

DIRECTION GÉNÉRALE DE LA COOPÉRATION INTERNATIONALE ET DU DÉVELOPPEMENT

**TACKLING AVIAN INFLUENZA
AND PREPARING FOR
AN INFLUENZA PANDEMIC
WHAT IS FRANCE DOING?**

**GLOBAL PUBLIC GOODS AND COOPERATION
FOR DEVELOPMENT**



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Tackling avian influenza and preparing for an influenza pandemic

What is France doing?

Global public goods and cooperation for development

How is the international community responding?

The international mobilisation against avian influenza is an historic first for global action in preparing for a potential pandemic of possible animal virus origin.

The international mobilisation vis-à-vis the developing countries is justified on two grounds: solidarity, in the first place, and secondly in order to tackle at source a planetary risk that could represent a considerable cost for the developed economies if it is not throttled. In addition there are considerable industrial issues at stake in terms of the production of avian and human vaccines, and this concerns both industrialised and emerging countries alike-as evidenced by the uneasy debates surrounding the transparency of knowledge concerning the H5N1 virus strains at the source of the animal outbreaks and human cases, and exchanges between them.

What is France doing?

Between 2006 and 2009, France is acting across a range of registers entailing a total financial outlay of €39.5 million. Ten experts have been assigned to OIE, FAO and WHO. Partnerships with CIRAD, Institut Pasteur and the French Institute for Development Research (IRD) have been reinforced, with the diagnostic and research centres in Africa and Southeast Asia, and the AFD's project-assistance have been mobilised in order to strengthen health systems' surveillance and rapid response capabilities. Support has been given to emergency missions.

In addition, technical assistants and researchers in the various institutes have been contributing since 2005 to work on preparing veterinary authorities and laboratories, as well as performing a wide range of research. Finally, French experts and veterinary departments have carried out short-term support missions.

France has opted to channel a large proportion of its contribution via the international organisations, in order to avoid the proliferation of actors and interlocutors for the infected and high risk developing countries. Evidence of the validity of this approach is provided by the positive assessment of the utilisation by FAO of the grants made to it by France, totalling €5.4 million. The effectiveness of this approach has been borne in a wide variety of situations, including the very rapid mobilisation on behalf of Côte d'Ivoire after its contamination; the support given to a large number of infected or exposed countries in order to train their personnel in all the requisite competences-in epidemiology, in laboratories, communication, and in framing integrated national plans.

Moreover, the research institutes present in the developing countries affected, i.e. the Pasteur Institutes, CIRAD and IRD, backed up by the entire French research system, all play a very active role in the international mobilisation and in support of the countries concerned.

France's financial commitments (December 2007).

OIE	Support given to the organisation's regional representative bureaus (including the Bamako bureau).	€2.1M
FAO	Active search for the virus in bird fauna on the African continent, regional African technical cooperation programmes, and strengthening the joint OIE-FAO programme for research into the virus.	€5.4M
WHO	Strengthening the Epidemiological Surveillance Centre in Lyon.	€3M
3-year funding for new positions of technical assistant for FAO, OIE and WHO.		€3.78M
Strengthening the activities of the Pasteur Institutes in Asia (€9.8M) and Africa (€2.7M): grant provided by the French Development Agency (AFD) and the French Ministry of Health.		€12.5M
Strengthening the diagnostic capabilities of African laboratories in order to control avian diseases, co-financed by the French Agricultural Research Centre for International Development (CIRAD), the Languedoc Roussillon Region, the French Food Safety Agency (AFSSA), and the French Ministry of Foreign Affairs (for €600,000).		€0.78M
French Ministry of Foreign Affairs Priority Solidarity Fund Project "GRIPAVI, Ecology and epidemiology of avian influenza in developing countries" implemented by CIRAD in association with AFSSA, French National Institute for Agricultural Research (INRA) and French National Forests and Wildlife Office (ONCFS), for a 3-year period (2007-2010).		€3.6M
CIRAD and INRA research programme on the genetic resistance and molecular virology of the avian influenza virus, financed by the French National Agency for Research (ANR).		€1.5M
French researchers assigned to these programmes by CIRAD and the French Ministry of Agriculture.		€3.96M
Miscellaneous contributions (equipment, including protective equipment).		€0,3M
Federation of Development Research Institutes (AIRD): research programme on the conditions determining the emergence of influenza viruses and their consequences for human and animal populations.		€2M
ANR and CIRAD contributions to the GENAVIFLU, ECOFLU and RIVERS projects.		€1.08M
Total : €39.5M (+/- USD 55M).		
<i>Slightly over half of the amounts committed had been spent as of September 2007</i>		

