

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

COUNTRY REPORT: COTE D'IVOIRE

12-14 OCTOBER 2009

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I. INTRODUCTION

Dr Emmanuel Camus from CIRAD and Mr Carlos Tarazona from the FAO Office of Evaluation visited Côte d'Ivoire from 12 to 14 October 2009 as part of the Second Real Time Evaluation of FAO's Work on Highly Pathogenic Avian Influenza.

In line with the evaluation's terms of reference and the inception report, the focus of the visit was to evaluate the relevance, efficiency, effectiveness, sustainability and likely impacts of country level assistance provided by FAO through global, regional and national interventions in the past few years. The Emergency Coordination Unit of the FAO Representation prepared a programme of meetings (see annex 1) and made logistical arrangements for the mission in collaboration with the FAO's Regional Emergency Centre for Transboundary Animal Diseases (ECTAD) for West and Central Africa in Bamako, Mali.

Reasons for the selection of Côte d'Ivoire as country case study for the Second Real Time Evaluation of FAO's work on the Highly Pathogenic Avian Influenza are described in the evaluation's terms of reference. Côte d'Ivoire was also visited in late 2006 by a team of the First Real Time Evaluation that evaluated the French contribution to SFERA funding which was, at that time, the major financing source for in-country work.

The First RTE summarized the mission's findings as follows: *“FAO was extremely quick to respond, having released SFERA funds for initial action with 48 hours of the [first] outbreak... The funds were spent on expert missions to assist the response, purchase of various types of equipment and supplies, workshops and the purchase of 12 million doses of HPAI vaccine. The reaction by government was rapid, with culling of infected chickens (two infection sites) and closing of poultry markets, and the disease was brought under control within days. »* The First RTE also stated that *“Issues arose however with the use of the vaccine purchased with SFERA funds. As the HPAI scare subsided following successful control measures, government priorities turned elsewhere and funding for carrying out the vaccination campaign evaporated. The vaccines languished until near their expiry date, but FAO did not want to be drawn into funding the vaccination campaign... As this report was being written, a first round of vaccination had taken place, and another was planned.”*

The First RTE concluded that *“FAO was the first and only major funding agency for the country's initial reaction. Issues were raised later regarding the wisdom of advising (and providing for) a vaccination campaign in a country where most chickens are backyard birds, infrastructure is poor and the security situation was unstable, making results of an attempt at large-scale vaccination uncertain at best. The [first real time] evaluation did not take a position on this issue in view of the major uncertainties still surrounding the whole question of vaccination for HPAI”.*

The Second RTE team has followed-up on the findings of the first RTE by providing a more detailed assessment of the vaccination campaign, with an emphasis on lessons learned. In view of the short time of the visit, other aspects of avian influenza work in Côte d'Ivoire (e.g. surveillance, biosecurity, etc.) were not reviewed at the same level of detail.

II. POULTRY SECTOR AND AVIAN INFLUENZA STATUS

In spite of years of civil strife, the poultry sector in Côte d'Ivoire, a country seen as the economic powerhouse of Francophone West Africa, has seen remarkable growth as a result of poultry development programmes and the entrepreneurship of the private sector. The poultry population had increased from approximately 29.1 million in 2000 to 33.4 m in 2005¹, with the “modern” poultry sector being responsible for over 50% of this increase. This growth responded to a higher demand for poultry products, with local production estimated to supply only about 40%, the rest being sourced from neighbouring countries.

There are different estimates of the current composition and size of the poultry sector, due to the lack of reliable data on the poultry and livestock populations in general, but there is a consensus that it is mainly comprised of backyard producers (who hold around 70% of stocks) and the so-called “modern” poultry producers (equivalent to FAO's sector 2 and 3). The former can be found almost everywhere, while the “modern” sector is located in the south of the country, with the highest concentration of farms established around Abidjan and in Agnibilekrou near the border with Ghana.

Before avian influenza hit the country the poultry sector was contributing around 0.5% (circa 40 billion FCFA) of the annual gross domestic product² and growing. The appearance of the

¹ Annuaire provisoire 2007 de la Direction de la Programmation et de la Planification.

² FAO Revue du secteur avicole (2008)

disease caused a major economic shock with total losses estimated at 10 billion FCFA, or around 25% of the sector's annual output³.

The first outbreak of avian influenza was confirmed on 19 April 2006 in Abidjan, following the investigation of a suspected case reported on 30 March 2006. Soon afterwards two outbreaks were detected in San Pedro (June 2006) and Bingerville (November 2006). Between February and December 2006, the Central Laboratory for Animal Diseases (LCBV in French and part of LANADA) diagnosed twelve H5N1 positive cases out of 2,125 samples analyzed. This led scientists (including FAO and Government staff)⁴ to suggest that “an endemic situation of HPAI in Côte d’Ivoire” existed, taking into account that other countries in the region were also reporting HPAI outbreaks. Perhaps surprisingly, no new cases have been reported since then, but as different reports have suggested “[the country] remains at risk of re-infection due to the proximity of Nigeria where the virus circulation is unknown”.⁵

During the mission's visit in Côte d’Ivoire a suspect outbreak of HPAI occurred in ravens at the International French School in Abidjan. Samples analyzed at the national reference laboratory concluded that it was a new case of H5N1 avian influenza. This prompted the Minister of Livestock and Fisheries to issue a press release to reassure the public and poultry producers on the protective measures being taken by the Government⁶. The samples tested at the FAO/OIE avian influenza reference laboratory in Padova, however, were negative for H5N1 avian influenza. The reasons for the sudden death of the ravens are still unknown⁷. Nevertheless, witnessing the dynamics of handling a suspect case were a valuable opportunity for the team to observe *in situ* the framework and the role played by FAO in the response.

