with our definitive findings and recommendations which we would be comfortable sharing. It is important to remember, however, that the RTE is an evaluation of FAO not the countries. Our draft report will go through a process which includes sharing within FAO for feedback and response, and then broader sharing and feedback before finally being made available in the public domain by being posted on the FAO website, which will occur sometime around March 2010.

SECOND RTE OF FAO'S WORK ON HIGHLY PATHOGENIC AVIAN INFLUENZA: REGIONAL WORKSHOP FOR ASIA

Thanks to everyone for participating so actively and providing lots of tremendous ideas. We hope the workshop sessions helped you in your own work as much as they have helped the RTE team.

The draft report of this meeting will be circulated to you all and the final report will form an appendix in our final report.

LIST OF PARTICIPANTS



No.	Name	Position/Organization	Country
1	Dr Leo Loth	Epidemiology Consultant	Bangladesh
2	Dr Lotfi Allal	Chief Technical Advisor	Cambodia
3	Dr Vincent Martin	Senior HPAI Coordinator	China
4	Dr Tri Satya Putri Naipospos	Team Leader	Laos
5	Dr Than Htun	National Consultant	Myanmar
6	Dr Tony Williams	Chief Technical Advisor	Nepal
7	Dr Abebe Wossene Wolde	Team Leader	Timor-Leste
8	Dr Yoni Segal	PPP Consultant	Italy
9	Dr Santanu Kumar Bandyopadhyay	CTA/Team Leader	Vietnam
10	Dr Jim McGrane	Team Leader	Indonesia
11	Dr Eric Brum	CTA/PDSR Programme	Indonesia
12	Dr Mohinder Oberoi	ECTAD Sub-regional Manager	Nepal
13	Dr Subhash Morzaria	ECTAD Regional Manager	Thailand
14	Dr Wantanee Kalpravith	Regional Project Coordinator	Thailand
15	Dr Carolyn Benigno	Animal Health Officer	Thailand
16	Dr David Castellan	Epidemiology Consultant	Thailand
17	Dr Loganathan Periathamby	Public Private Partnership project coordinator	Thailand
18	Dr Pawin Padungtod	Veterinary Epidemiology and Surveillance	Thailand
19	Dr Acty George	Regional Coordinator for Avian Influenza	Thailand
20	Dr Kachen Wongsathapornchai	Regional Project Director/Epidemiologist	Thailand
21	Mr Rajendra Aryal	Senior Emergency Operations Coordinator	Thailand
22	Mr Bryce Fieldhouse	Operations Officer	Thailand
23	Ms Auisui Chananut	Operations Clerk	Thailand
24	Dr Hiroyuki Konuma	Regional Representative for Asia and the Pacific	Thailand
25	Ms Priya Markanday	Operations Officer	Italy

SECOND RTE OF FAO'S WORK ON HIGHLY PATHOGENIC AVIAN INFLUENZA: REGIONAL WORKSHOP FOR ASIA

Donor Representatives

1	Dr Lynleigh Evans	AusAID	Indonesia
2	Dr Kendra Chittenden	USAID	Indonesia
3	Dr Jacques Jeugmans	Practice Leader, Asian Development Bank	Philippines
4	Dr. Sudarat Damrongwattanapokin	USAID	Thailand

Government Representatives

1	Dr Budiantono	Head of Veterinary Services Sub-directorate	Indonesia
2	Dr Ade Sjahrena Lubis	National Project Coordinator	Indonesia
3	Dr Hong Van Nam	Department of Animal Health	Vietnam
4	Dr Prabhakar Pathak	Director General, Department of Livestock Services	Nepal
5	Dr Orapan Pasavorakul	Veterinary Specialist, Department of Livestock Development	Thailand
6	Dr Arunee Chaisingh	National Institute of Animal Health	Thailand
7	Dr Surapong Wongkasemjit	National Institute of Animal Health	Thailand

FAO Partners

1	Dr Somsak Pipoppinyo	Assistant Director, ASEAN Regional Avian and Human Influenza Coordinator, UNSIC	Indonesia
2	Dr Annu Lehtinen	Coordinator, UNSIC	Thailand
3	Dr Jeff Gilbert	ILRI	Laos
4	Dr Alexander Bouchot	OIE Bangkok	Thailand
5	Dr Robert Tanaka	Senior Attache, USDA	Thailand
6	Dr Robert Kelly	Regional Representative, AED	Thailand
7	Dr James Hopkins	Senior Program Manager, Kenan Institute Asia	Thailand
8	Dr Pornsri Laurujisawat	Poultry Industry Representative, Thailand	Thailand

Evaluation Team

1	Prof Brian Perry	Evaluation Team Leader	Kenya
2	Dr Keith Sones	Workshop Rapporteur	Kenya
3	Dr Trevor Ellis	Evaluation Consultant	Australia
4	Mr Shashi Kapur	Evaluation Consultant	India
5	Mr Robert Moore	Evaluation Manager	Italy

Second Real Time Evaluation of FAO's Work on Highly Pathogenic Avian Influenza

Findings of the Peer Review Panel

Introduction, objectives of the review and methodology

A peer review of the Second Real Time Evaluation of FAO's Work on Highly Pathogenic Avian Influenza (RTE2) was conducted between 25 and 27 January, 2010. The peer review panel comprised Dr Jaana Husu-Kallo (Chairperson), Dr Stuart Hargreaves, Dr Ulf Magnusson, Dr Les Sims, Dr Gideon Bruckner and Dr Delia Grace.

The peer review was based on the terms of reference provided by the FAO Office of Evaluation, which were:

"To review the draft report and make comments on the preliminary findings, conclusions and recommendations of the evaluation team."

The panel received the full complement of documents, comprising the Draft Evaluation Report (DER) and associated annexes¹, on 23 January 2010. Panel members focused attention on the body of the draft report, but made reference to the annexes to cross check information and to assess whether the RTE2 team had conducted the country assessments in line with its terms of reference. The panel also received and read copies of the RTE2 inception report, the First Real Time Evaluation (RTE1) and other linked material, including the comments from FAO on the evaluation of the PDSR project and initial comments on the draft report from ECTAD staff in FAO HQ.

The RTE2 team leader (Professor Perry) gave an introductory presentation to the panel. In subsequent meetings, the panel sought clarification from and discussed issues related to the evaluation with the RTE2 team leader, senior officers from AGA and TCE (Dr Samuel Jutzi, Dr Juan Lubroth, Mr Dominique Burgeon and Ms Suzanne Raswant) and the staff from the FAO Office of Evaluation (Mr Robert Moore and Mr Carlos Tarazona).

The activities described in the draft report of RTE2 were assessed against the evaluation team's terms of reference. Of particular relevance to the panel was the statement in the inception report that RTE2 will be 'forward looking, emphasizing recommendations to FAO, its members and partners on how to optimize FAO's contribution. As such it will provide:

- Feedback to stakeholders on Programme achievements and constraints.
- Accountability to stakeholders on use of resources.
- Lessons learned for use in future work planning.

Assessing the evaluation team's approach to the evaluation

The Peer Review Panel drew the following conclusions on the approach taken by the evaluation team to RTE2:

¹ Annexes to the report comprised 6 country reports, 3 regional reports, 1 review of the Indonesian PDSR program and the record of two regional workshops.

The evaluation was conducted professionally, in line with the TORs, and involved a very broad range of stakeholders both within and outside FAO. It also involved examination of an extensive collection of relevant documents and reports collated over a period of more than one year.

The evaluation process was rigorous and followed a consistent, logical format. The six pillar framework of the evaluation was constructive and allowed the RTE2 team to gather and analyse information on the FAO program at national and regional level covering both general, cross cutting policy issues and specific technical matters related to disease diagnosis, eradication and prevention.

The evaluation team followed the three core principles of the terms of reference. Each country report contained an assessment of: relevance and appropriateness of FAO's strategy and program to the country; efficiency; effectiveness; sustainability; and, impacts. It was evident in reviewing the report that a lack of hard evidence made it difficult for the evaluation team to quantify effectiveness and impacts. Further attention to monitoring and evaluation systems is warranted to improve this process for future programs of this type.

Not all of the country-specific findings were reflected in the body of the DER especially the efficiency and effectiveness of the activities and it would be useful to have a synthesis of the individual country findings in the DER.

The process of review included visits to multiple countries over a tight time frame (c. one week per country and less in regional centres). The evaluation team also made extensive use of information gathered in the preparatory phase (which included visits to ten countries and three regional ECTAD centers to gather information not available at FAO HQ) and input received from other stakeholders including former FAO staff and consultants who would not otherwise have been contacted in the course of the country visits. However, the size and amount of work carried out by the FAO HPAI programme has been so great that inadvertent omissions in the country and regional reports may have occurred. Recent turnover of staff in some offices, including the position of FAO CVO (the panel was advised that the former FAO CVO did not respond to several requests for an interview) would also have contributed to these omissions through loss of institutional memory.

Nevertheless, in the view of the panel these issues did not compromise the overall process or detract from the general thrust of the key conclusions and recommendations.

The evaluation team provides a forthright assessment of both the strengths and weaknesses of the program and should be congratulated for its independence, hard work and rigorous approach to the evaluation.

Comments on the findings and conclusions

The evaluation team has highlighted in the DER both the strengths and weaknesses identified during its evaluation. However, in reviewing the report, the panel found that the balance between positive and negative aspects was less evident in the section on recommendations.

The report should be revisited to ensure that a bridge connecting the strengths of the program is incorporated into the Recommendations Section to ensure that those who only focus on the recommendations can also see the major gains made by the program. This could be achieved by including a new overarching recommendation that FAO has demonstrated its capacity to provide strong leadership and performance in supporting countries in avian influenza control and prevention and should continue to work in this area to ensure the gains made so far are not lost (especially as donors shift their focus to other areas).

The section on weaknesses highlights four specific contributing factors. For each of these factors the panel did not disagree with the thrust of the conclusion but was concerned that the assessments were too severe and provides the following comments.

Shortcomings in the multidisciplinary approach, in particular building of strong and effective working relationships between staff and consultants from different disciplines, are evident from and highlighted in the report. It is important for FAO to explore ways to improve the existing processes for building and supporting multidisciplinary teams and to engage with other agencies so as to avoid segregation of efforts across disciplines. This will require engagement of compatible experts from a range of disciplines in policy formation and implementation at an early stage in future disease control and preventive programs. However, identifying shortcomings in the approach does not mean that there was 'an absence of integration' across disciplines as suggested (on page 9) in the report. It should be acknowledged in the report that, in some countries, including, but not limited to, Vietnam, Cambodia and Indonesia, the approach to disease control and prevention has been multifaceted (even if imperfectly so) and has taken into consideration the wider socioeconomic, animal production, epidemiological and environmental implications of control and preventive measures.

The DER suggests that the 'lack of strategically applicable support tools' was a key reason for 'FAO's inability to add substantive strategic value to many of the preparedness and intervention approaches'. The availability of such tools, which need to be built and tested over time to ensure universal applicability, would support such a process. However, the absence of these tools did not prevent some innovative and strategic programmes and recommendations from being made and implemented in some countries supported by FAO.