The lessons of an international mobilisation

A number of lessons can be drawn from the experience gained in tackling avian influenza.

- First, the international community displayed effective foresight in tackling the H5N1 virus, in the face of predictions of an influenza pandemic. This should serve as a model for other emerging or re-emerging communicable diseases between animals and humans.

The H5N1 virus is unlikely to disappear in the foreseeable future. The history of influenza is not the same as that of SARS. Even in countries that have contained the infection, a resurgence is always possible,

and they must deal with the persistence of a less high-profile risk in media terms. It is vital to strengthen veterinary and human health systems' surveillance capabilities over the long term.

- Secondly, cooperation between the international agencies, between States, and within each country between the different actors concerned, needs to be placed on an institutional basis. Conflicting areas of competence between organisations, divergent views depending on their remit, and competition for limited resources are genuine issues. There is competition in the race to develop and produce new animal and human vaccines. Over and beyond statements of intent, these rivalries imply a need for governance mechanisms at the global level to ensure information sharing, at the regional level to pool expertise, and at the national level to achieve synergies between the different players.
- Finally, avian influenza shows that international action to produce a global public good in the geography of development needs to mobilise and combine the efforts of specialists from the North with those of national and international development actors. Generally speaking, the only way to respond to the demand for expertise expressed by the international organisations in answer to the needs of the developing countries is by mobilising the human resources of the developed countries' health and veterinary systems—even though these are already heavily involved in implementing emergency response and prevention plans in their own countries. When it has been possible to arrange short missions by developed countries' experts, it has been found decisive for them to be able to hand over to experts on the spot. It is indispensable to strengthen the capabilities of the developing countries' health systems. The French development research institutes, Institut Pasteur, CIRAD and IRD, are a good illustration of the need to strengthen the linkage between global scientific excellence and the developing countries' diagnostic and research capabilities.

The international institutions main reference documents (OIE, FAO, WHO):

1. The global strategy for prevention and control of H5N1 highly pathogenic avian influenza, third revision of the Global Strategy March 2007 (OIE and FAO in close collaboration with WHO): <http://www.fao.org/>
2. Vaccination: a tool for the control of avian influenza, Verona (Italy), 20-22 March 2007. OIE/FAO/IZSVe Scientific Conference, co-organised and supported by European Union: <http://www.oie.int/>
3. Ensuring Good Governance to Address Emerging and Re-emerging Animal Disease Threats: Supporting the Veterinary Service of Developing Countries to Meet International Standards on Quality (OIE and FAO, September 2007): <http://www.oie.int/>
4. Enhancing Control of Highly Pathogenic Avian Influenza in Developing Countries through Compensation ; Issues and Good Practice (2006, The world bank, FAO, IFPRI, OIE): <http://siteresources.worldbank.org/>
5. Prevention and control of avian influenza and emergency action plans for dealing with a human influenza pandemic in Africa (December 2006, AU-IBRA, FAO, OIE, WHO, UNICEF): <http://alive-online.org/>





French Development Agency
Agence Française de Développement (AFD)

The AFD finances projects relating to epidemiological surveillance, laboratories' diagnostic capacity building and the coordination of responses in partnership with WHO. These projects target not only avian influenza but also the other emerging infectious risks, and are contributing to the implementation of the new International Health Regulations (IHR) (2005), which came into force in June 2007:

- For Asia, the AFD has made a €5.9 million grant to the Institut Pasteur in Paris to lead a regional epidemiological surveillance project concerning China, Vietnam, Cambodia and Laos. This project is being carried out by these countries' national laboratories, which are members of the International Network of Pasteur Institutes and recognised as centres for reference on avian influenza. It is contributing to the strengthening of detection and diagnosis of human cases, and providing regional-level support for knowledge sharing between scientists and the coordination of responses in collaboration with WHO. Moreover, the AFD has granted a soft loan to the Institut Pasteur of Cambodia for the financing of a P3 laboratory;

- In the Indian Ocean, the AFD plans to make a €6 million grant to the Indian Ocean Commission, whose members are Comoros, Madagascar, France (Reunion Is.), Mauritius and the Seychelles. This project is helping to establish a regional epidemic surveillance and investigation network in the Western Indian Ocean region, and to strengthen the capabilities of OIC Member States other than France.

In 2008, the AFD plans to study the possibility of financing similar projects in the Caribbean region and West Africa.

Moreover, the AFD is aware of the need to strengthen global capacity to produce a vaccine against a pandemic influenza strain, and is closely following the WHO initiative for vaccine research (IVR). Within this framework the Agency will be considering how to contribute to technology transfers to vaccine manufacturers in the developing countries.

Website: <http://www.afd.fr/>

Examples of activities to which French residential bilateral technical assistance has contributed in Guinea, Madagascar, Chad, Senegal and Cameroon:

- evaluation of the risk of introduction of avian influenza,
- drafting an integrated national action plan, a surveillance protocol, a guide to how to respond in case of suspicion, a handbook on how to run an awareness-building meeting, and a communication plan,
- coordination of the prevention and rapid response system,
- a simulation exercise,
- information and training workshops on this disease and on the principles of epidemiosurveillance,
- selecting observation sites for wild birds,
- formulating applications for funding.

An international mobilisation to reinforce response and preparation capabilities in Africa.

As early as the Geneva conference at the end of 2005, even though the continent of Africa was not yet affected, France was speaking of the need to take into account the particular characteristics of Africa: as a migratory crossroads for many bird species; the shortcomings of its veterinary and healthcare systems; the importance of family poultry breeding, and the cohabitation between people and poultry. The scale of trade in chicks with contaminated regions of the world was underestimated at the time. The appearance of the disease in Nigeria in January 2006, and then in Egypt one month later, and its progress in sub-Saharan Africa, has confirmed this view. Even if the number of human cases is still very limited, the establishment of the virus in domestic poultry and bird wildlife in this region is a matter for concern.

The African Livestock platform (Alive, <http://alive-online.org>), bringing together international organisations (FAO and OIE), aid donors, including France, and African organisations (African Development Bank, African Union, and the Regional Economic Communities), was quick to provide support to the Inter-African Bureau for Animal Resources (IBAR) for the purpose of formulating a continental strategy, in conjunction with the partners of WHO and UNICEF. This strategy is based first of all on the preparation and implementation in all countries throughout the continent of national inter-ministerial plans integrating the animal health, human health and communications dimensions. From a veterinary standpoint, the experience and expertise gained in many countries in dealing with rinderpest and the programmes to support the poultry industry have in many cases served as a very useful point of departure. Regional animal health centres have been set up between the competent international organisations (OIE, FAO and IBAR), which are supplying States with the necessary expertise. To facilitate their funding, national plans may be reviewed by these organisations, the review serving as a quality assurance for aid donors such as the World Bank and the European Commission.

In the African context, avian influenza can easily be confused with Newcastle disease, which is very widespread, and to which breeders are accustomed. This epidemiological situation has three implications, (i) reports of outbreaks by breeders, especially family breeders, are incomplete; (ii) there is a need to strengthen the diagnostic capabilities for both these diseases of veterinary laboratories in a position to perform a differential diagnostic; (iii) there is a need for a combined vaccine against avian influenza and Newcastle disease since, once vaccination against avian influenza is adopted as a method for fighting it, the possibility of outbreaks of Newcastle disease in vaccinated animals would have a deterrent effect. Moreover, the propensity of breeders to report outbreaks and present suspect birds to the authorities depends on governments' capacity to set up and fund financial compensation mechanisms to deal with the need to slaughter birds on health grounds.

