

Final Report

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

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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. Tjeppy 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.

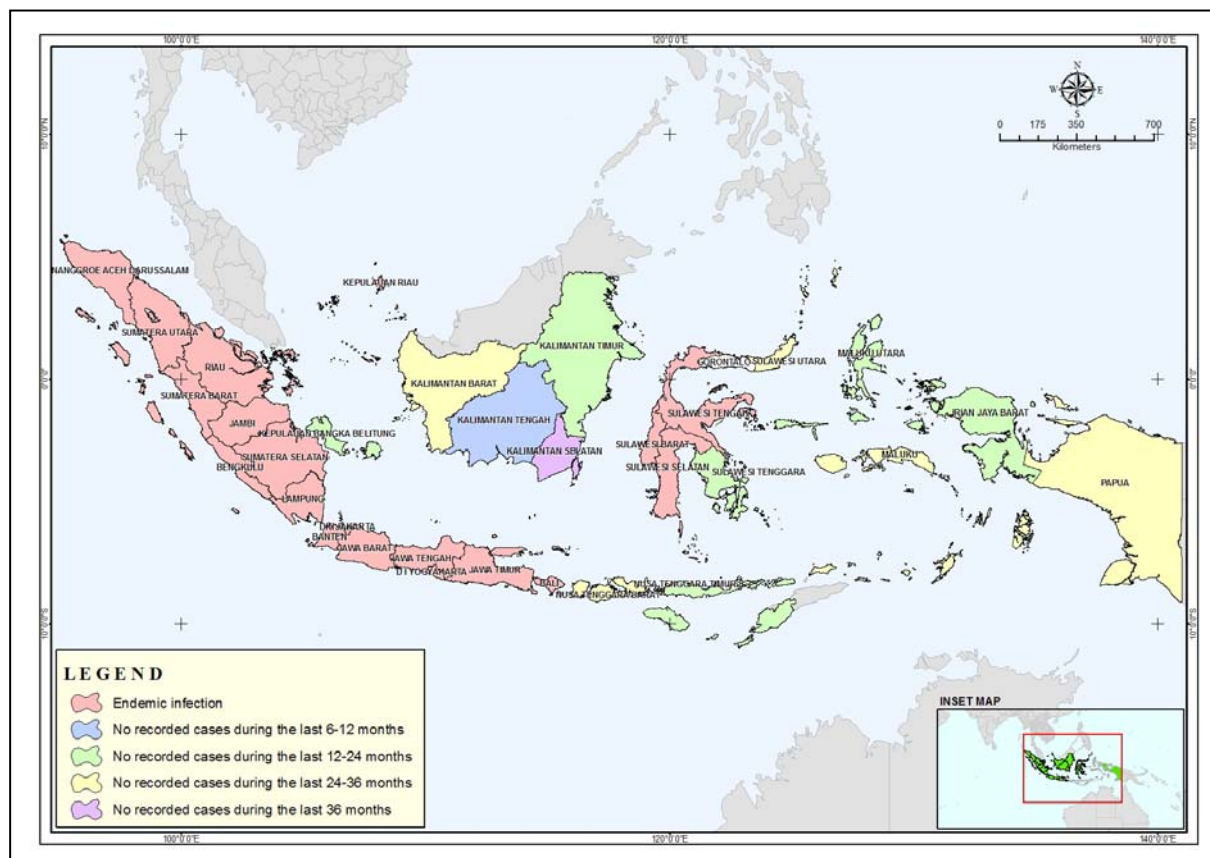
Even though Indonesia submitted its first avian influenza outbreak notification in January 2004, HPAI was suspected in August 2003 in a commercial layer flock. By December 2004 poultry deaths were estimated to be more than 8 million in over 100 districts/cities. By the end of 2005, the disease had spread 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.