III. NATIONAL HPAI RESPONSE FRAMEWORK

Côte d’Ivoire has had a national plan for the prevention and control of HPAI since March 2006, which was elaborated with technical support from FAO, OIE and WHO. FAO also supported the preparation of an emergency work plan for the period April-July 2006 to implement control measures targeting the ongoing HPAI outbreaks. These two documents have been largely superseded by the Integrated National Action Plan (INAP) to prevent and control avian and human influenza. This plan, which was prepared in November 2008 with financial support from the World Bank, has now become the official “HPAI strategy for the country”⁸.

The INAP considers that the previous national plan did not include an appropriate communication plan, and was not properly tested⁹. Yet the major weaknesses of the original plan, which have been partially remedied in the INAP, were the absence of high-level co-ordination and the lack of funds for its operationalization¹⁰. The new framework for avian

³ « Impact socio-economique de l'épizootie de grippe aviaire sur la filière avicole en Côte d'Ivoire (2006) », CHIAPO Christophe Adassé, MIPARH (Mars 2007)

⁴ The First Specific Detection of a Highly Pathogenic Avian Influenza Virus (H5N1) in Côte d’Ivoire (December 2007) E. Couacy-Hymann¹, T. Danho¹, D. Keita¹, S. C. Bodjo, C. Kouakou¹, Y. M. Koffi¹, F. Beudje¹, A. Tripodi, P. de Benedictis and G. Cattoli.

⁵ Report Exercise on Highly Pathogenic Avian Influenza: FAO contribution to the UNSIC report (2008) page 55

⁶ Communiqué du Presse No. 1 du 13 Octobre 2009.

⁷ <http://worldpoultry.net/news/ivory-coast-ravens-did-not-die-from-h5n1-id4589.html>

⁸ Personal communication with the CVO, October 2009

⁹ See INAP Report (November 2008), page 12

¹⁰ Report Exercise on Highly Pathogenic Avian Influenza: FAO contribution to the UNSIC report (2008) page 55

influenza preparedness, prevention and control envisaged in the INAP is considered by many local stakeholders to be more comprehensive. It includes two animal health sub-components (strengthening of preparedness and prevention capacity for avian influenza and strengthening of response capacity for avian influenza) with seven associated activities that range from strengthening veterinary services to providing improved surveillance and support to the poultry sector. The evaluation team also found the document to be a major improvement, and commend the detailed analysis of the country's situation made during its preparation.

The Government's handling of the recent suspect case showed that a full adoption of the activities envisaged in the INAP is yet to occur. The team noted for example that disease containment and outbreak communication activities did not involve a crisis management group and were rather taken more on an *ad hoc* basis, apparently because the suspect outbreak was found in a highly sensitive place, the French International School, which is the preferred school of diplomats based in Abidjan. The major limitation to following the new strategy was however a lack of funds. Following the positive diagnostic by LCBV, the Department of Veterinary Services found itself better prepared for disinfection and containment activities but with no operational funds at its disposal even for small purchases such as buying petrol and paying for the delivery of samples to and from the laboratory. As in 2006, FAO had to cover these and other operational costs to allow quick delivery of samples for testing. The evaluation team was informed by FAO and the Government itself (represented by the CVO) that in the absence of money being provided by external sources such as FAO, action would not have been taken on time or even taken at all. This, after earlier multi-million FCFA losses in the recent past, is a matter of serious concern, particularly if the country were to face a wave of new outbreaks.

IV. DONOR AND TECHNICAL ASSISTANCE SUPPORT

The INAP (table 6, p 37) provides figures on donor and technical assistance support till 2008.

Table 1. Resources mobilized for Avian Influenza (2006-08)

Partner	Budget (USD)	Budget (FCFA)	Project/Activities
FAO	815.874		SFERA funds (OSRO/GLO/504/MUL and OSRO/GLO/601/SWE)
African Development Bank	300.000		
CDC/USAID	772.000		
European Union	734.533		Budget : 599.611 Euros ; project implemented by FAO
UNICEF	50.000		Communication materials
China P.R.	130.000		Equipment for 1.000.000 Yuans
Government		750.000.000	324 millions CFA executed in 2006 ; no data for 2007-08
TOTAL	2.902.407	750.000.000	

The team was informed that there have not been any major activities in 2009; largely because of the decreased attention given to HPAI by donors and that most assistance was of an emergency, short-term, nature. Some regional activities are still ongoing and they include the EU-funded AU-IBAR US\$ 30 million SP-INAP project which is expected to contribute

towards the implementation of the INAP¹¹. This project has earmarked around US\$ 1 million for Côte d'Ivoire out of which US\$ 300,000 has already been transferred to the country (although the funds have apparently not reached the Veterinary Services yet). The USAID-funded STOP Avian Influenza project is also still active and has held regional bio-security workshops together with ECTAD Bamako and USDA. UNDP also provided funds (about US\$ 30,000 in 2007) for communication and socio-economic studies on the impact of avian influenza.

A number of local organizations have also been involved in avian influenza preparedness activities, mostly in cooperation with FAO and/or the Government. They include the "Interprofession Avicole Ivoirienne" (IPRAVI), which is an umbrella organization for the "modern" poultry producers associations (UACI, ANAVICI and INTERAVI), PROVETO, and a number of entrepreneurs whose particulars are well documented in FAO's 2008 poultry sector review. Some of these organizations, such as IPRAVI, have seen a surge in membership, and are now strong advocates on matters of importance for the poultry sector.

V. ROLE AND ACTIVITIES OF FAO

As concluded by the First RTE, FAO at large has been an active player in support of Côte d'Ivoire's efforts to prevent and control the spread of avian influenza. Technical support was first provided by FAO HQ at the early stages (2006-07) through short-term missions, with ECTAD Bamako providing the technical leadership and most of the backstopping in 2008-09. The FAO Representation, through the Emergency Coordination Unit, has led project implementation since day one and has also provided day to day supervision, and in consultation as necessary with ECTAD Bamako and HQ, has given practical advice on matters related to animal disease control.