Site web : <http://alive-online.org>





Agricultural Research Centre for International Development
Centre International de Recherche Agronomique pour le Développement

Building African laboratories' diagnostic capacity to control avian epizootics

This project, with a total budget of €1 million, funded by the French Ministry of Foreign and European Affairs, CIRAD and the Languedoc-Roussillon Region has three aims:

- Organise the rapid transfer of techniques in molecular diagnosis of avian influenza (AI) and differential diagnosis with regard to Newcastle disease (ND).
- Set up an initial series of tests to control quality in control plans (infected countries) or active surveillance (disease-free or infected countries) in order to develop and maintain the technical skills of the personnel trained.
- Implement pilot programmes to monitor wild birds and analyse risk in watch areas.

Some 50 participants were trained in 2007, amounting to a total of 15 weeks' of training, either individual or in workshops at CIRAD, in Ethiopia and in Egypt (molecular diagnosis and early diagnosis to differentiate avian influenza from Newcastle disease and to determine the sub-type and viral pathotype). A training CD has been developed.

Eight partners are involved: Mali (LCV), Ethiopia (NAHRC), Senegal (EISMV), Cameroon (LANAVET), Burkina Faso (CIRDES), Madagascar (FOFIFA), Algeria (IMV) and Zimbabwe. The project provides funding for 500 detection and molecular typing tests for each partner.

Three pilot watch areas have been identified: the lower Niger delta in Mali, wet zones and varied farming systems in Zimbabwe and traditional poultry markets in the Oromia region of Ethiopia.

Website: <http://avian-influenza.cirad.fr/>

Contact: dominique.martinez@cirad.fr



Ecology and epidemiology of avian influenza in developing countries (GRIPAVI).

Funded by the French Ministry of Foreign and European Affairs (€3.6 million over 3 years)

The GRIPAVI project involves some 20 partner scientific institutions in France and the South. It will study aspects of the disease's epidemiology on sites that are particularly suitable for gathering information and producing models that can be extrapolated to Africa as a whole.

The project will fund a "meta-watch" of avian influenza and Newcastle disease, centred on the Arguin Bank in Mauritania, the lower Niger delta in Mali, the Rift Valley in Ethiopia, the region around Lake Chivero and Lake Manyame in Zimbabwe, the central highlands of Madagascar, and the Red River and Mekong River deltas in Vietnam.

The project breaks down into four components:

1. Study the ecology of the influenza and Newcastle disease viruses (ornithological observation, ecology of wild and domestic bird communities and the associated virus communities).
2. Analyse and model the data from the previous component and observation of trade flows to produce models analysing the risks of viral occurrence and dissemination.
3. Enhance the information and communication system (integrate the data and results into international databases and transfer the findings to various target audiences: policymakers, scientists, technicians and farmers).
4. Build skills through training workshops, individual training, PhD and Masters degrees in both South and North.

GRIPAVI contributes to global research and information. Close operational ties exist, including on the steering committee, with international organisations such as OIE, FAO, World Bank and EC, and with other research projects funded internationally or bilaterally (by France or other countries).

Website: <http://avian-influenza.cirad.fr/>

Contact: jean-francois.renard@cirad.fr



Photos of the outreach brochures.

*Distribution: 130,000 copies,
80,000 in French
and 50,000 in English.*





The Institut Pasteur is a private law foundation created in 1887 for the purpose of contributing to the prevention and treatment of diseases, primarily infectious ones, and to do so chiefly through research, as well as through teaching and public health programmes.

1. A number of Institut Pasteur's fundamental research units study the determinants of the "pandemic potential" of viruses: the vectors and transformations of viruses and their interactions with the human host. Other teams are working on the evaluation of new candidate vaccines.

2. The *Cellule d'Intervention Biologique d'Urgence* (Emergency biological action unit) can act at the request of the national and international health authorities (Ministry of Health and WHO) to conduct investigations in the event of suspected new cases.

3. The Institut Pasteur supports and acts as an umbrella for research, surveillance and alert programmes conducted by the International Network of Pasteur Institutes, comprising 30 institutes in all regions of the world.