On the application of lessons learned, the process, again, may have been imperfect but new iterations of global and regional strategies and some country strategies clearly indicate that many lessons have been taken on board, including the need for a shift towards longer term programs in endemically infected countries (which is evident in documents issued by FAO and UN partners from 2007 onwards). Application of this principle and shifts toward programs away from emergency responses, covering other disease were complicated and compromised by the conditions imposed on many donor funds that were specifically earmarked for emergency control and prevention of avian influenza.

The panel recommends that these issues be considered by the evaluation team and changes incorporated into the executive summary and body of the DER.

The panel had some specific comments on international and regional coordination for animal diseases. The Panel noted that in the DER the future role of FAO/OIE GFTADs coordination and facilitating mechanisms received little prominence. Although the panel acknowledges that the visibility and awareness of GFTAD's purpose and function is low in the countries visited this does not exclude an important role for GFTADs in future national and regional initiatives for animal disease control by both FAO and OIE. The panel suggests that the DER should consider its potential in future-oriented recommendations.

The panel acknowledges that, at the time of the RTE1, the initiative to establish and deploy ECTAD's was just being launched. Since then substantial investment was made in ECTADs. The DER should consider the risk of duplication of coordination mechanisms and give future-oriented recommendations accordingly.

Some \$300 million has been invested in this program. Placing country teams in affected countries has a high transaction cost and the question should be asked by the evaluation team whether the right balance was struck between direct funding of national veterinary services versus an ECTAD approach.

A number of other more specific comments and recommendations on the evaluation team's findings and conclusions are provided in the first annex to this report.

Comments on Recommendations

The panel believes that the section on recommendations would be strengthened by the following changes.

The number of recommendations should be reduced, which can be achieved through amalgamation of a number of the existing recommendations. Some specific suggestions on amalgamation (along with comments on specific recommendations) are included in the first annex to this report.

The panel felt strongly that all recommendations on future directions, based on lessons learned, should be clearly separated from those that are based on areas where the evaluation team detected some shortcomings in the existing processes. This approach is in line with the terms of reference described above (page 1). This will allow distinction between opportunities lost and future opportunities.

For example, the current recommendation 5 reflects a lesson learned in that situation analyses have been conducted in individual countries but a standard framework for conducting such analyses is yet to be built and would be a valuable aid in the future.

Recommendations that suggest broadening the work to cover other livestock diseases or broader programs such as One World, One Health, may also be seen as recommendations for the future rather than reflecting shortcomings in the past given the restrictions that were placed on FAO by donors and the nature of the program (which was to address control and prevention of HPAI).

The recommendations should be reviewed to ensure that they create a bridge between existing avian influenza programs and broader programs in the future.

The four general recommendations (Recommendations 1 to 4) and the text accompanying the recommendations should be reviewed and revised to take

account of the comments above on the conclusions and to show that the approaches recommended are building on an existing (albeit imperfect) base. For example, Recommendation 1 could be revised to read:

‘To review and enhance the implementation of integrated and multidisciplinary approaches to international, regional and country level programs’

A tabulated format for the recommendations provides clarity, but not when the table extends over 6 pages. It would be better to present a one page table of the high priority recommendations separated into those that are derived from lessons learned and those that reflect significant weaknesses in implementation. The evaluation team should also consider explicitly the priority for recommendations in an environment in which there is likely to be reduced donor support for disease-specific programs. Individual tables based on the current format that assigns recommendations to each of the six pillars can still be included to retain consistency with the approach taken in the evaluation.

Some of the recommendations could be enhanced by providing a broad statement of intent followed by a number of sub elements.

Annex One

Additional comments and recommendations on findings and conclusions

Figure 2: Review of country classifications

The panel strongly recommends deletion of Figure 2 on page 24, while still supporting the need to keep country classifications under review. Despite the different classifications of countries in Table 2 there are few significant differences in the approaches listed. In addition the classification of disease status of countries could be misconstrued.

Table 3: Ratings to FAO/OIE Global Strategy outputs and outcomes

The review panel concluded that although the information in Table 3 provided a way of assessing progress towards goals, the assessments were subjective and several of the assessments (including those on application of PVS and gap analysis for veterinary services and the stage of implementation of the OWOH strategy) were surprisingly high. The short term objectives in the OIE/FAO Global Strategy were set in late 2008 and therefore the scores only represent a snap shot of progress one year along the path. The panel felt that given the subjective and preliminary nature of the results, their presentation in a full page table afforded them undue emphasis and provided scope for misinterpretation by casual readers. Alternative ways of presenting this information should be considered.

Role of country versus role of FAO

In the report the evaluation team has indicated that FAO is not the agency implementing control programs. The panel would suggest that the review evaluation team carefully re-examines the DER (including individual country reports) to ensure that FAO is not being judged unfairly for activities at country level that are not implemented, despite FAO recommendations.

Changing environment

The environment in which FAO operated over the period assessed has changed dramatically with a shift in focus away from single disease approaches to broader programs. However a number of the FAO programmes were designed for a specific purpose. It is not clear that the evaluation has reflected all the difficulties faced in rapidly changing direction when funds are tied for specific purposes.

Additional comments on specific recommendations

In addition to the earlier comments on the recommendations, including amalgamation and separation into future-oriented and those addressing past shortcomings the panel has the following comments on specific recommendations.

Recommendation 2 should be split into two parts to separate the emergency response versus broader preparedness from single disease versus a broader disease focus in the future.

The text accompanying Recommendation 6 (development of strategic frameworks) should talk of 'harmonized' rather than 'standardized' frameworks

Recommendation 9 on epidemiological definitions: FAO should be promoting use of the OIE definitions and standards.

Recommendations 8 to 11 on surveillance could be amalgamated and where OIE standards exist, they should be promoted.

Recommendation 12 on laboratories should be rewritten to increase clarity. If this is recommending definition of minimum laboratory requirements for countries then it should be rephrased accordingly.

Consider amalgamation of recommendations 14 to 18 on epidemiology with more emphasis placed on the need for better case investigations as the first step. Use of risk based approaches relies on better data quality.

Recommendation 20 on human risk factors covers issues that fall within WHO's mandate.

Recommendation 21 on sub-national support will be very difficult to implement if funding for AI support is reduced (apart from the practical difficulties in implementing such a scheme in countries such as Vietnam).

Recommendation 23 on moving biosecurity from theory to practice should be rewritten to reflect the fact that considerable effort has been put in to promoting biosecurity measures but uptake, which depends on complex issues related to behavioural change, has been weak.

Recommendation 24 on vaccination: this should reflect the need for FAO to work with OIE to update recommendations on vaccination.

Parts of recommendation 32 on multidisciplinary approaches could be largely amalgamated into Recommendation 1.

Annex Two

Brief Bios of the Peer Review Panel Members

Mrs Jaana Husu-Kallio (Chair)

(Finland)

Dr Husu Kallio is the Director General of the Finnish Food Safety Authority, Evira since 1. Aug 2006. The Authority is in charge of the implementation of all the veterinary measures on HPAI on national level. Before Evira, she was the Deputy Director General in the European Commission, DG SANCO since 2002 (in charge of food safety, animal and plant health, animal welfare). Before that she was the Finnish CVO. A veterinarian by education, she prepared a thesis on veterinary microbiology and she holds a special degree on infectious animal diseases. She has taken part in the work of OIE since 1994, also as a deputy chair of the European sector.

Dr Husu Kallio was a member of the Peer Review Panel of the First Real Time Evaluation of FAO's Work on HPAI.

Mr Stuart Hargreaves

(Zimbabwe)

Dr Hargreaves has been serving within the Zimbabwe Veterinary Service for 39 years, and has headed the Veterinary Service for the previous 22 years. He is currently the Principal Director for Livestock and Veterinary Services in Zimbabwe. He has travelled extensively, especially in Africa and he is familiar with the general capability of veterinary services on the continent to control transboundary animal diseases. He was a past President of the OIE Regional Commission for Africa from 1995-1997. He was elected to serve on the OIE Terrestrial Animal Health Standards (Code) Commission from 2000. He was selected by the OIE in 2006 as an expert to evaluate veterinary services using the OIE Performance of Veterinary Services (PVS) tool. He is also the Chairman of the Zimbabwe Task Force for Avian Influenza.

Dr Hargreaves was a member of the FAO Peer Review Panel in December 2001 to review FAO Livestock Programmes from 1995-2000 and a member of the Peer Review Panel of the First Real Time Evaluation of FAO's Work on HPAI in 2007.

Ms Delia Grace

(Ireland)

Dr Grace is a veterinary epidemiologist and food safety specialist at the International Livestock Research Institute (ILRI) in Nairobi, Kenya. She obtained her PhD from the Institute for Parasitology and Tropical Veterinary Medicine, Free University of Berlin (Germany) in 2006. Currently, her research work involves developing and managing risk-based approaches to animal diseases, particularly zoonoses (animal diseases that can be transmitted to humans), in developing countries. Before joining ILRI as a postdoctoral scientist, Dr Grace worked for several years in community-based animal health programs in Asia, East Africa and West Africa. She has written several papers and guides on participatory approaches to veterinary epidemiology. She has also developed and implemented training courses in participatory risk assessment and risk analysis for food safety.

Mr Gideon Brückner

(South Africa)

Dr Brückner served for 34 years in the Government veterinary service and held the positions of Director of Veterinary Public Health, Director of Animal Health and Director of Veterinary Services in the National Department of Agriculture and Chief Director of Veterinary Services in the Western Cape Department of Agriculture. During his career in South Africa, he was responsible for the management of several major animal disease outbreaks such as foot and mouth disease, rabies, avian influenza, swine fever and Corridor disease. He has published 42 articles in scientific journals of which 29 as senior author. During this time he participated in several ad hoc expert Groups of the OIE and also served three years as a member of the OIE Scientific Commission for Animal Diseases.

In February 2006 he became Head of the Scientific and Technical Department of the World Organisation for Animal Health (OIE) in Paris, France and in October 2007 promoted to Deputy Director General (Animal Health and International Trade) of the OIE. He represented the OIE on numerous occasions on expert missions, seminars, workshops and international conferences. He is an accredited OIE PVS and Gap Analyst expert. He was chairman of the OIE task force on AI and served on an expert panel to evaluate and audit the FES Avian influenza project in the Netherlands. He retired from the OIE in March 2009. In May 2009, he was elected as President of the OIE Scientific Commission for Animal Diseases.

Mr Les Sims

(Australia)

Dr Sims is a veterinary consultant with over 30 years of experience, focusing primarily on farm animal disease management. He has a special interest and association with avian influenza, having been involved with outbreaks of highly pathogenic avian influenza since 1985 (two outbreaks in Australia in 1985 and 1992). He was in charge of operations and played a major role in avian influenza control and prevention in Hong Kong from 1997 to 2002, while working for the Hong Kong government as an Assistant Director of the Department of Agriculture, Fisheries and Conservation.

Since 2004, he has worked as a consultant, mainly through FAO and the World Bank, advising veterinary authorities on avian influenza in China, Thailand, Cambodia, North Korea, Mongolia, Indonesia and, especially, Viet Nam. He has provided technical support for HQ staff at FAO, written numerous papers on avian influenza control and prevention, and guided development of technical components for World Bank projects on avian influenza in Cambodia and Viet Nam.