As of 2 October 2009, about US\$ 1 m (This figure reaches about US\$ 1.5 m when procurement carried out through FAO HQ is included) has been spent by ten different projects (one national and nine global/regional) to support in-country activities. A table summarizing expenditure per project can be found below. This will be followed by a detailed assessment of the main national (OSRO/IVC/603/EC) and regional/global projects (SFERA).

¹¹ http://www.au-ibar.org/ach_animhealth/spinap.htm

Table 2. Avian Influenza Projects implemented in Cote d'Ivoire as of October 2009

Project	EOD	NTE	Donor	Total Approved Project Budget	Total Expenditures under the project	Budget Allocated for Cote d'Ivoire through FBA	Expenditures and Commitments under FBA for Cote d'Ivoire
National - (OSRO/IVC/603/EC)	01-Jul-06	30-Apr-08	EC	734,537	660,625	495,499	441,897
Total National Projects:				734,537	660,625	495,499	441,897
Global - (OSRO/GLO/604/UK) child	29-Mar-07	31-Mar-10	UK	5,388,655	4,439,887	12,962	11,734
Global - (OSRO/GLO/601/SWE BABY02)	28-Apr-06	31-Dec-09	Sweden	3,418,047	3,408,386	80,000	81,849
Global - (OSRO/GLO/504/MUL BABY04)	01-Jan-06	30-Apr-07	France	5,930,420	5,869,949	259,635	234,505
Global - (OSRO/GLO/702/CAN CHILD)	14-Mar-07	13-Apr-10	Canada	7,827,361	5,197,944	8,000	7,920
Regional - (OSRO/RAF/612/USA BABY03)	01-Jun-07	30-Mar-09	USA	225,001	208,471	8,337	3,084
Regional - (OSRO/RAF/722/SWE)	28-Nov-07	31-Dec-09	Sweden	6,738,646	4,657,185	78,400	20,828
Regional - (OSRO/RAF/704/WBK CHILD)	29-Jan-07	30-Jun-09	WBK	2,754,858	2,206,992	5,000	4,650
Regional - (OSRO/RAF/717/USA)	01-Mar-08	31-Mar-10	USA	1,432,000	823,140	16,800	15,680
Regional - (OSRO/INT/604/USA BABY02)	17-Jan-07	30-Apr-14	USA	1,000,000	687,670	67,575	59,015
Total Global/Regional Projects:				34,714,988	27,499,624	536,709	439,265
Grand Total:				35,449,525	28,160,249	1,032,208	881,162

SFERA Projects in Côte d'Ivoire (OSRO/GLO/504/MUL & OSRO/GLO/601/SWE)

At the time of writing this report, about US\$ 900,000 from SFERA funds have been spent in Cote d'Ivoire (over US\$ 340,000 for direct in country activities and over US\$ 530,000 at FAO HQ and Bamako for procurement and the fielding of expert missions). As shown in table 3, the bulk (around US\$ 800,000) was spent in 2006-07 in support of the vaccination campaign.

OSRO/GLO/504/MUL was evaluated in late 2006 as part of the First RTE. The Côte d'Ivoire share was funded out of the French and Norwegian contributions. The project concept note included as the main objective "to limit the spread of avian influenza outbreaks in Abidjan through the strengthening of control measures and provision of equipment and materials for the laboratory and the veterinary services". The project was also expected to support the implementation of the vaccination campaign and the formulation of new project proposals for disease prevention and surveillance. A study, followed by a workshop held jointly with USDA/APHIS, on biosecurity in live bird markets, was also conducted with the involvement of the veterinary services of Abidjan District.

Table 3. Activities funded by SFERA in Côte d'Ivoire in 2006-07

Activity	Budget (US\$)	Description
Emergency fund at the disposal of the FAOR	45 000	Used in the preparatory phase for training and advocacy purposes, and purchase equipments
Procurement from HQ	30 000	Video projector and laptop
Emergency procurement at local level	64 500	Diagnostic kits and other laboratory materials
Emergency procurement at local level	235 500	Laboratory supplies and various equipments for the Vaccination campaign
Purchase of 12.1 million doses of vaccine	412 000	393 851 to the producer (Merial) plus custom taxes
Expert missions	28 874	Fielding 5 short term missions by international consultants and the hiring of a long-term national consultant
Total	815 874	

Source: SFERA report (http://www.fao.org/docs/eims/upload/217280/rep_hpai_sfera_en.pdf)

The First RTE found that the "SFERA funds made available through this project were key to FAO for providing a timely support to the Government and allowed for the refinement of the emergency control plan and resource mobilization" (e.g. formulation of project OSRO/IVC/603/EC). The second RTE team shares this view, but also notes that project funds were subsequently diverted to support the vaccination campaign in view of the lack of earmarked funds for this activity (see discussion below regarding project OSRO/IVC/603/EC)

Funds from project OSRO/GLO/601/SWE were on the other hand used mainly to fill in technical assistance gaps and conduct specific follow-up activities. The evaluation team did not receive a concept note for this project, but was informed that the missions and activities

conducted (e.g. expert missions in 2006¹² and 2007¹³ to support and assess the local laboratory capacity as well as improving biosecurity levels of selected live bird markets in Abidjan) were conducted as a follow-up to the previous SFERA project, and/or complementary to those undertaken by the EC-funded project and other ongoing regional initiatives (such as that on laboratory networks).