3.1 The RESPARI (Research-driven RESPonse to Acute Respiratory Infections-www.respari.org) programme, which is a large-scale initiative permitting cooperation on respiratory infections between Pasteur Institutes in the Asia-Pacific region.

3.2 The SISEA (*Amélioration de la détection des pandémies en Asie du Sud-Est*-Improving the detection of pandemics in Southeast Asia) programme, financed by the French Development Agency (AFD), is harnessing the Pasteur Institutes of Southeast Asia around three goals: (a) improving the diagnostic capabilities of national reference laboratories and networking them; (b) strengthening national epidemiological surveillance systems, and (c) strengthening national and regional coordination with, notably, the World Health Organisation (WHO), the World Organisation for Animal Health (OIE) and the FAO.

3.3 In Africa, a programme funded notably by the French Ministries of Health and of Foreign and European Affairs is working to improve the capabilities of Pasteur Institutes (Cote d'Ivoire, Senegal, Cameroon, Niger, Madagascar and the Central African Republic). In terms of training and equipment, including the construction of new high security laboratories (BSL3 or P3), which play an essential role in diagnosis and sounding the alert in potentially epidemic situations.

Website: <http://www.pasteur.fr/>

Contact: adesgrav@pasteur.fr





Agricultural Scientists and Veterinarians Without Borders *Agronomes et vétérinaires sans frontières*

AVSF is an international development NGO that works in the field of rural development by mobilising skills in the areas of crop growing, livestock breeding and animal health.

AVSF has sound knowledge of family agriculture and national veterinary services in developing countries.

AVSF sees avian influenza and drought as indicative of agriculture services' low capacity to manage risk. The key to controlling avian influenza is to strengthen animal health services by coordinating the three actors in the system: public veterinary services, private practitioners (veterinarians and technicians) and livestock breeders.

Local animal health services (village auxiliary veterinarians), assisted by private veterinarians, in turn supported by state services, enable significant productivity gains in farming and control of epizootic risks.

Website: <http://www.avsf.org/>

Contact: s.benzerrak@avsf.org

AVSF's work in Vietnam:

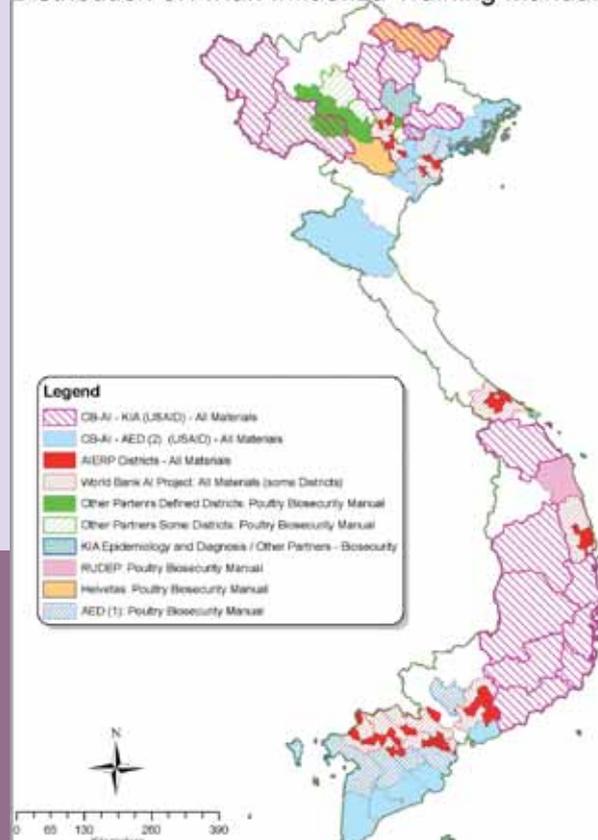
- Building the capacity of veterinary services in more than 30 Vietnamese provinces by strengthening collaboration between public veterinary services and private veterinary and paraveterinary practitioners.

- Drafting technical manuals for veterinary practitioners (including a guide on biosafety for small-scale village poultry farmers and a diagnostic and epidemiological manual distributed in Vietnam and Cambodia).