Mr Ulf Magnusson

(Sweden)

Professor Magnusson recently ended a 6-years period as Vice Dean for Research and International Cooperation at the Faculty of Veterinary Medicine and Animal Science of the Swedish University of Agricultural Sciences. Following his postdoc fellowship at University of Guelph in the early nineties he has been running animal health

research and capacity building projects in Vietnam, Thailand, Laos and Cambodia and western former Soviet Union States. He has made evaluation/assessment missions for the Swedish International Development Agency, FAO and EU in Bosnia Herzegovina, Kenya, Uganda, Azerbaijan, Tajikistan, Kirgizstan and Viet Nam. Since 2005 he is the manager for a programme developing the Public Veterinary Service in Tajikistan. He serves in committees for the Swedish Government on animal health issues, and on FAO and CGIAR issues. Since 2006 he is chairing a reference group for the Swedish support to FAO's work on HPAI and was a member of the Consultative Group of the First Real Time Evaluation of FAO's Work on HPAI in 2007. He is a Fellow of the Royal Swedish Academy of Forestry and Agriculture and has published some 65+ peer reviewed scientific articles.

RTE – Follow up reporting – February 2009

Recommendations	Accepted, partially accepted or rejected (Management Response, October 2007)	Actions taken?		Comment / explanation (examples to be provided)
		Yes (with date)	No	
<p>1. FAO now needs to adjust its overall approach to begin to gradually move from the early mainly 'fire-fighting' emergency mode to include a longer-term perspective which seeks the solution to the continuing HPAI crisis in terms of the larger development and economic context.</p>	<p>Accepted – however, there is a need to keep in mind that the situation still remains an emergency from the public health and poultry sector perspectives. Emergency response capacity is still crucial to stop any incursion of the disease in newly infected countries or regions. It is acknowledged that the disease will not be eliminated in the short term.</p> <p>Condition for a longer-term development approach to HPAI crisis management to be sustainable is the availability of (extrabudgetary) resources for sustaining such an approach. Given the short-term, emergency-type funding so far available to the programme, this paradigm shift will require corresponding shifts in donor strategies and priorities.</p>	<p>Yes</p> <p>Revision of the Global Program, Feb 2008</p> <p>OWOH strategy, October 2008</p>		<p>The last version (February 2008) of the FAO's Global Program - updated after the first RTE - provides a framework for an appropriate balance between the short and longer term actions through FAO's commitment to both emergency and strategic planning sector interventions. While there is still a need for emergency responses to address requests from countries that have been infected recently or re-infected, greater attention is increasingly given to strategic and longer-term issues such as socioeconomic factors, impact of disease and control programmes on the food security of the most vulnerable, protection of biodiversity, and restructuring of poultry industries and farming systems. Together, these two dimensions, emergency response and longer-term actions, will ensure effective prevention and control of the disease in the animal population while protecting livelihoods</p> <p>The medium to longer planning horizons are reflected in:</p> <ul style="list-style-type: none"> - FAO's normative (AGAH) activities, with as the main example the development of guidelines on the poultry sector restructuring (Poultry in the 21st century, November 2007; biosecurity for highly pathogenic avian influenza, October 2008; role of the insurance system in HPAI and the poultry sector, on-going). Many country projects supporting the HPAI Global programme now support longer term assistance and almost all systematically include national poultry sector reviews as well as assessments of national biosecurity in place. - FAO's operational (ECTAD) activities: while large part of the funding of the ECTAD programme is still based on contributions for maximum of 18 months activities are planned, when possible, to ensure medium term assistance. Projects now almost all systematically include national poultry sector reviews as well as assessments of national biosecurity in place. <p>It is important to note that the flexibility of the Global Program allows shifts to short- or longer-term interventions in response to new circumstances, challenges or priorities.</p>

Recommendations	Accepted, partially accepted or rejected (Management Response, October 2007)	Actions taken?		Comment / explanation (examples to be provided)
		Yes (with date)	No	
				<p>In terms of funding, close to 80% of FAO's funding portfolio for HPAI activities are dedicated to non-emergency short to medium term interventions. It is too early to say whether donors will embark to longer term funding. Winnipeg technical meeting (March 2009) and Hanoi International conference on AHI (early 2010) will be crucial milestones to try and shift Donors' vision towards longer term objectives.</p> <p>The transition away from short-term responses towards more sustainable capacity and systems strengthening is even further reinforced in the newly developed 'One-World-One-Health strategy discussed and adopted in the Sharm-El-Sheik International Conference on AHI, October 2008, addressing HPAI and other Infectious Emerging Diseases. THE OWOH Strategy encourages a long-term vision to address issues of public good, beyond the normal 3–5-year political time horizons This will consequently be reflected in the subsequent OWOH Program FAO is currently developing, as the next step to FAO's Global Program for the prevention and control of HPAI.</p>
<p>2. FAO needs to revise the format and content of the <u>Global Programme</u> with wider participation (and buy-in) inside and outside FAO, careful attention to the March 2007 Global Strategy document, careful consideration of budget needs, identification of clear indicators of success and means of measuring them, and incorporation of the gradual change of emphasis of the campaign from the short-term to the longer-term. Following revision and with highest priority, FAO needs to approve, publicly</p>	Accepted	<p>Yes.</p> <p>Revision of the Global Program, Feb 2008</p>		<p>The Global Program has been revised in February 2008 taking into account of the RTE results, in line with the FAO-OIE Global Strategy for the prevention and control of H5N1 HPAI (version dated March 2007). The major modifications – also based on the lessons learnt from the first 2 years of implementation – mainly include: a shift towards longer term-interventions, with a better consideration of the socio-economic factors (See Recommendation 1); a new prioritisation in terms of targeted countries, according to the constant evolution of the epidemiological situation.</p> <p>A detailed logical framework, comprising verifiable indicators and means of verification for each outcome, was included to the last revision of the Global Program (Feb 2008), see its annex 1. The evaluation of the first phase of the Global Program (2006-2008) scheduled in 2009 will be based on the logical framework. In line with the HPAI Global Program, all HPAI projects are now designed using a logframe approach with clearly defined objectives and performance indicators to measure progress. This encourages field officers to report on results and will also facilitate the Global Program overall evaluation (2009).</p>

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present and widely distribute this revised Global Programme document to clarify its actions to beneficiaries, donors and all stakeholders.				<p>It is to be noted that the last revision of the Global Program was based on a wide internal consultation process both at HQ and decentralised offices, taking full account of concerns from key partners and donors.</p> <p>This version has been widely distributed through FAO's field offices, during the Sharm-El-Sheik international conference on AHI (October 2008) and is currently available on FAO public website at: http://www.fao.org/avianflu/en/index.html</p>
3. The <u>Global Strategy</u> needs to be revised to provide direction and structure to the longer term work above and in addition to the immediate disease control response to avian influenza. In orchestrating the conceptual aspects of the shift from emergency to rehabilitation and development, the experience and collaboration of TCER would be most valuable.	Accepted - however, it is unclear how familiar TCER is with livestock development issues. An appropriate balance between both tracks (immediate/medium- and long-term perspectives) to be maintained as commented above under Recommendation No.1	Yes Revision of the Global Strategy, October 2008		<p>The FAO-OIE Global HPAI Strategy was lastly revised – in collaboration with WHO - in October 2008 and reflects the latest development of the HPAI epidemiological situation worldwide.</p> <p>The revised global strategy presented here is based on the experience and lessons learned from the involvement of FAO and OIE in the global control of H5N1 HPAI over the last four years. As a result, the updates include a shift in emphasis in countries with entrenched/endemic infection away from emergency measures to longer-term measures that address the factors in the poultry production and marketing systems (that allow the viruses to persist).</p> <p>As mentioned in Recommendation 1, the new strategy OWOH is based on long term and multidisciplinary approaches to animal diseases prevention and control.</p> <p>The revision process involved a large group of staff from FAO and also experts from OIE and WHO. TCER has not been associated with this revision exercise.</p>
4. The Global Strategy, as all design documents of the HPAI work, needs to indicate means of measuring progress toward its goals. A serious log frame exercise would be beneficial, and indicators for understanding	Accepted (see response to recommendation No 3)		No	<p>A logical framework per se has not been included into the Global Strategy. The Global program is the expression and the implementation framework of the Global Strategy and therefore it is expected that the evaluation of the FAO Global Program (2006-2008) and the subsequent phase (2009-20011) in addition to close follow up and monitoring of the situation on the disease will contribute to measuring progress of the FAO implementation work within the Global Strategy on HPAI.</p>

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success or failure as well as suggested means of measurement are essential. This might be achieved through a facilitated exercise with a planning and log frame expert.				In 2008, a quantitative and qualitative technical assessment of the countries capacities based on 9 selected indicators (preparedness at the animal source; surveillance capacities; laboratory capacities; response capacities; vaccination; compensation; biosecurity level; sectoral coordination; geographic coordination) has been conducted. While this is not an evaluation of the Global Strategy <i>per se</i> , it however gives quite precise indications of the progresses the countries – following the Global Strategy - made towards the eradication of the disease. The assessment is available upon request.
5. FAO needs to focus sufficient resources in both the Global Strategy and the Global Programme on better understanding these factors and developing specific strategies and policy recommendations to address them, as they will be a key element in achieving success with the return to 'normal' after the HPAI crisis. This work should be done with leadership from AGAL.	Partially accepted. Comment: Underlying factors and long-term strategies refer to both biological factors (biology of the pathogen), capacity of animal health services to prevent and control TADs (including institutional, policy and socio-economic tools) and institutional, socio-economic and farming system factors. There is a need to keep an appropriate balance between these various dimensions which are all important to be considered when addressing the prevention and control of diseases. Strengthening the socio- economic, farming systems, policy and institutional programme dimensions is strongly supported. This needs to be reflected also, however, in the donor profiles and	Yes since 2007 – on-going		AGAL and AGAP continue to work together within the thematic group to bring elements of socio-economics and production within the programme. Through 2007-8, representation at regional and country level was expanded (staff in East and West Africa, RAP, Indonesia, Egypt). In Viet Nam there was never a permanent presence but quite a lot of backstopping time was provided by those in the HQ team who had previous work experience in the country. In Bangladesh there was a strong resistance to the presence of a social scientist in the team. Details of the programme and outputs will be provided to the RTE. The “Friday morning” seminars of the Socio-economic group, which are open to wide attendance within and outside ECTAD, have continued to be used as a vehicle to present issues of both strategic and tactical relevance in controlling HPAI taking a multi-disciplinary perspective (presentations an minutes of the meetings re circulated and can be made available to the RTE upon request). The group has also used multi-disciplinary teams and approaches to explore questions (most notably in linking value chain mapping to identification of potential risks). Funding was partially secured at global level using TSS and a number of socio-economic and farming system activities were included in many of the country projects. But longer term contracts of experts in this field were still missing due to the nature of the donor agreements which are mostly short-term. This makes difficult to put together a coherent programme. In addition:

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	preferences in order to materialize.			<p>- A combined 2009 planning workshop for 2009 activities was held in December 2008 with attendance by AGAL, AGAP and TCE staff resulting in a 2009 workplan approved by AGAH;</p> <p>- a working paper on combining epidemiology and value chain analysis was produced in December 2008.</p>
<p>6. Starting with an in-depth re-examination of the functions required for FAO's HPAI efforts, FAO will need to renew the management structure of its HPAI response along the lines described below and in Section III.6.F, in order to incorporate the non-animal health aspects into the structure on an equal footing with animal health and emergency response work, and to strengthen the existing management arrangements in areas where they have been inadequate</p>	<p>Partially accepted.</p> <p>Comment: As confirmed above, the need to strengthen the socio-economic programme activities is recognized; however, the basic question posed to FAO centres on how to prevent and control HPAI and other TADs. Non-animal health disciplines should not to be put in a leading position but rather at the service of animal health improvement. The focal point in FAO regarding animal health, for coordinating FAO's response to livestock diseases, whether emergency or long-term in nature and for interfacing with the authorities responsible for animal health in the member countries (national CVOs) has to be FAO's CVO.</p>	<p>Yes</p> <p>Revised ECTAD structure, organisational chart and ToRs, September 2007</p>		<p><i>Remainder - The Emergency Centre for Transboundary Animal Diseases (ECTAD) was officially established by the Director-General in December 2004 in the context of FAO's commitments in the fight against HPAI H5N1 to guarantee an enhanced response by associating the Animal Production and Health Division (AGA) and the Emergency Operations and Rehabilitation Division (TCE) in this operation. From 2004 to 2007, the following entities have been added to the ECTAD initial structure: the FAO-OIE CMC-AH (under TCE); the EMPRES-AH, the Socio-Economic, Production and Biodiversity, and the Communication Units. The EMPRES-AH Unit is broken down into 4 sub-Units: the epizootic strategies, policies and guidelines, FAO-OIE-WHO GLEWS, OIE-FAO OFFLU and wildlife. Such a structure is able to respond to immediate needs (CMC-AH) and longer-term interventions. The profound structural changes FAO underwent within less than 3 years demonstrated the Institution capacities to promptly adapt and respond to the needs of its members countries.</i></p> <p>In September 2007, the ECTAD Oversight Committee approved the revised ECTAD organizational structure, Terms of Reference and organigramme (documents available upon request). The note on ECTAD structure and function was further revised and approved by OCD, ADG-AG and ADG-TC and distributed to all FAO country, sub-regional and regional representations clearly indicating the relationship between ECTAD and FAO decentralized offices. Terms of reference have distributed clear roles and responsibilities among the established Unit (they are available upon request). This revision was driven by the need (i) to address the HPAI H5N1 situation that had become progressively globalized affecting Asia, Europe, Africa and the Near East, (ii) to reflect lessons learned in the first two years of ECTAD operations as well as (iii) to respond to the increased requirements of the effective and efficient delivery of the avian influenza programme.</p>

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				<p>The revised structure:</p> <ul style="list-style-type: none"> - Confirmed the importance of a unified command system in ECTAD, with the leadership responsibility conferred to the FAO's Chief Veterinary Officer (CVO) - also the head of the Animal Health Service. The CVO therefore has a pivotal and unique command role to define appropriate strategies and to lead the implementation and monitoring of the Global Program for HPAI. - Established professional working groups which encompass socio-economics, farming systems, policy and institutional dimensions, as well as wildlife aspects and media & development communication tasks (see also Recommendation 1).
<p>7. It is recommended that this should be the responsibility of an HPAI Coordination Unit under the leadership of an HPAI Director at D2 level. It will require the creation of an <i>ad hoc</i> position, funded with extrabudgetary funds, possibly in TCD (rather than a technical department) to allow access to technical divisions across departments. The Coordination Unit should be small, with no more than 3-4 staff in addition to the director. ECTAD would continue to function similarly to its current situation for emergency response, under the coordination of the HPAI Director.</p>	<p>Deferred:</p> <p>While management agrees with most findings in this Section, it has reservations with regard to this recommendation on migration of the programme to a new coordination/management structure, suggested to be led by a D2-level official. In line with the recommendations of the IEE, management is working to improve and streamline FAO's emergency response, including its management structure, through the introduction of a corporate framework based on the Incident Command System (ICS) which envisages a systematic, organization-wide transition to assembling emergency management teams under the leadership of dedicated full-</p>			

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	time coordinators recruited from across the Organization and released by their units to undertake such assignments; once established, animal health-related emergency management operations will follow such arrangements. Management is committed to closely follow the consolidation of ECTAD in its current format and assess the efficiency of the HPAI programme management through its Oversight Committee and introduce changes as appropriate. The recommendation of the RTE will need further study with regard to cost implications and suitability in light of these processes.			

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<p>Consolidation</p> <p>8. After a period of fluctuation and uncertainty, ECTAD is being consolidated at the management, systemic and procedural level and plans to consolidate regional presence through decentralized units is underway as well. The recent ECTAD team meetings were a positive step in this process. This work should continue and be supported but also be given a clear time frame to achieve that consolidation. Meanwhile no major structural changes should happen in the short run as that will diminish the positive effects of the consolidation taking place this year. This consolidation process should include the following (see greater detail in Section III.6.F):</p> <p>a. Develop and consolidate a strategy and a plan of action for ECTAD today</p> <p>b. Conduct a "talent review" within ECTAD to determine existing profiles and skills</p>	<p>Accepted.</p> <p>Process to be driven by the strategic and operational plans, not as an independent exercise.</p>	<p>Yes</p> <p>Revised ECTAD structure, organisational chart and ToRs, September 2007</p>		<ul style="list-style-type: none"> • Structural consolidation (f) (g) <p>Under the ECTAD Oversight Committee,</p> <ul style="list-style-type: none"> - ECTAD's consolidation at the central level: see Recommendation # 6. - ECTAD's consolidation at the decentralized level entailed the establishment of ECTAD regional, subregional and country units - distinct from FAO's regional, subregional and country offices but with which they work in close collaboration -, funded from extra-budgetary resources. <p>Whenever possible, and to enhance the needed collaboration between FAO and its global and regional partners in the combat against HPAI, some ECTAD decentralized units were located within the Regional Animal Health Centres. For example, the ECTAD subregional unit in Nairobi is hosted by AU-IBAR and the ECTAD subregional unit in Gaborone by OIE.</p> <p>To date, there is one ECTAD Regional Unit (Bangkok), 6 ECTAD subregional units (Kathmandu; Bamako, Nairobi, Gaborone, Beirut, Tunis). The opening of an ECTAD subregional unit for Central Asia in Ankara is being considered. Other countries/regions not covered by an ECTAD subregional unit (i.e. Eastern Europe, Latin America and Central Asia for the time being) are directly supported by ECTAD at FAO headquarters.</p> <p>ECTAD country teams have been established in several countries infected with HPAI, also funded on extra-budgetary resources. In most cases, ECTAD country teams are staffed with a country team leader and an operations officer.</p> <p>The first among equals concept of shared accountability but single leader is applied to the Directors of AGA & TCE as well as to lower levels of management.</p> <p><i>Conclusion:</i> less than 4 years after its initiation, ECTAD was consolidated at the central, regional, sub-regional and country level. Current concern is the sustainability of these entities funded on non-regular program resources and therefore linked to the current (and temporary) interest of the international</p>

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<p>c. Invest more effort on the internal front to, better managing staff and their expectations</p> <p>d. Put accent on FAO's corporate identity for staff to develop a sense of belonging to FAO</p> <p>e. Better integrate the added value of EMPRES and GLEWS in the Global Strategy</p> <p>f. The Oversight Committee must take on full responsibility for the consolidation of ECTAD</p> <p>g. Apply 'first among equals' concept of shared accountability but single leader to the Directors of AGA & TCE</p> <p>h. Use external management consultants as resource to accompany the consolidation process</p>				<p>community of donors for HPAI. It is however foreseen that ECTAD will continue to be funded via the under development OWOH FAO Program (targeting HPAI and other IEDs). ECTAD's integration within the new framework of the CMC-Food Chain has also been agreed upon. This transition may ensure sustainability of ECTAD; however a key pre-requisite is that the direct chain of command from the FAO CVO remains unchanged.</p> <ul style="list-style-type: none"> • Functional / operational consolidation (a) (c) (d) <p>Arrangements for collaboration between HQ, decentralized FAO's offices and ECTAD Units have been clearly defined as follow:</p> <ul style="list-style-type: none"> - The ECTAD Oversight Committee sets FAO's corporate policies concerning HPAI-TADs in the context of overall guidance by Governing Bodies assisted by FAO's CVO who formulates corporate HPAI - TADS policies and determines FAO's day-to-day response to the evolving global situation of HPAI – TADs and manages global partnerships (OIE, WHO, AU-IBAR and others). - Regional Representatives, subregional Coordinators and FAO Representatives lead FAO's overall response to, respectively, agreed regional, subregional or country assistance priorities following corporate policies including those on HPAI-TADs. Heads of decentralized offices provide guidance to the CVO on regional, subregional and country situations and priorities. Conversely, the CVO guides Heads of decentralized offices on corporate policies applicable in the field of HPAI-TADs. - The managers of ECTAD regional/subregional or country units work in the line of command of FAO's Chief Veterinary Officer (CVO). They provide technical assistance to regional/subregional organizations/groupings in close collaboration with the concerned regional Representative/subregional Coordinator and provide technical assistance to countries through the FAO Representative. Managers of ECTAD units assist Heads of decentralized offices with mainstreaming HPAI and TADs concerns into FAO's overall regional, subregional and country strategies and priority framework. Heads of decentralized offices provide ECTAD regional units with functional guidance on managerial and administrative issues, as well as regional

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				<p>priorities. In particular, the Assistant Director-General, Regional Representative for Asia and the Pacific, provides functional guidance to the ECTAD regional unit for Asia and the Pacific.</p> <p>- The ECTAD subregional units (Bamako, Beirut, Gaborone, Kathmandu, Nairobi and Tunis) coordinate their interventions with the respective subregional Coordinators. In addition to the livestock officers in the subregional offices, the managers of the ECTAD subregional units in Africa are members of the respective subregional multidisciplinary teams (MDTs). The subregional manager for West and Central Africa is expected to be a member of the two concerned MDTs.</p> <p>- In providing technical assistance on HPAI and TADS, the ECTAD country team operates under the direct supervision of the ECTAD country team leader who works in the line of command of the FAO CVO through the ECTAD regional/subregional managers. The ECTAD country teams receive functional guidance from the ECTAD regional units and ECTAD headquarters units. On the matters concerning the general FAO response to country priorities, on advocacy, policy, security and general managerial issues, ECTAD country team Leaders follow the functional guidance of the FAO Representative.</p> <p>In terms of better involving FAO staff in the process / program (c and d), four important meetings took place where FAO's role in the fight against HPAI has been comprehensively discussed:</p> <ul style="list-style-type: none"> - 2nd CTA meeting for Asia (Bangkok, Thailand 23-28 January 2008) - 3rd Annual Regional Meeting for Asia (Pattaya, 11-13 February 2009), - 2nd CTA Meeting for Africa (Nairobi, 15-18 July 2008), - AGAH Retreat (8-9 December 2008 and 19 February 2009). <p>It clearly emerged from recent meetings (ie Pattaya in February 2009) that staff substantially increased their sense of belonging to FAO.</p> <p>Talent review (b) is linked to the strengthening of technical and operational</p>