The evaluation team visited the laboratory in Bingerville as well as a few live bird markets in Abidjan to observe and gather views from the beneficiaries on the services provided by FAO. The feedback received from the laboratory was very positive, albeit there are still outstanding issues such as a lack of reagents and the need for an incinerator to properly dispose of expired vaccines. These issues have already been highlighted by FAO in 2007 (see Seck and Dauphin report) but remain unresolved. Following the incorrect diagnosis of the suspect H5N1 case, the team believes that there is also a need for refresher training on H5N1 diagnosis and a proficiency test to find out the origin of the mistake and take corrective action. There is also a need to strengthen the surveillance as it is not undertaken on a regular basis (only 400 laboratory analysis performed every year) and is not carried out following a comprehensive risk based sampling (e.g. including the role of wild birds).

Feedback from the visit to the live bird markets and the discussions held with the veterinary services of the Abidjan district was also positive regarding the assistance provided. The team indeed noted a high level of avian influenza awareness among the sellers met and a genuine desire to improve their facilities as a result of the training on biosecurity provided with FAO support. The team was informed that the district veterinary authorities were following up this activity mainly through the provision of disinfectants and periodic visits, but at the same time it was made clear that without any economic incentive to improve their facilities, most sellers will not change some of the riskiest practices still being widely undertaken, such as separation of birds from humans and safe slaughtering of birds.

OSRO/IVC/603/EC “Emergency intervention for the prevention, early detection and fight against avian influenza in Côte d’Ivoire”

This project had a budget of Euro 599,611 (US\$ 734,537). It operated from June 2006 to April 2008. The project was originally intended to focus on preparedness and prevention, strengthening of the laboratory diagnostic capacity, awareness raising and surveillance activities country-wide, but in view of the changing situation (i.e. three official outbreaks between April to November 2006) it was amended to mainly support surveillance and vaccination activities in areas considered to be at high risk of infection (Abidjan and border areas). The project’s refocus was the product of a long negotiation process between the donor, the Government (represented by the Department of Veterinary Services, DSV and the National Laboratory for Agricultural Research, LANADA) and FAO, as the new activities were of a longer term nature (whereas funds were earmarked for emergency work); this is reflected in the successive extensions to the project’s duration (from June 2007 to December 2007 to April 2008).

The project was implemented by FAO’s Emergency Co-ordination Unit (ECU) in Abidjan with technical support and backstopping from ECTAD Bamako and ECTAD HQ. The original project design called for a greater role of the Government in project implementation,

¹² Rapport de mission en Côte d’Ivoire (July-August 2006, B. Seck)

¹³ Evaluation of the LANADA Laboratory in Bingerville, Côte d’Ivoire (March 2007, G. Dauphin and B. Seck)

but following a change in Government priorities (emphasis on toxic waste disposal) emergency funding allocated to DSV and LANADA for avian influenza disappeared¹⁴. ECU had to step in and play a greater implementation role than expected. Funds were also allocated to DSV to carry out surveillance and epidemiological activities; a memorandum of understanding was signed with LANADA to carry out sero-surveillance of vaccination and provide training on the use of rapid test kits and sampling; IPRAVI was hired to undertake awareness raising campaigns on avian influenza and vaccination among its members; and a number of private veterinarians were hired to conduct the vaccination campaign against avian influenza as well as to undertake a geo-referenced survey on bio-security at farm level.

In 2006, the decision to vaccinate was taken jointly by the Government, FAO and private industrial breeders, at a time when the efficacy of vaccination was not well documented, there was no previous experience in large scale vaccination of backyard poultry, and in the context that major outbreaks in and around Abidjan, a big city surrounded by commercial and backyard farms, would have had potential negative health and socio-economic consequences. The vaccine strategy designed by the national CVO and FAO had 3 main pillars:

- Provision of information to poultry breeders and the population at large by the national Veterinary Services, FAO, private veterinarians and IPRAVI.
- Vaccination focused on highly productive zones (South and East) and on borders with Ghana and Burkina Faso, to be carried out by private veterinarians, but monitored and controlled by the Veterinary Services and FAO. Farms with less than 1,000 birds were to be vaccinated free of charge by private veterinarians and their assistants, while larger farms were to be vaccinated at a cost of 10 FCFA per bird.
- Sero-monitoring of vaccinated poultry to be carried out by LANADA.

The evaluation team reviewed the criteria used in designing the above strategy with local stakeholders (DVS, LANADA, IPRAVI and FAO) and found it to be justified on technical grounds. As the campaign progressed, however, certain operational issues that were not adequately taken into account at the design stage ended up affecting the campaign's success. The project terminal report lists some of these issues and the overall results achieved:

- The decision to vaccinate was taken very early in the process (May 2006); SFERA funds were used to purchase 12 millions doses of vaccine H5N9 from Merial with the objective to vaccinate the backyard sector around Abidjan and the entire industrial sector which is concentrated in the South. Then the strategy was changed and extended to backyard poultry along the border with Ghana and Burkina Faso where outbreaks were occurring, and there were private veterinarians available to conduct the campaign.
- Vaccination started in June 2006 and ended in February 2008 at the date of expiry of the vaccine. Around 3 million doses were used, mainly in southern regions, but also in northern and eastern regions in small farms. In the large farms, about 200,000 grand parent and 3.5 million layers were vaccinated, mainly in the South. In total only about 7 million doses were used, with the remainder being kept at LANADA.
- The main constraints affecting the vaccination were the limited human and financial resources available at DSV and LANADA to conduct the campaign. This was then coupled by the lack of collaboration from the industrial breeders who first strongly lobbied for the vaccination, then vaccinated but without feed back and eventually refused

¹⁴ The mission was informed that the national emergency funds that were expected to be used for the campaign were at the last minute allocated to other more pressing activities (such as mobilization of IDPs) by the Ministry of Finance. This resulted in further delays (that are partially responsible for the expiration of the vaccines) and long discussions with the donor to reallocate project funds to conduct the campaign in a shoestring.

to vaccinate¹⁵. FAO had to respond to these difficulties, and eventually had to run the campaign on its own.