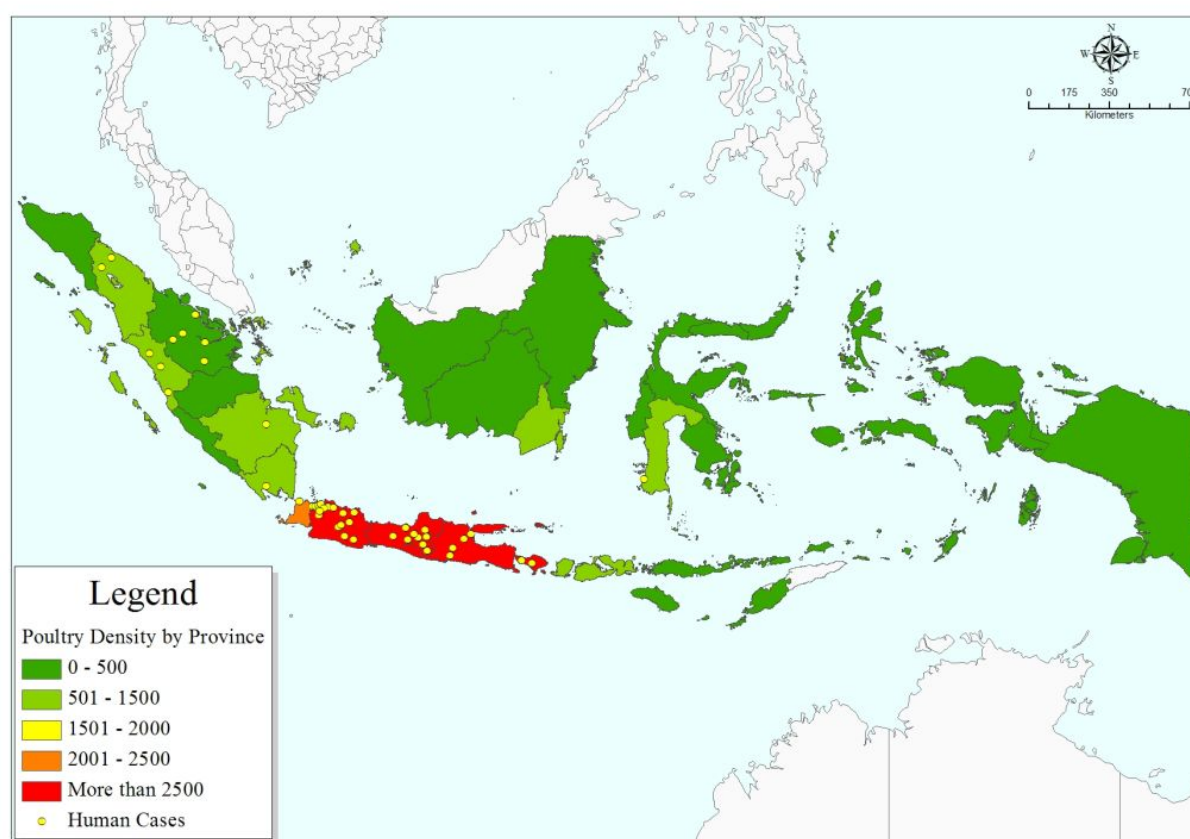
In 2008, total poultry population in Indonesia was estimated at 1.522 billion head, of which 70.7%, 19.1%, 7.7% and 2.4% were broilers, village chickens, layers and ducks. Poultry populations for the years of 2006, 2007 and 2008 are indicated in the following table. It shows that there has been a consistent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