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				<p>units within ECTAD as mentioned above. Each unit has reviewed the existing human resources, identified the skills needed and established the ToRs for head of units and subunits.</p> <p>Finally, ECTAD Management meetings have been reshaped / modified as follow:</p> <ul style="list-style-type: none"> - 2 meetings are held per week; one of them is entirely dedicated to management issues and operational decisions; - More decision-making is provided during the meetings; - Specific thematic discussions are scheduled every other weeks; - Regional Unit in Bangkok systematically attends the meetings by audioconference; other regional and sub-regional Units attend the meetings when relevant by video or audioconference. <ul style="list-style-type: none"> • Strategical consolidation (e) <p>The revised FAO-OIE Global Strategy for prevention and control of H5N1 HPAI (October 2008) clearly states and emphasizes the roles of EMPRES and FAO-OIE-WHO GLEWS in its global level approach (see pages XIV and 5).</p> <p>The new CMC-FC describes the functional and structural organization and relations between EMPRES and the ECTAD levels.</p> <p>(f) Oversight committee has met regularly and has provided guidance to the implementation and overall strategy of ECTAD. Minutes are available. This OC-ECTAD is integrated into a wider CMC-FC OC involving animal health, plant health and food safety</p> <p>(h: no action taken)</p>

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<p>Migration</p> <p>9. Once the consolidation is done successfully, and taking into consideration the immensity of the job at hand, ECTAD should migrate to the new coordination structure which is able to accommodate necessary change, regrouping functions and responsibilities along new work categories and placing a Director (at D2 level but outside the FAO Regular Programme structure and on extrabudgetary funds) to head the new organization. This transformation process should include the following (see greater detail in Section III.6.F):</p> <p>a. ECTAD must have a clear time frame to migrate to the new and lighter structure.</p> <p>b. Strengthen the decentralized structure in line with the Global Strategy</p> <p>c. Establish a decision making cascade system clearly delegating</p>	<p>Some parts of this recommendation (decision making cascade system, clear strategy for fund raising for Global Strategy) are agreed.</p> <p>The rest is rejected (v. response to recommendation No 7)</p>	<p>Yes</p> <p>Revised ECTAD structure, organisational chart and ToRs, September 2007, May2008</p> <p>+ Crisis Management Centre for the Food Chain (CMC-FC) framework (March 2008).</p>		<p>It's to be mentioned that all ECTAD consolidation/strengthening work mentioned in Recommendation #8 is progressing to achieve 9b-9c.</p> <p>Time frame for migration (a): ECTAD has deferred the proposition in recommendation #7, however ECTAD work is now being streamlined within the framework of Crisis Management Centre for the Food Chain (CMC-FC): The CMC-FC is FAO's primary instrument for action in support of Member Countries and for institutional collaboration in the global governance of threats to the human food chain at all stages from production to consumption; such action and collaboration focuses on the response to potential or verified substantial emergencies threatening the food chain and on necessary steps for rehabilitation. The CMC-FC facilitates horizon scanning for improving forecasting, preparedness and prevention of emerging threats to the food chain; the CMC-FC also undertakes and promotes risk communication.</p> <p>Strengthen the decentralized Structure (b): ECTAD continues to invest in maintaining its decentralized structure (country, sub-regional and regional units) see comments in recommendation # 8 a, c, d.</p> <p>Decision cascade (c): See Recommendations # 6 and 8; emphasis is brought on the fact that a unified central command system (under the leadership of the FAO's CVO) is key to the efficient prevention and control of HPAI and other IEDs and cannot be reconsidered; this is why the Recommendation # 9 point c was partially rejected. Also, considerable efforts are being made, with external support, to streamline Incident Command System principles within the CMC-Animal Health (rapid response unit).</p> <p>Funding strategy (d): As part of its public information strategy, ECTAD adopts and promotes a series of advocacy initiatives in support of the Global strategy and the Global program with focus on the visibility to be provided to donors. These initiatives include but not limited to (i) the annual Global Progress Reports published ahead of international conferences and major donors meetings and widely disseminated on the web – the last report was published in October 2008 -, (ii) Specific progress reports for majors donors,</p>

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<p>downwards where possible</p> <p>d. Develop a clear strategy for fundraising for the global strategy and the new structure</p> <p>e. The transformation process should be accompanied by external consultant resources</p>				<p>(iii) partnership programs and initiatives with strategic donors, (iv) advocacy documents and briefs, (v) donors' meetings and informal consultations, (vi) PowerPoint presentations for use in meetings with donors, beneficiary countries or general public and (vii) specific meetings with donors and/or visits to their headquarters.</p> <p>As of January 2009, the total ECTAD funding envelope amounted to 282 M (including 18.4 M in the pipeline) out of a total FAO's Global Programme estimated requirement of 308 M.</p> <p>(e: not achieved)</p>
<p>10. FAO needs to have a clear position with regard to its own interventions which articulates the reasons for targeting or not targeting each of the sectors. Governments of affected countries in many cases have different priorities and FAO needs a clear rationale for its approach in relation to its mandate.</p>	Accepted	Yes On-going		<p>FAO's interventions are primarily driven by Internationally agreed strategies and by FAO's corporate priorities, as defined for example in the HPAI Global Strategy and Global Program. In this case, priorities are mainly set up according to epidemiological (importance of GLEWS), socio-economical or public health criteria. Other documents and reports (AGAH Retreat, OWOH strategy) also define the priorities known through constant dialogue meetings, NMTPF approaches, etc...</p> <p>Despite it constant advocacy in favour of the various sectors, donor resources remain in most cases earmarked to a large degree.</p>
<p>11. Clear criteria need to be set for deciding on priorities for country assistance in the HPAI campaign: what concentration of which resources are to be used for which activities. In collaboration with the national and regional FAO representations, other UN agencies and OIE,</p>	Accepted Comment: It should be recognized that much support is donor driven and other strategies and agendas come into play. FAO should influence donor priorities	Yes Revision of the Global Program, Feb 2008		<p>Prioritization of countries and regions for assistance is critical to implementation of the Global Programme in order to rationalize mobilization of resources and ensure the most effective contribution to HPAI control efforts. The Global Program focuses assistance on affected countries and hotspots where the disease is endemic and in the countries considered at risk, with different focus and sets of activities.</p> <p>All countries free of the disease can be considered at risk, but those with inadequate veterinary and laboratory services and weak disease control and prevention capacity are at higher risk than those with stronger capacity. Many of the countries considered at risk have disrupted social and civil structures where it is easy for the presence of HPAI to go undetected and</p>

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<p>FAO/ECTAD needs to improve the existing system for categorizing countries that are at greatest danger of new outbreaks and where there is a risk that the disease would become endemic, and become an international threat. Categorization should also be according to the amount and the type of resources that would be required in case of an HPAI outbreak. FAO needs to maintain a <u>dynamically updated priority list of countries</u> that will need a major input if there is an HPAI outbreak to improve the speed of response.</p>				<p>unreported.</p> <p>Although it is possible to set priorities, one of the great challenges facing the global response to HPAI is the inability to predict exactly where it will occur next and under what circumstances. Therefore the Global Programme foresees the need for contingency funds to ensure that resources are available for immediate provision of emergency assistance to newly-infected countries to mobilize technical and operational support in the event of outbreaks.</p> <p>Rinderpest eradication (GREP), FMD global FAO-OIE initiative, Tsetse and Trypanosomiasis (PAAT)... are among the priority diseases FAO addresses. These major threats will remain among the priorities but other diseases are eventually to be chosen as new priorities according to the evaluation of the risk of emergence or the occurrence of new health events. This has happened in 2008 with RVF in ASF for example. A tool to help prioritizing diseases is being developed by AGAH. Regarding categorizing countries, constant work and dialogue with countries allow to adjust the list of priority countries. This is done for HPAI (see above) and it has to be developed further, which is one of the objectives of the OWOH strategy (identify "hot spots"). Some other studies are helping adjusting the priority list of countries such as the OIE PVS tool and the FAO-OIE gap analysis which assess the compliance of Veterinary Services to the OIE norms and standards. The NMTPF FAO-National Government plans are also a major tool to define the country priorities.</p>
<p>12. The Global Strategy should focus on ensuring that resources are provided to achieve ongoing support for the governments of high priority countries (at the time of this report, these were Egypt, Indonesia, Nigeria and possibly Bangladesh) deemed to be critical countries for the</p>	<p>Accepted.</p> <p>Same comments as above response to recommendation No 11</p>			<p>The Global Strategy and the Global Programme clearly identify the priority regions and countries for targeted intervention as those where the disease is entrenched. Most of the times donors' response match with these priorities and the bulk of earmarked resources is allocated to priority countries in South and South East Asia as well as to Egypt. ECTAD constantly advocates with donors for their contributions to be allocated to high priority countries. In some cases substantial donors support is allocated to non-affected countries but with weak veterinary capacity and limited resources (Chad) or where the donor has a special interest (Great Lakes region of Africa). Disbursement of funds for the 10 ten countries — including Indonesia, Bangladesh, Nigeria and Egypt — are available upon request.</p>

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		Yes (with date)	No	
control of HPAI.				The SFERA contributions continue to play an essential role to plug critical gaps in priority countries and regions especially when there is a shortfall of earmarked funding. For example SFERA was critical to kick start the ECTAD response in Egypt and remains essential to provided most needed support to Nigeria where it funds about 85% of FAO HPAI activities in the country.
13. For each country, a brief contingency plan should be prepared to enable a fast response in case an outbreak occurs. Ensure that each FAO regional and national representation has full awareness and ownership of this plan ahead of time, to be able to activate it rapidly in the event of HPAI being diagnosed in that country.	Accepted	On-going		<p>FAO overall assessment of the countries capacities to prevent and control HPAI (report available upon request) showed that most of the surveyed countries (96%) had a preparedness plan including a contingency plan, in line with the FAO-OIE Global Strategy principles.</p> <p>FAO has largely participated in this encouraging result by:</p> <ul style="list-style-type: none"> - Including preparedness activities in most of its projects; - Developing a methodology for desktop simulation exercises, especially addressing communication, coordination and chain of command between the different sectors involved; - Organizing simulation (desktop and field) exercises in Africa, Eastern Europe, central Asia and the Balkans regions; - Organizing – jointly with OIE, WHO and IBAR, under the ALive framework – rapid assessment missions in Africa in order to assess the capacities of the countries to prevent and control HPAI (includes an assessment of their contingency plan). To date, 21 rapid assessments missions have been carried out and 5 additional ones are in preparation. The technical outputs of the RA missions – the Integrated National Action Plans – are still to be funded for most of the countries; however, preparedness is usually priorities that most governments are willing to finance without the need for external resources. This specific activity explains why Africa is shown to be the best ‘prepared region’ to date. <p>Most countries with active FAO programs and projects have submitted their contingency plans for FAO review and validation through the FAO office and</p>