- In spite of FAO's efforts, the lack of monitoring by DVS/LANADA and the lack of reliable data on the poultry populations by regions and sub-sectors resulted in an inability to estimate the vaccine coverage and the efficiency of the vaccination. Similarly, the sero-surveillance survey conducted by LANADA, with the objective of determining vaccine efficacy, was incomplete and the partial results obtained could not be interpreted.

The evaluation team, when asked in retrospect “whether it was necessary to vaccinate”, is of the view that in a country where outbreaks appeared around a big city, threatening not just animal but also human health, with the frightening example of the earlier spread of the disease in South East Asia, the proposed pilot vaccination campaign was a challenging, but given the circumstances, reasonable technical option. The main limitation observed by the team was not the “why” but “how” it was done. The project, and the vaccination campaign at large, suffered from a number of problems, and as it is often the case with pilot projects, operational and logistical risks and constraints were underestimated, which overall affected the final outcome.

Positive aspects of the vaccination were indeed mostly indirect, by reassuring consumers and farmers and by getting better data on poultry farms. The project also achieved positive results through its awareness raising activities, which addressed people's fear of eating local chicken and informed around 800,000 poultry breeders on safe poultry practices. DVS and LANADA (particularly LCBV) were also given equipment and training, without which it would have been difficult for them to identify, diagnose and respond in a timely way to disease outbreaks. IPRAVI, the Veterinary Services of Abidjan district, the Veterinary Services of the Army, and a number of private veterinarians were also trained by the project on avian influenza preparedness and, as noted earlier, some of the activities conducted (such as biosecurity in live bird markets) are being followed-up several years after they took place.

At the second question “was it necessary to continue vaccination when it became obvious (March 2007) that there was no operational or logistical support from the Government and the private sector?” the team is of the view that given the substantive investments already made on the vaccine stocks and FAO interest in determining the “effectiveness of vaccination”¹⁶, FAO had no choice but to follow-up and continue supporting the vaccination campaign. After the expiration date of the vaccine stocks in February 2008, with less than one third being used, the evaluation team considers that FAO did well in stopping its support to the campaign.

A major lesson for Côte d'Ivoire, and for other countries still debating whether or not to vaccinate, is that the country, and FAO itself, should not embark on or promote vaccine use in the absence of secure funding and long-term commitment; and perhaps more importantly, before ascertaining local capacities and the epidemiological situation of the disease.

Regional projects:

Côte d'Ivoire has participated in a number of FAO regional/inter-regional initiatives as follows:

¹⁵ These issues were already highlighted by FAO in the Assessment of the Vaccination Strategy (March 2007); including that part of the problem with the private sector was the fact that other countries such as Ghana (near Agnibilekrou) did not allow import of vaccinated chicken, as their HPAI control strategy excluded vaccination.

¹⁶ Report of the First Real Time Evaluation of FAO's work on HPAI (2007)

- TCP/RAF/3016 – Emergency Assistance for Early detection and Prevention of Avian Influenza in Western Africa.
- OSRO/GLO/706/FRA – Appui au système d’alerte précoce mondial et aux initiatives des réseaux régionaux pour la prévention et le contrôle de l’Influenza aviaire en Afrique centrale et de l’ouest.
- OSRO/RAF/612/USA Baby 03 – Support FAO’s Global Avian Influenza and Eradication programme for regional activities in West Africa.
- OSRO/RAF/717/USA – HPAI Early Warning Early Response and Preparedness Strategy Support in Western and Central Africa.
- OSRO/INT/604/USA Baby 02 – Support for FAO/OIE/WHO collaboration on HPAI rapid response and containment.

The team noted that some of these projects (TCP/RAF/3016 and OSRO/RAF/612/USA) have co-funded key backstopping missions (on laboratory capacity) and in-country activities such as the closure workshop of OSRO/IVC/603/EC. Others have funded regional laboratory networks (OSRO/RAF/717/USA) and global exercises such as the INAP. The team considers that most of these regional/global activities have brought an added value to the country, particularly in terms of complementing national activities and allowing some networking with regional peers.

VI. SYNTHESIS AND DISCUSSIONS OF FAO’S CONTRIBUTIONS AND ROLES

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

As noted earlier, numerous projects and experts were mobilized in Côte d’Ivoire to support the country’s response. These were proportionally more than in neighbouring countries (Nigeria and Togo), likely because of the weak veterinary services and laboratory capacity following a civil war, vis-à-vis those of their regional peers.

The mission noted that FAO’s support was discussed, organized and set up in close consultation with the Government. The INAP prepared in late 2008 jointly by the Veterinary Services, FAO, OIE, AU-IBAR, WHO and ALIVE after a large consultation involving many stakeholders including the poultry industry, is an example of this. Today, but particularly following the recent suspect case, HPAI is still considered a priority by the Veterinary Services but certainly more advocacy needs to be done at higher (and different) levels of Government to secure adequate resources for disease prevention and control.

The activities carried out have been largely in line with the FAO/OIE’s global strategy to prevent and respond to the disease. The initial response to the avian influenza outbreaks was a combination of focal culling and compensation, disinfection and closure of markets and eventually vaccination. The priority was to protect human health through animal disease control. At the same time, and with a longer term view, training and information were provided to local livestock actors and to the public at large; capacity building activities were conducted to enhance laboratory diagnosis and the overall capacity of the Veterinary Services as well as to improve bio-security in weak parts of the chain (such as live bird markets). The vaccination campaign was “a gamble” but it was probably a necessary one to make. Also, the emergency response was in general suitable for the 2006-07 scenario, but the lack of long-term funding for avian influenza preparedness and response has affected the effectiveness of activities that by their very nature (e.g. increasing laboratory capacity; conducting disease

surveillance, carrying out studies on the epidemiology of the disease, the role of wild birds and cross-border informal trade in disease introduction, etc.) requires longer term financial and technical support.