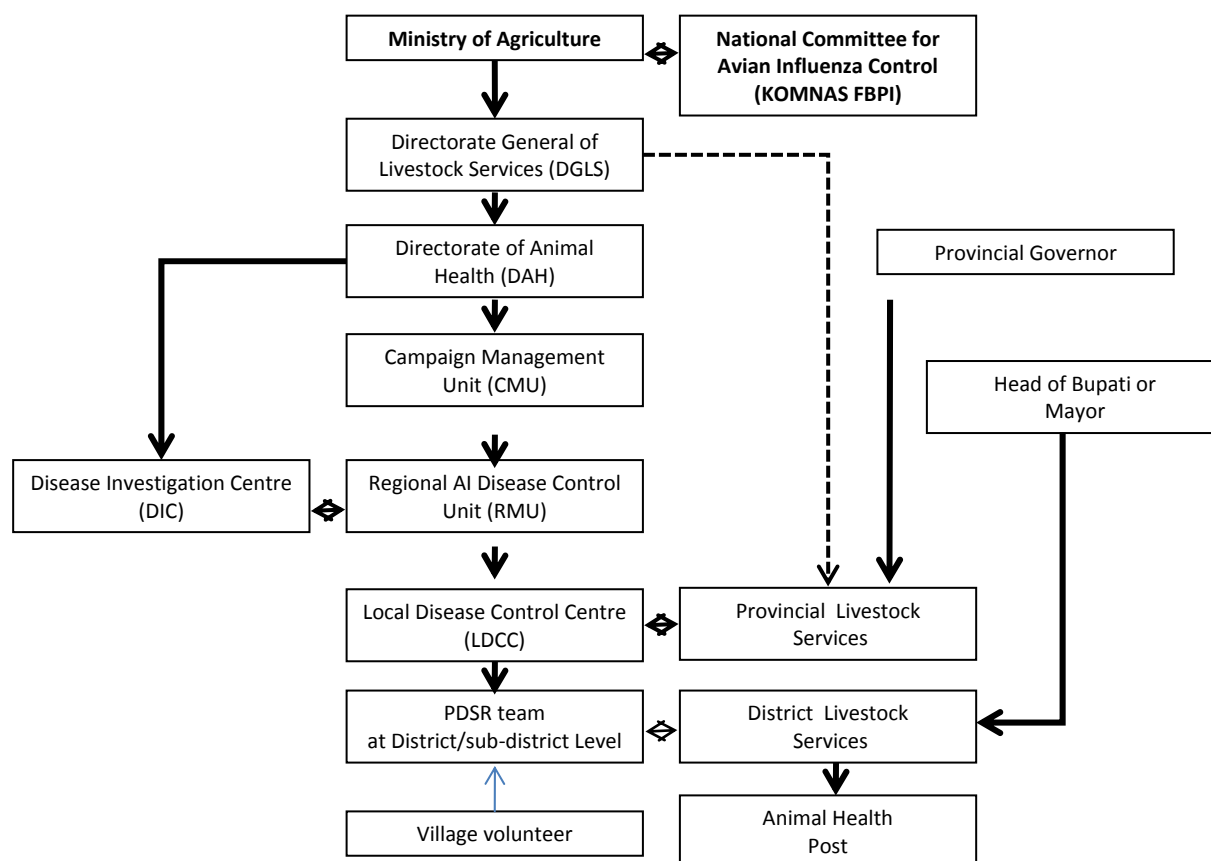
The CMU was established following DGLS order No. 58/2006, and is the first element of the NSWP. The objectives of the CMU are:

- 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 2010⁶
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

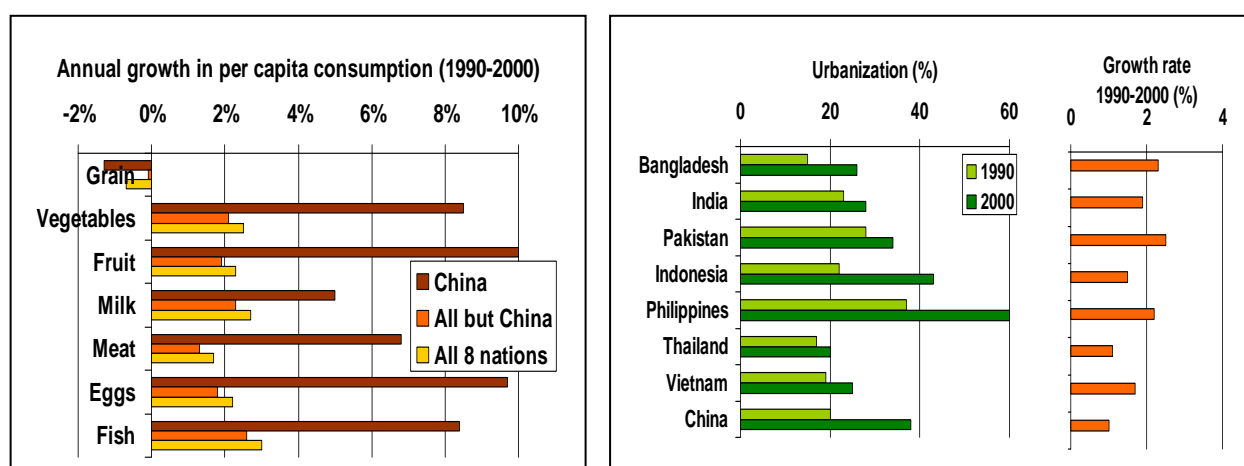
⁷ *Participatory Disease Surveillance*. This is a disease surveillance activity that uses an innovative approach to epidemiological study called participatory epidemiology (PE). Participatory epidemiology is the collection of epidemiologic information using participatory approaches, such as those that 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.