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		Yes (with date)	No	
				ECTAD decentralised units. In addition all FAO offices are being regularly informed about HPAI situation in their duty stations and also in the region.
14. In making recommendations on country interventions, regional strategic frameworks should avoid prescribing specific tactics for countries, but instead, as has been done in Asia, present a portfolio of options that are consistent with the components of the comprehensive response under the Global Strategy.	Accepted	on-going		<p>FAO supports governments to design the country strategies in coherence with the FAO-OIE Global Strategy for the prevention and control of HPAI.</p> <p>Some issues are of particular importance when preparing tailored country strategies:</p> <ul style="list-style-type: none"> - Vaccination: The choice of the vaccination strategy should be based on a risk analysis, a cost-benefit analysis as well as on the country capacities to implement the vaccination campaign (VS / laboratory capacities). To support countries in their decision making and estimation of the cost-effectiveness of vaccination strategies, FAO has developed (i) a vaccination costing model and (ii) a cost model (combined to the poultry population model). These models are an important component of OFFLU vaccination strategy development projects. A FAO working group has also been formed to specifically provide advice at country level. It also has provided major inputs to the section on vaccination of the global HPAI control strategy. <p>A concrete example is the case of Vietnam: the country is currently trying to move from a mass to a targeted vaccination strategy. FAO therefore proposed the following options: (i) to envisage a public-private cost sharing of the vaccination, in order to bring government support to a level that is sustainable in the long term and spare budgetary reserves for other key interventions; (ii) to change from twice yearly mass vaccination campaigns to those carried out throughout the year in each flock at the optimum age of birds.</p> <ul style="list-style-type: none"> - Compensation: FAO provides overall guidance in the best compensation scheme to implement. It has therefore produced, in addition to the already existing guidelines on compensation schemes and policies – an Operational Manual which guides step by step the country to implement the most appropriate compensation scheme. FAO is also currently elucidating the possible role of insurance schemes in HPAI, to later propose a cost-sharing mechanism best adapted to the countries situation and their financial capacities.

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				<p>- Biosecurity: Biosecurity programs must be designed and established with the active participation of the stakeholders, and be tailored to what is needed and possible, not what is perfect. FAO has therefore produced a Paper on biosecurity for HPAI which provides a set of measures according to their feasibility (potential effectiveness in reducing risk; persistence of his effectiveness; speed of implementation; set up cost; recurrent cost; disruption of the production system; social and cultural acceptability) which may be different from one country to the other one as well as according to the system it will be implemented in (large-scale commercial; small-scale commercial; scavenging poultry; hatcheries; live-bird markets; duck/rice; intermediaries and service providers). Two other elements also shows that FAO is not providing ready-made specific tactics but tries to propose the most adapted solution case by case: (i) FAO is encouraging the use by stakeholders of an HACCP-like approach by the stakeholders and (ii) it developed in its Paper the concept of the 'traffic-light' system indicating changing biosecurity needs (and therefore practises) as the HPAI threat increases or decreases.</p>
<p>15. It is recommended that FAO press forwards with the development of an HPAI Communications Team to focus more on policy advocacy, programme communication, social mobilization, and communication capacity building with the goal of controlling HPAI. There should be a clearer distinction between the public good objectives of the information activities of FAO and the HPAI communication activities.</p>	<p>Accepted</p> <p>Comments:</p> <p>ECTAD's thinking on communication is fully in line with the RTE analysis and recommendations</p> <p>FAO recognizes that current investments in an ECTAD Communication Unit, which although is focused exclusively on HPAI today, will bring back invaluable returns in terms of experience and expertise for responding to other TADs in the future</p>	<p>Yes</p> <p>2007 – To date (on-going)</p>		<p>Several actions have been taken, for example:</p> <ul style="list-style-type: none"> - The ECTAD Communication Unit took a strategic decision that in the communication domain, FAO's comparative advantage lay in a multi-disciplinary approach. Specific examples and outcomes of being closely linked with the technical and socio-economic/farming-systems group include: <ul style="list-style-type: none"> - Joint missions in West Africa, East Africa and SE Asia to understand better risk and risk perception along production/market chains, as well as jointly advocating for a multi-disciplinary approach to member states and key partners (UNICEF, WHO and OIE). New projects in South Asia sub-region to focus specifically in this area of work. - Conduct of multi-disciplinary strategic communication planning workshops in 4 regions involving 40 countries and over 100 participants. Inputs included linkages of communication with bio-security practices, compensation policies, and small-holder poultry systems. - Participation in inter-agency (FAO-WHO-UNICEF-OIE) processes to review and revise global guidance on HPAI communication using

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		Yes Nov / Dec 2007		<p>multi-disciplinary approaches; as well as joint participation at inter-ministerial conferences (New Delhi 2007, Sharm-al-Sheikh 2008, and the upcoming One World One Health process 2009).</p> <ul style="list-style-type: none"> - Communication made integral to major programs initiated by FAO/ECTAD – Biosecurity/decontamination; Public-Private Partnerships; Communication competency and leadership development. <p>- Organigram, TORs, workplan, staffing, budget etc of the Communication Unit presented to ECTAD Management Team, and subsequently approved by the ECTAD Oversight Committee.</p>
		Yes Nov / Dec 2007		<ul style="list-style-type: none"> - Organigram of ECTAD clearly outlines the linkages between the ECTAD Communication Unit and KCI Division – the corporate information arm of FAO. The TORs describe clearly roles and responsibilities of both teams, and has been approved by the Oversight Committee. Specifically, KCI Division has the lead and responsibility for ECTAD information released to the international media (e.g., all press releases are developed and released by KCI), as well development of relevant products and information for specific (corporate-level) events. ECTAD Communication Unit focuses strictly on programmatic communication, capacity-building, updating of the avian influenza website, technical publications/products, and technical support to member-states.
		Yes April – august 2008		<ul style="list-style-type: none"> - Four major regional multi-disciplinary and multi-lingual (English, French, Russian) workshops on strategic communication planning were conducted for Ministries of Agriculture/Livestock in North Africa (Tunis, April), West Africa (Dakar, May), Central Asia (Ankara, August), and East Africa (Nairobi, August). A total of 40 countries and more than 100 participants (which included national vet services, national UN agency counterparts, private sector, and NGOs) were given inputs on outbreak, risk, and behavior change

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				communication for HPAI. Furthermore, small surveys and facilitated discussions helped countries and regions identify their own regional/country priorities – which is now being used to develop a major communication capacity-building program. Furthermore, regional networks on animal health communication are being set up as an outcome, and for on-going support and peer interaction.
16. As part of an information strategy, FAO together with OIE and WHO should take the lead in coordinating and launching a platform for the exchange of information not only on HPAI control strategies and programmes, but also on <u>donor commitments</u> and <u>government policies</u> and <u>positions</u>.	Accepted but to be part of the coordination function of the ECTAD Management strategy	yes on-going		<p>- At present there is no such platform lead by FAO but there are rather many coordination initiatives for exchange of information under the umbrella of UNSIC such as:</p> <ul style="list-style-type: none"> - the Meetings of the Steering Committee on Avian and Human Influenza where all UN and international agencies participate to discuss burning issues and exchange relevant information - With regards to donors commitments, UNSIC publishes with the WB progress and financial reports within the framework of UNCAPAHI with contribution from all international agencies including FAO. The ECTAD Programming unit ensures FAO contribution to these reports (documents 2007 and 2008 available upon request), contribution which has been highly appreciated by the UNSIC Coordinator. <p>Actually UNSIC is the real leading entity for AHI coordination among the United Nations System (and OIE) as reflected in its mandate. FAO together with OIE is in charge of Objective 1 (animal Health and Biosecurity) and Objective 2 (Sustainable Livelihoods) of the United Nations consolidated Action Plan for Avian and Human influenza (UNCAPAHI) and de facto it places FAO (and OIE) as the leader agency for animal health. UNSIC with the support of the World Bank reports on donors' commitments to AHI, notably in preparation of the annual International conferences on AHI (last one was held in Sharm-El-Sheikh, October 2008; financial reports available upon request).</p> <p>- In addition to these initiatives, ECTAD uses as part of its information strategy advocacy initiatives including web page, technical brochures, press releases, country briefs and FAO in action to provide and share information not only on the programme but also on donors commitment and policy issues in priority countries.</p>

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				<p>- 'Ensuring coordination, collaboration and information exchange among donors, international and regional organisations, others agencies and national government to facilitate HPAI prevention and control' is the first strategic objective of the global dimension of the FAO-OIE Global strategy. This is also reflected in the FAO Global Program.</p> <p>- The overall framework to exchange information on HPAI control strategies and programs is the joint FAO-OIE Global Framework for Transboundary Animal Diseases (GF-TADs) to which WHO is also partnering for zoonotic aspects. Over the past two years, the global and regional governances have been reinforced (detailed ToRs produced and endorsed for each body at the global and regional level – information is available upon request) and roadmaps precisely established. Annual global and regional meetings ensure the appropriate level of knowledge and information sharing among technical, financial and political stakeholders. On a more technical side, the GF-TADs tools and entities - FAO-OIE-WHO GLEWS, FAO-OIE CMC-AH, FAO-OIE OFFLU, the FAO-OIE Regional Animal Health Centres and the regional networks of laboratories, socio-economics and epidemiosurveillance – share information on a routine daily basis and allow the adequate level of response.</p> <p>- FAO is a major technical partner of the ALive partnership (www.alive-online.org), one Pillar of which is related to knowledge sharing on all livestock-related issues in Africa – of course including HPAI information. The elaboration of donors' livestock portfolio is a top-priority of the ALive Action Plan (see the Tool).</p> <p>Under ALive,</p> <p>** FAO is also responsible for leading and coordinating the AHI Rapid Assessment (RA) missions in collaboration with the OIE, WHO and AU-IBAR. The objectives of RA include (i) evaluation of the country's veterinary and public health services, the communication capacity to respond to avian and human influenza (AHI); (ii) strengthen the national AHI prevention and response capacity; and (iv) determine the financing needs to achieve the above objectives. The main output of the RA is the</p>

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				<p>Integrated National Action Programme (INAP). INAPs are cleared by the institutions (FAO, OIE, WHO, and AU-IBAR) and the Governments and then presented to the partners for funding during a final donors' round table (indications of commitments and harmonized financial plan) (See also Recommendation # 13).</p> <p>** FAO took the lead for the elaboration of the Need and Gaps for Africa Paper (see document 2007), which provided a technical and financial stocktaking of all interventions related to AHl in Africa.</p> <p>- In 2009, FAO will be closely involved in the PVS Gap Analysis exercises, which are the next steps of the OIE PVS evaluations for the strengthening of the national Veterinary Services, under the overall leadership of OIE and based on priorities identified and selected by governments.</p>
17. During the course of such a crisis, FAO, as with other partners, should be realistic with donors as to its delivery capacity and counsel donors on the strengths of a measured response, on occasion delaying acceptance of funds where expectations are unrealistic.	Accepted	Yes On-going		ECTAD has developed strategic partnerships with major donors under which funding is best matched with actual programme requirement and delivery capacity constantly reviewed and strengthened whenever required and feasible. Allocation of funds and duration of projects is also subject to joint review with donors which are requested to support activities and also the human resources capacity to implement them.
18. At the same time, it needs to be accepted by all that, in an emergency, there is a greater level of inefficiency than in more planned situations. FAO needs to continue to develop standby contractual arrangements with suitable staff for all types of sudden onset	Accepted	Yes On-going		<p>- Incident Command system principles are being streamlined within the CMC-Animal Health (rapid response unit).</p> <p>- Several stand-by partnership agreements with relevant organizations, agencies, professional associations and collaborating centres are in place and being developed.</p> <p>- A number of 'stand-by contracts' and when actually employed contracts have been adopted with qualified staff for their rapid deployment when and as required.</p>