The evaluation team noted good linkages and communication between the FAO Representation (particularly its Emergency Coordination Unit) and ECTAD Bamako, which have facilitated the provision of support not just for emergency work but in general for any sort of technical advice on animal health. This has however not been translated into the mobilization of long term funding, in part because of the relatively limited availability of ODA for livestock development activities in Cote d'Ivoire but also due to the limited fundraising capacity available at country or regional level for non-emergency work (when compared with the capacity developed for emergency activities at HQ and at the country office).

Efficiency of FAO's Field Support

FAO responded immediately to the official request for assistance and the first experts were sent very rapidly, even if it was at a difficult time with political and social instability, as recognized by the CVO. During the recent suspect outbreak, the support provided by the FAO expert in Côte d'Ivoire was very timely, with ECTAD Bamako and ECTAD Rome expressing also their readiness to help.

Even though FAO's response was in general adequate in terms of expertise, funds and internal coordination, major handicaps to efficient implementation have been the limited human capacity of the Veterinary Services and the Laboratory as well as the relatively low engagement from the private sector. Considering the billions of FCFA in losses due to the 2006 HPAI crisis, it is difficult to understand why the public veterinary systems remained so under-resourced (see PVS report for further details). By the same token, the relatively minor expenses incurred by FAO and the donors to prevent and control avian influenza outbreaks can be considered to have been cost-effective.

Effectiveness of the national programme

The evaluation team considers that there is not enough evidence to show that the measures taken with FAO support have led to the reduction and eventual disappearance of the disease. Part of this responds to a lack of knowledge and understanding of the drivers behind the wave of infections that affected the country in 2006-07 and the absence of outbreaks in the whole region for the past few months. The team was told by several stakeholders (including the Government, IPRAVI, private sellers and district veterinarians) that the vaccination and other response measures implemented with FAO support (such as improving bio-security in markets around Abidjan and increasing awareness of producers and public at large on health risks associated with avian influenza) have very likely contributed to the absence of new outbreaks in some high risk areas and may have had a positive effect in re-gaining the trust of consumers and producers of poultry. The team was also informed that the communication activities and the surveillance and diagnostic systems set up during the peak of the outbreaks did play a role in raising awareness and temporarily changing some risky practices. These preventive measures have reportedly now virtually collapsed, with the exception of the ongoing biosecurity work in markets, due to lack of funding. Laboratory capacity was also said to be decreasing with no funds allocated to procure HPAI reagents or to undertake refresher training of staff.

In the absence of additional Government funding, at least in the short term, the evaluation team was informed that hopes for re-establishing longer term capacity rest with expectations that donors will contribute to the follow-up of the INAP process. The INAP does indeed propose a number of sensible measures that need to be followed up in order to restore local capacity and increase the understanding of avian influenza dynamics in the country. For example, despite the production of a comprehensive review of the poultry sector, the data collected has not been used in any risk analyses that would in turn had fed into the design of surveillance activities or into the design of a strategic plan for the improvement of the poultry sector. On the other hand, the avian influenza crisis has provided lessons to the Veterinary Services, which can be applied to improve avian influenza control. Nevertheless, to fully take into account such lessons, human and financial resources do and will remain a key constraint.

Effectiveness of global/regional programmes at country level

Several HQ-based mechanisms, such as the Crisis Management Centre (CMC) – Animal Health, OFFLU and GLEWS, have had some involvement in the early response and the design of follow-up interventions. ECTAD, and particularly CMC, staff were heavily involved in the initial response, particularly in the design of the vaccination strategy, and were reportedly available to field a mission, in co-ordination with ECTAD Bamako, to help with the suspect outbreak. GLEWS expertise has apparently not been directly used in Côte d'Ivoire. The team believes that, in co-ordination with ECTAD Bamako, GLEWS could play an important role in understanding HPAI epidemiology and risk factors in the country, but for that it would need reliable poultry disease and production data which at the moment is lacking. OFFLU expertise was reportedly used for laboratory diagnosis but on a small scale. The main source of assistance for this was indeed ECTAD Bamako through the RESOLAB network.

As documented in the regional ECTAD Bamako report, regional networks have played a key role in building capacity and increasing information sharing and transparency in a cost-effective manner. It remains to be seen if countries such as Côte d'Ivoire and regional organizations such as UEMOA are ready to champion and take ownership of the networking concept, particularly in the absence of external funds.

Perhaps the weakest aspect identified by the team has been the limited research and focus on the role of migratory birds in the spread of HPAI in Côte d'Ivoire, particularly since wild birds (mainly sparrow hawks) were considered to be involved in the initial outbreaks in 2006 and were again singled out as a potential source of infection in the suspect H5N1 outbreak of October 2009. A better knowledge and understanding of the role played by wildlife, and also on domestic poultry movement, would have definitely helped the country to review their surveillance and detection mechanism, and would have also allowed this team to provide a better judgment on the appropriateness of the measures taken.

Sustainability and Impact

The evaluation team considers that FAO's work has contributed to the development of individual capacities through the numerous and necessary trainings provided to civil servants, private veterinarians, poultry producers and sellers. The impact on the institutions and organizations is far less evident. In fact, in order to properly document and assess the effects of capacity building and other activities, clear priority areas with milestones to be attained

should be identified before hand in the form of a strategic framework. Such a framework for FAO operations should clearly lay out the organization's contribution to avian influenza preparedness and response in the country within the national agenda. This would also then have to be complemented with an outcome-oriented monitoring system that identifies and reports on the achievements and shortcomings of the institutions building process.