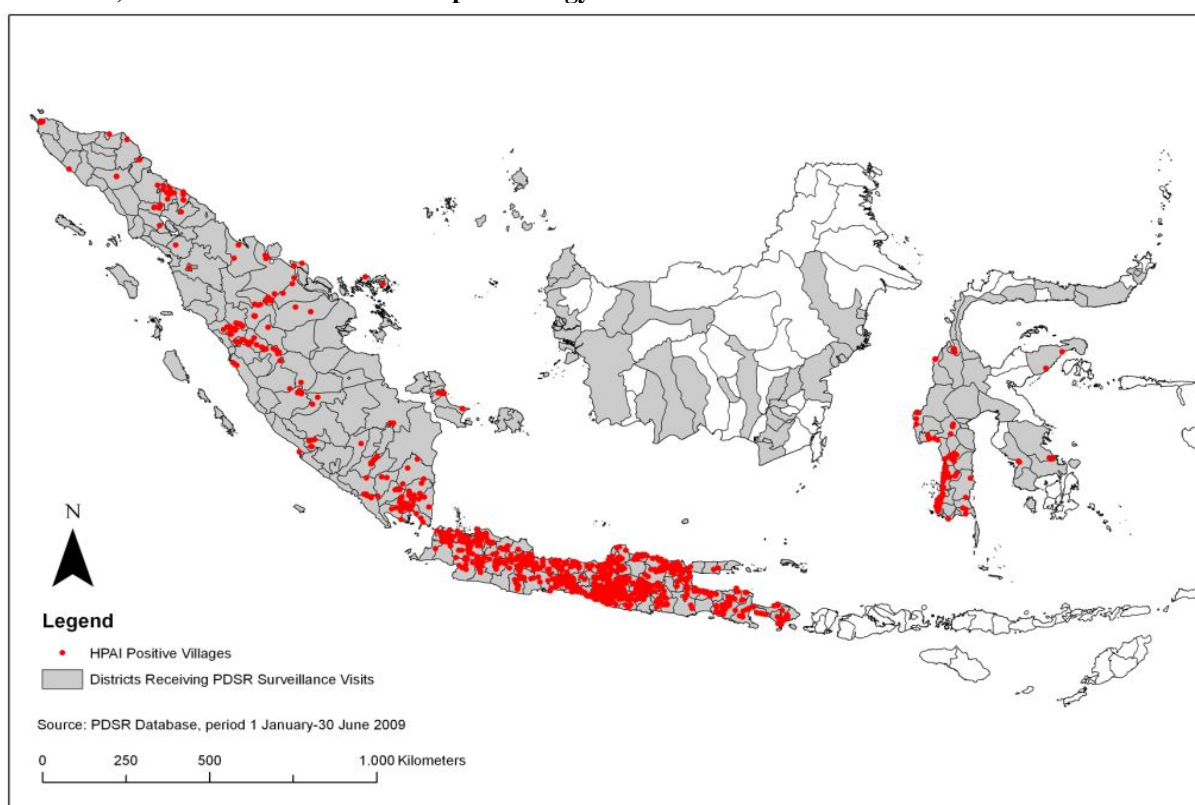
2. Programme Results

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)