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emergency, in particular animal health and plant protection emergencies which require especially narrow technical expertise.				
19. FAO needs to have its own set of priorities beyond the availability of money, and be willing to challenge donor priorities when they are not coherent with FAO's vision of the best way to do the work. FAO needs to provide guidelines and convincing, technically sound arguments seeking to orient donors with regard to use of their funds in the animal health domain (and all the other development issues).	Accepted	Yes On-going		<p>The vast majority of projects under the Global programme have been developed in the field taking into account national and regional priorities and designed in line with the main orientations of the Global strategy and the Global Program (role of the ECTAD Programming Unit) including whenever possible long term development issues. These documents are made available to potential donors as project profiles or concept notes, thereby informing and supporting their funding decisions. This process has been used in the past and further strengthened in recent funding contracts with donors such as USAID, EC, ADB, etc</p> <p>At the country level, ECTAD is promoting a national medium term priority frameworks (NMTPFs) approach and the preparation of related sectoral documents (AH-NMTPPs) to ensure that priorities regarding FAO's assistance are jointly agreed with host country governments and in line with the Poverty Reduction Strategy Papers, based on the attainment of the MDGs. AH-NMTPPs specifically target animal health priorities and mainly HPAI so far. They can either contribute to existing NMTPFs by refining the Animal Health Component or represent a very useful contribution to future NMTPFs when it does not exist. They have been developed for Nigeria, Congo DRC, Burundi and Rwanda. More are in the pipeline.</p>
20. In support of requests for funding, it would also be important for FAO to clarify how its programme for avian influenza addresses the UN Millennium Development Goals, an important element in the decision-making of many donors.	Accepted		no	<p>It is obvious that HPAI prevention and control activities are geared directly to protecting food production, maintaining safe food distribution systems and improved nutrition, and preserving income opportunities and livelihoods of rural populations, including the most vulnerable groups. These activities, having a huge impact on food security in particular in DCs, therefore contribute to MDG1 (eradicating extreme poverty and hunger).</p> <p>The preparation and complementing of over fifteen poultry sector country reviews have provided new information on the importance of the poultry sector for both the national and household economy (conducted from Feb 08</p>

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				<p>to Feb 09).</p> <p>They also contribute to MDG6 (Combat HIV/AIDS, malaria and other diseases), by notably working at the animal source and therefore reducing the risk of a pandemics.</p> <p>Considering the huge efforts made successfully towards increased collaboration among international, regional and national institutions to combat against AHI, this program has contributed to the development of an international partnership and therefore to MDG8 (Develop a Global Partnership for Development).</p>
<p>21. The RTE highly recommends that donors use the SFERA fund to the maximum amount possible. A precursor evaluation to the RTE which focused on SFERA also strongly recommended to donors that they carry on providing a maximum of funding through this mechanism, in particular for regional and country work. As a corollary however, the RTE highlights the importance for FAO to continue to build the confidence of donors in its technical expertise and efficiency and effectiveness in using these funds.</p>	Accepted			<p>The programming of funds under SFERA is based on a financial analysis of the gaps vis-à-vis the priorities set in the Global and regional programmes, the urgent needs and taking into account the donors' requirements/preferences in terms of thematic and geographic areas. The use of SFERA funds is based on the programme approach in which funds contribute to the overall implementation of the programme and have key function in targeting areas which are priority in the Global Strategy and Global Programme but have not received sufficient funds.</p> <p>Donors are regularly informed about the usefulness of the SFERA mechanisms especially of crises such as HPAI which need flexibility in allocation of funds and in reorienting funding priorities depending on emerging needs (unexpected outbreaks).</p> <p>Briefings on the SFERA are regularly included in the agenda of formal and informal donors meetings to raise donors' awareness on this funding mechanism and facilitate its acceptance.</p> <p>The increasing donors interests in UN pool funding mechanisms at central and country (ie CERF) will contribute to increase confidence in the SFERA.</p> <p>While in some cases there is a donor resistance to fund mechanisms in which their specific contributions cannot be closely monitored and given specific visibility, others clearly perceive that they contribute to a global effort and therefore see clear benefits in terms of overall impact. Most of these donors also feel an increased ownership of the programme as a whole.</p> <p>All donors contributing to SFERA receive regular progress reports on the</p>

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				implementation of the Global Programme to which SFERA funds contribute to. These reports always include a note on the funds provided through the SFERA and how these funds contribute to programme activities. These reports are available upon request
22. In assisting member countries where governance is an issue, FAO's strategy needs to explicitly confront obstacles and possible pragmatic 'work-arounds' (which may not be to everyone's liking) in order to do a better job responding to HPAI. Where this involves facilitating countries' own efforts at improving governance, FAO should not hesitate to bring in the assistance of a sister agency or outside expertise that has more specific experience and capacity in this area as part of its effort.	Accepted Comment: FAO supports very much the approach on good governance for preventing and controlling TADs, particularly through efficient and transparent national Veterinary Services, through appropriate laws and regulations and their enforcement, and emphasizing a central chain of command on animal disease management	on-going FAO and OIE Chart, May 2008		<p>Good governance issues related to HPAI prevention and control primarily concern national Veterinary Services (VS) capacities. Good governance principles have been described in the joint OIE-FAO Paper on 'Ensuring good governance to address emerging and re-emerging animal disease threats: supporting the veterinary services of developing countries to meet OIE international standards on quality'.</p> <p>The upstream stage to VS capacity strengthening is their evaluation, under the leadership of OIE. FAO is involved during the OIE PVS evaluation (provision of experts) and the PVS Gap Analysis (on-going discussion of FAO's role as the main implementer). FAO will play a major role during the VS capacity building <i>per se</i> – investment programs based on the results of the evaluation stage.</p> <p>Distribution of roles between OIE and FAO regarding VS strengthening has been clarified in the Chart on FAO and OIE competencies and complementarities and its companion Vade Mecum (documents available upon request), officially endorsed in their last version on May 2008.</p>
23. FAO and its partners must pay more attention to understanding and addressing issues of international governance and institutional architecture pertinent to the control of trans-boundary animal diseases and in particular HPAI.	Accepted	Yes Revised OIE-FAO Global Strategy, Feb. 2008 OWOH Strategy, October 08		<p>The current FAO-OIE Global Strategy (update Feb. 2008) set as strategic objective of its global dimension (objective # 10): 'improve the implementation of standards and regulations for international trade and movements of birds and poultry products. This involves strengthening VS including appropriate legislation and improved governance to ensure safe trade and movements according to OIE standards'. This is to take place within the GF-TADs framework.</p> <p>The Under development FAO-OIE-WHO OWOH strategy also underlines the importance of good governance issues and proposes to build more robust public and animal health systems based on good governance compliant with the WHO International Health Regulations (IHR 2005) and OIE international</p>

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				standards.
24. More specifically, FAO and OIE must clearly identify their specific individual and joint roles in combating HPAI, which should be outlined and agreed upon in the Global Strategy and the proposed Global Programme to control HPAI, as the current confusion and disagreement is an impediment to effective joint work.	Accepted To a large extent already implemented/under implementation (GF-TADs agreement, 'Good Governance Initiative', joint FAO/OIE Global Strategy, establishment of regional animal health centres in Africa, Near East and Asia,...).	Chart and vade-mecum, May 2008		The mandates of OIE and FAO converge in the field of animal health. For some tasks in this field, OIE and FAO have primary responsibility; for others, the two organizations join forces and work synergistically. To optimize the collaboration, avoid overlaps and provide clear and coherent messages to all FAO and OIE teams as well as to countries and partners including donors, complementarities and synergies in the mandates of the two organizations have been assessed and agreed in detail in a Chart on the competencies and complementarities of FAO and OIE. It delineates the agreed responsibilities and synergies for seven areas – standards, guidelines and recommendations, strategies and best practices, sanitary information and epidemiological intelligence, expertise, scientific and technical publications, training; and development programmes - and several cross-cutting issues - awareness, research, communication, and coordination. A Vade Mecum complements the Chart, providing detailed explanations in each listed areas (Chart and Vade-mecum are available upon request).
25. Based on the experience with the HPAI response reviewed here, this evaluation strongly recommends that a thorough high-level review of the international architecture for animal health and transboundary animal diseases be carried out in the near future in an effort to rationalize and improve efficiency of the division of labour and responsibility between FAO, OIE and other actors in this field when facing this type of	Accepted	Partially Chart and vade-mecum, May 2008		See Recommendation # 24 on FAO-OIE Chart. A second evaluation of the GF-TADs should clarify even further the expected complementary roles among FAO, OIE and WHO for the prevention and control of HPAI and other IEDs. This was not conducted in 2008 but is scheduled for the first semester of 2009. Again, the UNSIC UNCAPAHI properly delineates the responsibilities falling under FAO, OIE and WHO mandates.

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zoonotic crisis.				
26. FAO/ECTAD should be careful to distinguish the results of its own investigative work in the context of field activities and strategy development as informal applied research, not formal research with rigorous testing of results. For that, it must (continue to) partner with research institutes, universities, etc. It should clearly define its role in identifying or commissioning research, and the resources it is willing to commit to this.	Accepted	Yes On-going		<ul style="list-style-type: none"> - Epidemiology of Avian Influenza in Africa (EPIAAF) study has been conducted with CIRAD in 2008; - Epidemiological analysis and information database (EMPRES-i) has been shared with Google Earth, BBC, USDA-CEAH, UC-Davis, Columbia University, Université Libre Bruxelles as a way that others can contribute or undertake their own analysis in a similar situation. - LoA with IZSve in 2007, 2008 and pending for 2009, for funds for testing and whole genome sequencing. Articles published with FAO as co-author or acknowledged; - grant given to the head of poultry virology for 4 month in IZSve to study 150 H5N1 viruses; - OFFLU vaccination project in Indonesia: 2 articles pending with large co-authorship. - The EMPRES Wildlife Unit has partnered with other institutions in Europe, Asia and Africa to contribute (technically and financially) to understand the role and behaviour of wild birds in Avian Influenza epidemiology. -The DFID-funded Pro-poor HPAI risk reduction project funded by DFID (which is not run through ECTAD but through AGA) is a partnership between FAO, four international research partners and several national government and research organisation in which each has clearly defined roles. See http://www.hpai-research.net/index.html for more information on the consortium and the programme. The PPLPI makes a considerable effort to link with ECTAD and others (one of the project team is specifically designated to do this). Work in the Mekong has been joint with ECTAD or done with the knowledge of ECTAD country teams. - Almost all of the investigative work done by the socio-economics and production group of ECTAD has involved national partners or local consultants, whose names appear on the reports produced and has been reported at meetings in country, often by the local teams that did the work.