As discussed earlier, activities supported by FAO such as disease surveillance, rapid diagnosis, effective culling and compensation, vaccination, and the bio-security improvements in some live birds markets have probably all played a role in the apparent control of the disease. It remains difficult to say, however, which has been the key factor behind the decrease in the number of outbreaks, and even more difficult to ascertain what would have happened without these measures.

Several reports (INAP, FAO, OIE) do also continue to highlight that the overall capacity of the Government's Veterinary Services remains seriously weak, and while it may be able to respond effectively to minor outbreaks (such as the suspect case witnessed by the mission), it will likely face serious problems to contain multiple outbreaks. To this end the team considers that the OIE's PVS evaluation has made very sensible suggestions for a sustainable strengthening of the DVS, and agrees with their finding that the lack of a strong chain of command system for HPAI control that involves local public and private vets is probably one of the main constraints for an effective response.

Overall, the team considers that the FAO programme has contributed to limiting the spread of the disease, and to a certain extent also the panic associated with it, and by doing so, it has supported the recovery in poultry consumption and production, knowing that poultry is an important source of proteins and income for several thousands of people in the country.

It is worth noting here that although FAO has played, and continues to play, a prominent role, it was not the only international organization involved. Several other donors (USAID/CDC, China, Asian Development Bank, France, etc), UN agencies (UNICEF, UNDP), the Government and the private sector itself were all contributing resources to enable the participation of experts, organizing the emergency response, providing reagents and equipment for the laboratory as well as vaccines and Standard Operation Procedures, etc. The evaluation team was informed that FAO's role of coordinating closely with the Government and partners was key to avoid duplications. Some partners met by the evaluation team went on to say that "no other agency would have been able to do so many things, with such a range of expertise and so rapidly at the country level".

Although there were some early successes during the emergency response, the evidence now suggests that the country is far from being well prepared to control a major wave of HPAI H5N1 outbreaks. There is a long to-do list that includes all aspects of disease preparedness, prevention and control. For a start FAO should continue to follow-up the country situation very closely so that it can strategically support the INAP process and provide immediate assistance should a new case occur. SP-INAP funds have already been provided by AU-IBAR for avian influenza activities, but due to administrative requirements from the Ministry of Finance, the funds cannot be directly accessed by the Veterinary Services. The team believes that without strong FAO advocacy and follow-up with the Government, the private sector and donors to keep their interest on avian influenza and livestock issues high in the agenda, the limited capacity gained will inexorably fade till the next crisis strikes.

VII. CONCLUSIONS AND RECOMMENDATIONS

Côte d'Ivoire's response to avian influenza outbreaks has been a combination of vaccination, focal culling, disinfection and closure of markets, with the active support of FAO and the private sector. FAO played a key role during and since the outbreaks of HPAI in 2006, by mobilising donors, expertise and the international community at large to support the country's prevention and response measures.

Three years after the first outbreaks, a comprehensive strategy (INAP) has just been officially approved by the Government, but the surveillance is still weak or absent; the coverage and efficacy of vaccination could not be evaluated for lack of data, the bio-security has improved in some live bird markets around Abidjan but still is far from being enough, a risk analysis remains to be made on the risk of new introduction for which a number of studies needs to be carried out. A suspect outbreak in Abidjan during our stay showed however that the preparedness of the Veterinary Services was fair but again with close and strong support from FAO.

The team thus concludes that the role of FAO has overall been positive in supporting the country to handle the crisis and helping to set up tools to prevent others and that some negative aspects affecting the effectiveness of the measures taken were beyond its control. Specifically, the evaluation team considers that the immediate emergency type of assistance provided by FAO HQ and Bamako, which was followed up by activities at country level, was very positive. The vaccination campaign had a mixture of positive and negative results but probably played a positive role in stabilizing the poultry market. The current state of affairs looks negative but is mainly a reflection of the limited sustainability of the [mainly] emergency work conducted, the poor capacity of the Government and the lack of long-term sources of funding to support the surveillance and the conduct of studies, most of these factors external to FAO.

The evaluation team considers that there is a major gap between the strong role and assistance provided by FAO and others, particularly during the 2006 outbreak, and the critical present situation of the country, and in this line makes some recommendations, chiefly among them that the INAP, which was prepared following a large consultation involving many stakeholders including the private sector, should now serve as the framework for future assistance on avian influenza. In conducting new country activities, FAO also needs to take into account lessons from past experience such as:

Box 1. Lessons Learned in Côte d'Ivoire

- Advocate for prevention/response measures that are going to be sustainable, avoiding programmes that are largely designed, implemented and monitored by external actors;
- Availability of external funds are key to operationalizing the INAP but yet donors were not consulted throughout the process but only at the end; if more exercises of this nature will be conducted (such as the OIE PVS GAP exercise), FAO should advocate for a better co-ordination, involvement and identification of possible funding sources as early in the process as possible. Nevertheless, the INAP and the PVS are critical tools that could be more used and the gaps observed more taken into consideration before starting a project.
- Veterinary Services governance: nothing (or few things) can be done without a real involvement of DVS all along the process from the National Strategic Plan to the final report but particularly on the operational aspects. Even with a very strong and proactive

support of permanent FAO experts, any activity not totally endorsed by DVS will be only partly implemented and the vaccination is one example.