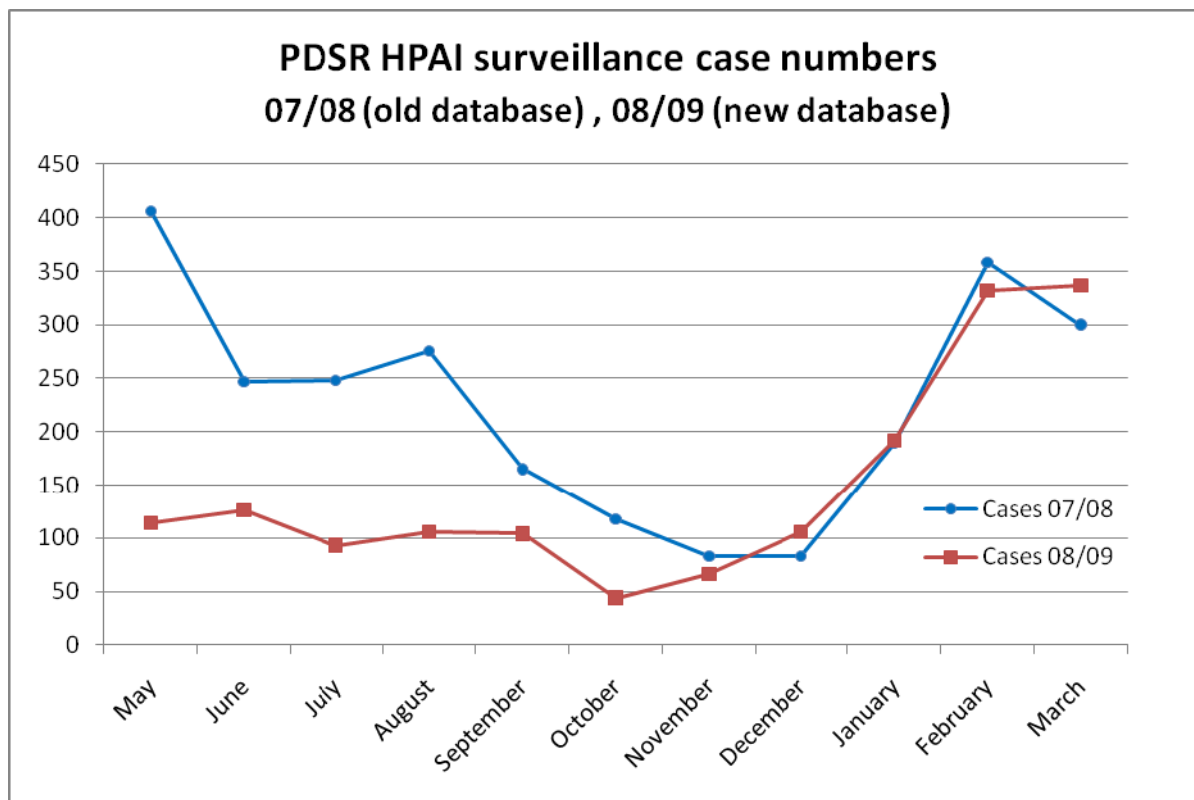
The new PDSR database shows that monthly HPAI detection rates¹⁴ were low (around 3 out of 1000 villages) in late 2008 but increased to almost 10/1000 villages in February 2009. Similarly, a comparison between 2006-07 and 2008-09¹⁵ shows a surge in detection rates during the rainy season (i.e. November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