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27. FAO has a major role to play (better than it is doing at the moment) in managing, using and making available to others the knowledge emerging from research, rather than in generating it. FAO should serve as identifier and disseminator of valid and useful research results pertinent to making policy decisions in dealing with HPAI.	Accepted	Yes On-going		<ul style="list-style-type: none"> - Regional networks: in annual meetings, where all countries are represented: sharing of recent knowledge. Mailing lists and ECTAD/FAO websites (http://www.fao.org/avianflu/en/index.html) also to disseminate knowledge. - Verona conference: AI at the human-animal interface organised with WHO and OIE in October 2008. Was aimed at reviewing the knowledge in AI at the interface and identify gaps. http://www.fao.org/avianflu/en/conferences/verona_2008.html - FAO has purchased in 2008 150 books on AI and ND (Springer) to be distributed to countries - Laboratory training on AI: in region, in OIE/FAO laboratories. Many training sessions for laboratory staff (excel file available) - CMC training on AI (3 sessions in 2007/2008) - OFFLU day at the 7th Symposium on AI (April 08) http://www.offlu.net/OFFLU%20Site/offluday_notice.pdf - Several efforts to make information more readily available e.g. International meetings, newsletter (RAP), DFID pro-poor project website and e-consultation, FAO HPAI website, abstracts at international research meetings. The DFID pro-poor project puts a considerable effort into establishing links with other organisations and websites and because of its consortium is linked in to IFPRI, ILRI, UC-Berkeley. Royal Veterinary College, IDC (STEPS) websites. <p>But simply providing information is not enough to make an impact on policy formulation. This requires a sustained effort in working with national and regional institutions, each with their own agendas and competing influences.</p>
28. The HPAI socio-economics programme should develop a clear strategy to support	Accepted Applies also to socio-economic and farming	Yes On-going		Building capacity is a complex issue because it requires sustained engagement on questions of mutual interest where each party has something to bring to the collaboration. More efforts is still to be done to

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research and build capacity of economics and social science programmes working on HPAI-related issues in targeted countries. Work should be encouraged with in-country partner institutions where possible.	systems research			develop it. To take one simple example which can be “ring fenced”: work on compensation strategies. FAO’s work began in 2004-5 in Viet Nam. It has grown to involve missions to several countries to assist in building strategies and operational plans, collaboration with the World Bank and IFPRI on a broad set of recommendations, collaboration with USDA on a CD to summarise experiences (upcoming) engagement in regional meetings for the past 3 years (the most recent one took place in February in Asia, to compare experience and examine the role of insurance). We had a full-time specialist engaged for 2 years who worked to strengthen our collaboration with the World Bank, UNDP and USDA and to unearth and build local strengths. There is a great deal more understanding of how to do it than 3 years ago, but still no sustainable funding source. And this is just one topic, addressing just one small aspect of disease control.
29. Collaborative work with economists and social scientists in other FAO departments should also be encouraged. Looking outwards, UNSIC encourages the linkages between IFPRI and World Bank, of which FAO has recently become a part. FAO should work to ensure that post-HPAI-crisis socio-economic rehabilitation is addressed in the research work of those institutions.	Accepted. Applies also to socio-economic and farming systems research			The socio-economics and production has ALWAYS collaborated widely, from the time in 2004 that we set up the working group involving people cross-house plus WFP and IFAD, and we continue to do so. We have worked on all of the issues mentioned under “proposed actions” although least on gender impact assessment. The biggest challenge at the moment, however, is not “post crisis rehabilitation” in the sense that it would apply to building back after a cyclone, but the question of the future of smallholder poultry production. IFPRI and ILRI are certainly looking at this question we are in touch with them. But the most challenging work is on the ground in countries that are daily reviewing “restructuring” plans for their poultry sectors and here ECTAD has no coherent strategic approach. There ought to be a multidisciplinary ECTAD working group with strong engagement from the country teams.
30. The Global Strategy should position responsibility for <u>vaccination</u> programme design largely at the country level (with outside advice if	Accepted – keeping in mind that the RTE Report statement (quote “set of guidelines as to when and where vaccination is	Yes On-going		- Guidelines for vaccination have been available since early recognition of the H5N1 HPAI problem, but required research (and its results) have not been disseminated (i.e. efficacy is different among species) or standardized (serological, virological monitoring, vaccine matching).

Recommendations	Accepted, partially accepted or rejected (Management Response, October 2007)	Actions taken?		Comment / explanation (examples to be provided)
		Yes (with date)	No	
desired), including major decisions regarding when and if vaccination is appropriate. The public good nature of animal health means that to some degree this will also need to be tempered by regional priorities and constraints. A more clearly worded set of guidelines for vaccination is needed that directs attention to three levels of recommended use: newly infected, sporadically infected, and endemic countries	appropriate and how it could be used with other tools including stamping out, targeted slaughter, market and movement controls, and restructuring.”) is not correct: see FAO/OIE Global Strategy, Conclusions and recommendations of the FAO-OIE-IZV Reference Laboratory International Conference, Verona, 2007, and OIE/FAO guidelines.			<ul style="list-style-type: none"> - Paper: Experiences with vaccination in countries endemically infected with highly pathogenic avian influenza -: the FAO perspective (to be published in the OIE technical review). - Indonesia: OFFLU project on vaccine efficacy implemented by FAO (Oct 07-Oct 09) FAO interim recommendations on vaccination (on behalf of OFFLU) provided to the Indonesian MoA on April 2008. A reviewed version will be generated in March 2009 (documents available upon request). As this project is focused on vaccine strains and vaccine types only, an OFFLU committee on the vaccination strategy was held in Jakarta by FAO and Indonesian MoA on 14 November 2008 with international partners to review results of project in Indonesia and make recommendations on vaccination (a second version of OFFLU recommendations is under preparation). Socio-economics component in the project. - Vietnam: external experts appointed by FAO as vaccination expert to review the national vaccination strategy (3 attachments) - Egypt: OFFLU project on vaccine efficacy and SAIDR project. Technical meeting on vaccination planed in September 09 with partners of both projects (adaptation of the Indonesian vaccine work above in an Egypt context). - OFFLU technical group on vaccines formed in March 2008 with international experts from OIE/FAO reference laboratories, vaccination experts, FAO experts, research institutes in NL, UK and USA. - Verona Conference (6-9 October 2008) on vaccination. - Participation to 2 electronic conferences with World Bank on AI vaccination (5 invited countries each time) (2007/8). - OIE Working Group on Vaccination with FAO participation.
31. FAO needs to present vaccination as one of several tools to use concurrently, and to be used	Accepted Already supported by FAO: see comments on recommendation No 30).	Yes On-going		<ul style="list-style-type: none"> - This is what FAO constantly recommends in countries (see previous comments and documents). It is described in FAO manual on 'Preparing for Highly Pathogenic Avian Influenza', produced in 2004. - FAO interim recommendations on vaccination (on behalf of OFFLU)

Recommendations	Accepted, partially accepted or rejected (Management Response, October 2007)	Actions taken?		Comment / explanation (examples to be provided)
		Yes (with date)	No	
only where there is a well-funded and responsive veterinary service with and appropriate levels of geographic coverage.				provided to the Indonesian MoA on April 2008) (document available upon request). - Paper: Experiences with vaccination in countries endemically infected with highly pathogenic avian influenza -: the FAO perspective (to be published in the OIE technical review).
32. FAO needs to promote greater country level and international dialogue on the strengthening of veterinary public health policy and its direct impact on global public goods as exemplified by crises like HPAI.	Accepted FAO has strongly promoted the need to see HPAI as only one of various potential veterinary public health concerns when facing the emergence of important transboundary and zoonotic disease agents	Yes On-going		The OWOH Strategy is guided by the key principle that the prevention and control of HPAI and more generally of IEDs is an international public good and requires strong political and financial commitments at national, regional and international levels. FAO organizes / participates in many international and regional conferences and meetings to raise the awareness of the public at large on the Public Good Dimension of the prevention and control of the major animal diseases. One of the key meetings was the conference co-organised by the World Bank, OIE and FAO (October 2007, Washington) on the Global Animal Health Initiative: The Way Forward.
33. FAO needs to improve its own processes and mechanisms for rapid response in the context of protracted emergencies, of which HPAI is a prime example.	Accepted	Yes 6 Feb 2008: Matrix on current status of CMC-AH implementation issues (including administrative) submitted to senior management		Despite of the needs to focus on medium and long-term prevention and control of diseases, the short-term emergency capacity to respond to new outbreak events is an important axis of the FAO strategy. The CMC-AH (renamed "Rapid Response Unit" of the CMC-Food Chain) team, working as a "fire-brigade" team was established with OIE and it works with WHO when outbreak events are of zoonotic nature. The CMC-AH has been guided and over sighted several times by its Steering Committee (2 meetings): the partners and donors have acknowledged the good work done and have confirmed their continuous support. CMC-AH implementation has involved brainstorming on methods of expediting FAO procedures for rapid response. Matrix includes: <u>Procurement</u> <ul style="list-style-type: none"> • Waiver for expedited CMC-AH procurement under discussion • Development of contingency stock arrangements underway

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		Yes (with date)	No	
				<ul style="list-style-type: none"> • Faster/larger post-mission assistance capacity suggested <u>Human resources</u> <ul style="list-style-type: none"> • Core team established; increased numbers and training advised for food chain; • Availability of specific animal health consultant roster; development of more emergency type roster under discussion • Delegation of authority for travel issues still to be obtained Partnerships strengthened within FAO externally for improved information exchange, joint mission deployment and/or supply of deployable experts
<p>34. FAO needs to define an institutional policy indicating how resources should be allocated between addressing animal health (or other) emergencies, other Regular Programme thematic areas, or both. In the case of the HPAI crisis, FAO needs to assess what loss of Regular Programme activity has resulted from the increased focus on HPAI and how work on other important TADs may have suffered.</p>	Accepted	Yes On-going		<p>The definition of priorities for resource allocation is a very difficult exercise as said above. New emergencies can occur any time despite the improvement of prediction. The continuum between short-term/emergency and long-term activities, between prevention, detection and response is obvious and FAO advocates for better understanding and acknowledgement of this concept. Therefore, constant interaction and transfer of HR and budgets between emergencies and more long-term Regular Programme (RP) funded activities should be ensured. This is what EMPRES and ECTAD constantly do. The importance of HPAI programmes resulted to a HR problem at the beginning of the crisis in 2004 and 2005. However, progressively, almost all other RP programmes have resumed and the major ones (GREP/RP eradication, FMD global initiative, T&T PAAT activities...) have not really suffered from a lack of attention from FAO. Having said that, it is evident that to make this long-term programmatic exercise sustainable without sudden crisis response interference, a stronger RP expert team should be established in FAO-AGA, with a pluridisciplinary critical mass able to address capacity building, disease intelligence, and normative activities as well as guiding and supporting field prevention and control programmes on a long-term sustainable manner.</p>