- There is a need for a national co-ordinator, s/he doesn't necessarily have to be the CVO who is often taken by his other duties, but ideally a senior officer who can work with higher levels of Government;
- Surveillance activities both active and passive are very weak, and have almost vanished together with the disappearance of HPAI. One of the best ways to sustain it is to broaden the spectrum of diseases surveyed to other key transboundary diseases.
- The outbreaks of 2006 were not analysed epidemiologically and specifically the role of wild birds was not clarified despite the fact that the first case was diagnosed on a falcon
- Trace back and analysis of outbreaks is a very difficult but essential exercise to better understand the epidemiology of HPAI and to better control it.
- The communication system can be improved as observed during our stay when the false positive case was officially communicated by the Ministry before confirmation by the Reference Laboratory of Padova.
- Laboratory needs not only equipment, reagents and trainings but also good reactivity and motivation to be really involved from the design of samples to the report of results which was lacking is the monitoring of vaccination. Networking is also a very effective backstopping mean particularly at regional level.
- Vaccination requires a strategy that can be adapted when the circumstances need it, good contracts with private veterinarians but also a confident public-private partnership and mutual trust. In view of the team the first two aspects were met but not the third one. A good monitoring needs a real involvement of DVS and LANADA, the most difficult phase being the final sampling.
- Poultry sector is far better known in Côte d'Ivoire but that knowledge still has to be used and applied at policy and technical level.
- Several poultry associations emerged from the crisis and are very useful to diffuse messages on bio-security and other aspects of disease prevention and control.

Based on the above, the evaluation team recommends the following priority actions for FAO:

- Use the INAP and other related assessments (such as the PVS) to mobilize resources to fill in the gaps already identified with the Ministry of Livestock and Fisheries (particularly DVS and LANADA) in the leading role. In this context, FAO could organize with the Government and donors a round table to continue activities on Preparedness and Control of HPAI and other Transboundary animal diseases with potential impacts on human health and livelihood.
- The experience of the suspect case clearly shows the need for further support to laboratory capacity development and the revision of Standard Operating Procedures for disease investigation which will allow for a better understanding of the origin and extension of outbreaks. This support should include the strengthening of critical areas (e.g. outbreak communication, laboratory diagnosis, etc.) through short term missions coordinated through and with heavy inputs from ECTAD Bamako.
- The studies and research started in the 2006-07 period have not been fully used nor finalized to date; In this regard, FAO should:
 - Promote the linking of the poultry sector review and other socio-economic studies with farm census data already gathered to improve disease risk assessment and surveillance.

- Consider supporting the preparation and implementation of a comprehensive epidemiological survey on virus circulation in wild and domestic birds, in and around Abidjan. This will require FAO to pursue collaborative work with different sections of the Ministry of Livestock and Fisheries and reach out other actors such as the Ministry of Environment for wild life surveillance.
- Complement the poultry sector review with more detailed value chain analyses.

With not the same sense of urgency, but equally important, FAO should support:

- The reinforcement of passive and active surveillance and to enlarge the focus of diseases surveyed to key animal diseases like Newcastle disease, CBPP and Rift Valley Fever.
- The organization of training and forums with the participation of public and private sector to improve collaboration and mutual trust.
- The nomination of a National Coordinator from Higher levels of Government to facilitate work with units outside DLS and LANADA.

Annex 1. List of People Met

Ministry of Livestock and Fisheries (MIPARH in French)

Veterinary Services Department (DSV in French)

Dr Kanga, Director/CVO

Dr Bleu, Coordinator, Emergency HPAI programme

Dr Kallo, Chief, Veterinary Services (Abidjan District)

National Laboratory to Support Agricultural Development (LANADA in French)

Dr Ahova, SDQRE

Dr Dea, SDEM

Dr Konoin, SIDTS

Central Veterinary Laboratory (LCVB in French)

Dr M'Betiegue, head LCVB

Dr Danho, chief, viral diagnosis unit

Dr Toure, chief, parasitological unit

Dr Nisng, chief, research and diagnostic unit

FAO Representation in Côte d'Ivoire

Mrs MN Koyara, FAO representative

Mr Patrick Berner, Coordinator, Emergency Unit (UCU)

Dr Monique Nguessan, Consultant, UCU

FAO Donors and Partners

Mr Gounel, Counsellor for cooperation, French Embassy

Dr N Guetta, Director, PROVETO

Mr Ackah, President, IPRAVI

Mr Yelassigne, Economist, IPRAVI

Mr Dihie, President, UACI

Mr Aboubakar, Monitoring Committee, UACI

Annex 2. Documentation Reviewed

Government Documents:

Côte d'Ivoire's National Plan to prevent and fight Avian Influenza (March 2006)
Côte d'Ivoire's Emergency Work Plan against Avian influenza (June-November 2006)
Côte d'Ivoire's Integrated National Action Programme for the prevention and control of human and avian influenza¹⁷ (2008)
MIPARH (2009) Communiqué du Presse No. 1 du 13 Octobre 2009.
MIPARH (2007) Annuaire provisoire de la Direction de la Programmation et de la Planification
MIPARH (Mars 2007) Impact socio-economique de l'épizootie de grippe aviaire sur la filière avicole en Côte d'Ivoire in 2006

FAO Documents and other reports:

FAO's Quantitative and qualitative technical assessment of Côte d'Ivoire's veterinary services capacity (2009)
FAO's Côte d'Ivoire Poultry Sector Review (2008)
FAO/OIE HPAI Global Strategy (2008, 2007 and 2005)
FAO's HPAI Global Programme (February 2008)
FAO Global Programme Progress Report #1 (2007) and # 2 (2008)
First Real Time Evaluation of FAO's Work on HPAI (2007)
Management Response (2007) and Follow-up Report to the First RTE (2009)
Report Exercise on Highly Pathogenic Avian Influenza: FAO contribution to the UNSIC report (2008)
OIE PVS report¹⁸ (2007)
E. Couacy-Hymann¹ et al (December 2007) The First Specific Detection of a Highly Pathogenic Avian Influenza Virus (H5N1) in Côte d'Ivoire,

Plus over thirty reports (including back to office, consultancies, scientific articles, project documents, workshops and terminal/final/progress reports) given to the team in Côte d'Ivoire related to FAO's HPAI activities in the country from 2006-09.

¹⁷ Albeit the INAP was formulated with support from FAO/OIE/AU-IBAR/WHO/World Bank, the Government has full ownership of the report.

¹⁸ Same as above.