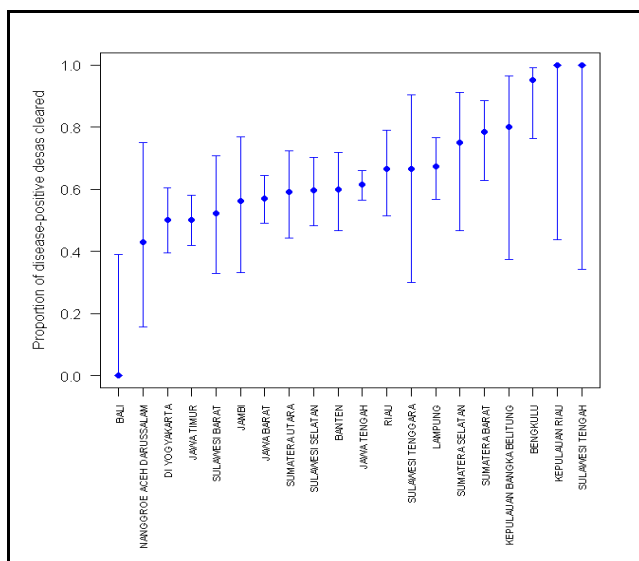
The FAO project team has proposed three possible indicators to measure the effectiveness of the surveillance, control and prevention activities of the programme, based on the progressive improvement of the disease status of a village (from 'Infected' to 'Suspect 14, Suspected 60, Controlled', and then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

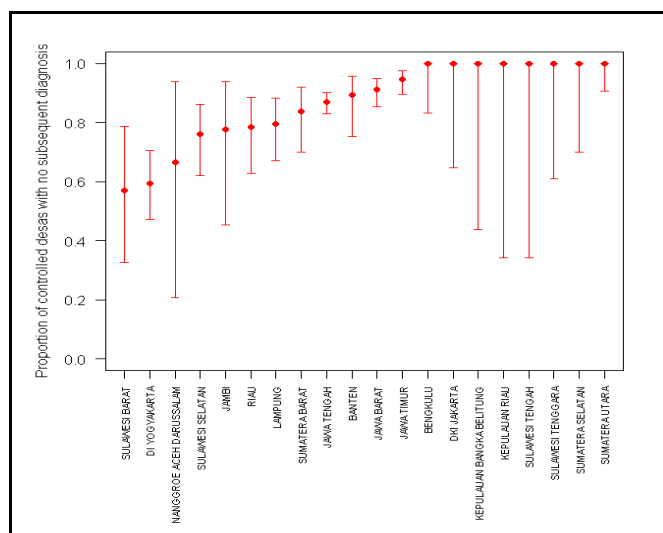
Figure 7: Ranked error bar plot showing Provincial point estimates and 95% confidence intervals of the proportion of infected villages identified between 1 April 2008 to 28 February 2009 that achieved as a status of 'Apparently Free' or 'Controlled'. Data provided by the FAO/CMU epidemiology team.



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).

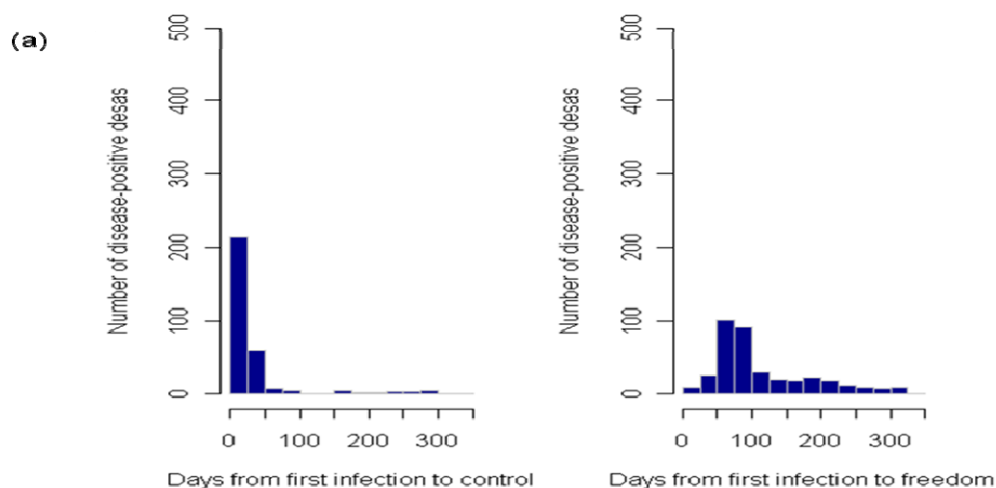
Figure 8: Ranked error bar plot showing Provincial point estimates and 95% confidence intervals of the proportion of ‘Controlled’ villages identified between 1 April 2008 to 28 February 2009 with no subsequent breakdowns to become ‘Infected’ or ‘Suspect(14)’. Data provided by the FAO/CMU epidemiology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

12-month Strategic Work Plan: July 2008 – July 2009

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 projects²⁵:

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 co-ordination of the CMU.

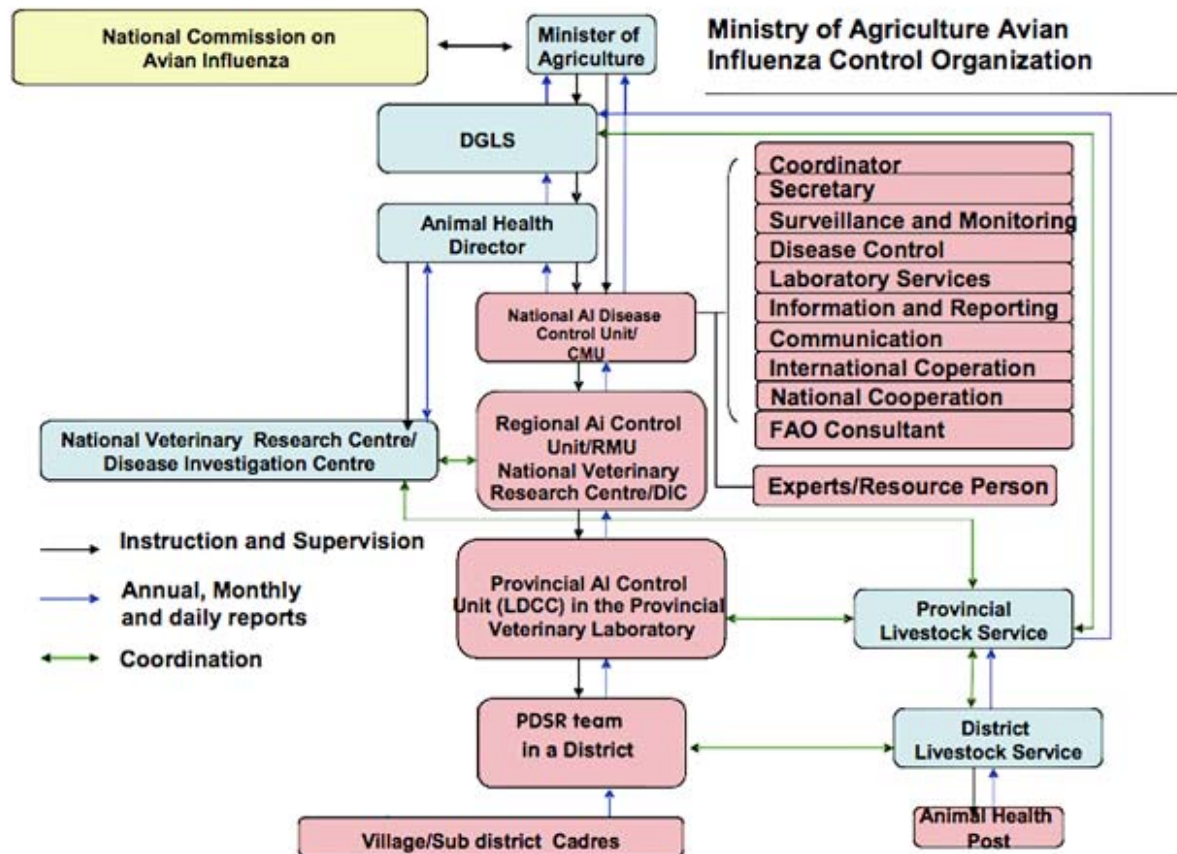
Throughout the Campaign, the GoI has had the following priority tasks:

- 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.

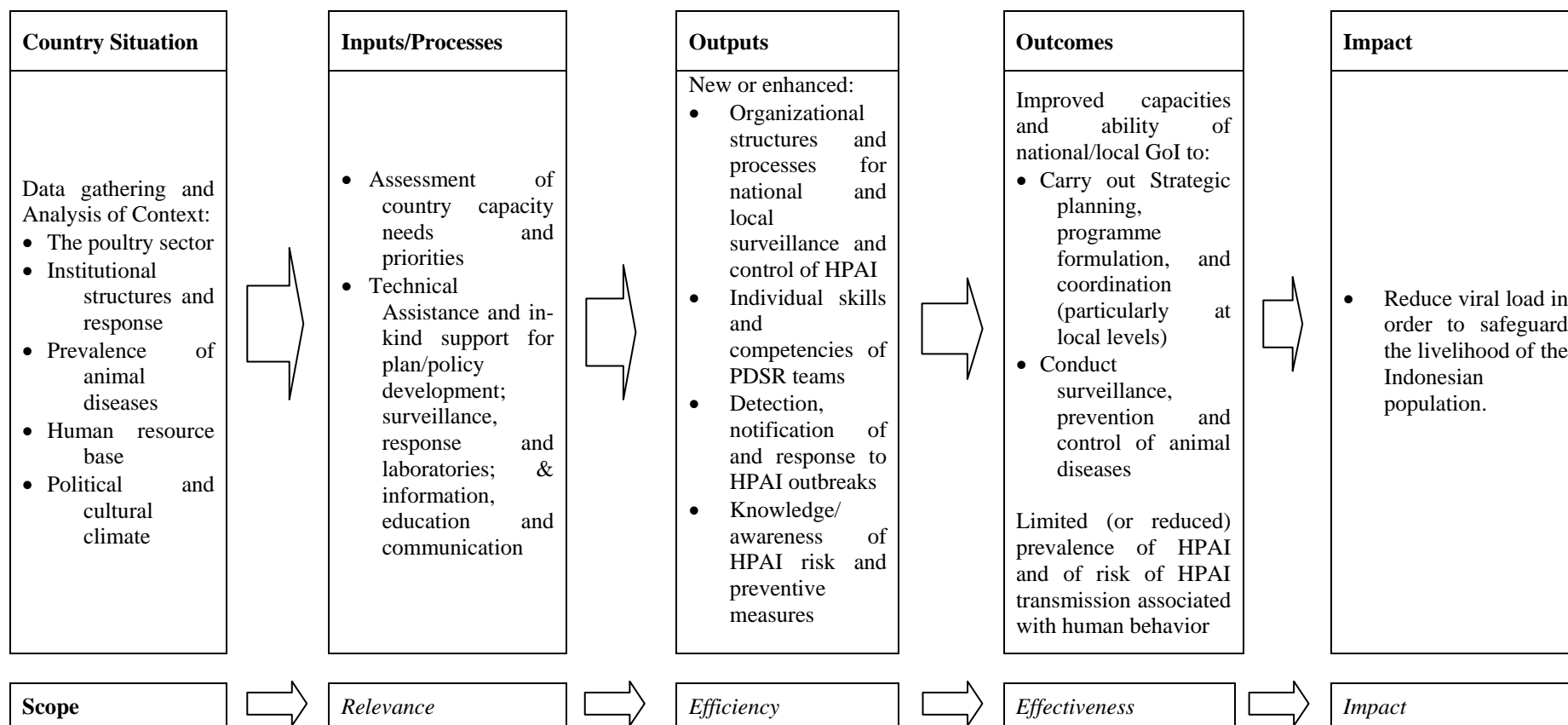
Discussions will be held with FAO staff at HQ, and at the Regional and Country offices to solicit their contributions towards the finalization of the Terms of Reference. Key stakeholders within other UN agencies, development partners and donors will be met by the evaluation team at the start of the fieldwork. 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. Participatory Disease Surveillance and Response. An [Internal] Review. January 2006-May 2007.

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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.

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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: whither 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 Maciocchi, 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: - 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: - 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	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; To provide suitable facilities for the establishment of local disease control centers at national level; To provide basic equipments and materials for disease investigation, culling operations, cleaning and disinfection of infected premises; To assist coordination of disease control activities at the local level.	2004-03	2005-11	1610083	Japan
TCP/RAS/3010	Emergency regional support for post-avian influenza rehabilitation	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: - 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	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.	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