- Organising training modules for livestock farmers.

- Conducting studies on the poultry industry, on traditional duck farming in North Vietnam and on the socio-economic impact of cross-border animal diseases (Vietnam, Cambodia and Laos).

Distribution of Avian Influenza Training Manuals





To coordinate the supply of veterinary expertise internationally and facilitate the mobilisation of available human resources, France established the public/private partnership FRANCE VETERINAIRE INTERNATIONAL (FVI), representing the various public and private components of the industry (institutions, practitioners, test laboratories, training and research institutes, NGOs, etc.). With regard to avian influenza, FVI was called on in 2006 to compile and update the list of French experts in the various fields concerned (key experts, disease control plans, epidemiology, diagnostics, virology and ornithology), to maintain a watch on multilateral cooperation projects, and to produce an educational CD-ROM containing various practical and regulatory information for broad distribution.

Website: <http://www.france-vet-international.org>

Contact: fvi@agriculture.gouv.fr





Inter-State School of Veterinary Science and Medicine in Dakar
L'École Inter-États des Sciences et Médecine Vétérinaires de Dakar
(EISMV)

EISMV has 13 member states from West and Central Africa and a student body of more than 300. The school is supported by the French Ministry of Foreign and European Affairs, which provides three technical assistants and funding of €1 million to improve the qualifications of teaching staff.

1. Since November 2005, a weekly electronic newsletter has been emailed to 250 actors involved in combating avian influenza in African countries. The 100th issue was sent out on 15 October 2007.

2. An educational awareness-raising kit has been produced for technicians and outreach workers who run meetings on avian influenza with local people. The kit contains the following items: meeting guide, FAQ, disease monograph, poster, illustrated brochures for audiences with limited literacy skills, script for four sketches with audio and video recordings, conference slide show, illustrated training manual for livestock farmers trained in animal health (livestock auxiliaries). The items in the kit are in hardcopy and on CD-ROM and DVD. Almost 3,000 kits have been sent to some 20 countries. The French Ministry of Foreign and European Affairs has provided €25,000 for the production of the first 1,000 kits.

3. A Masters in epidemiosurveillance and health crisis management will soon be offered at EISMV.

Website: <http://www.eismv.refer.sn/>

Contact: mariamd@refer.sn





AGENCE FRANÇAISE
DE SÉCURITÉ SANITAIRE
DES ALIMENTS

The French Food Safety Agency (Afssa) has been the French national avian influenza reference laboratory since 1992. The Agency harnesses national and international competencies. In France, Afssa expresses scientific opinion at the request of the government. At the international level, the Agency acts at the request of the European Commission, the OIE, FAO and EFSA to assist analysing risks and advise on the management of crises. Afssa is member of the OFFLU (OIE/FAO) network and the European Pharmacopeia.

With regard to research and development, Afssa is involved in five European research programmes, namely: AVIFLU: “Pathogenesis and improved diagnosis and control of avian influenza infections”, FLUAID: “Generation of information and tools to support the management of the avian influenza crisis in poultry”, NOVADUCK: new duck vaccines, FLUPATH: ecology and pathogenesis of influenza virus infections, and FLUTEST: new diagnostic tests and early detection systems.

Afssa is a major contributor to the European EPIZONE (Epizootic Disease Diagnosis and Control) Network of Excellence and works with French research bodies such as Institut Pasteur, ONCFS, CIRAD and INRA, for example within the framework of the GRIPAVI project and the work being performed by the AIRD (the “therapeutic and vaccine strategies” research line) involving partners in the developing countries.

The above activities are pursuing a wide range of objectives:

- Developing methodologies with a view to improving diagnostic capabilities
- Antigenic and genetic characterisation of isolates comprising phylogenetic analysis
- Developing new avian vaccines (plasmidic DNA, viral pseudoparticles, viral vectors), and developing experimental models of viral infection
- Studying host-pathogen interactions, notably duck-H5N1
- Studying the possibilities of vertical transmission of H5 viruses in ducks and risks of contamination in poultry farms
- Studying the zoonotic potential of avian influenza viruses

In the field of training, Afssa notably provides facilities for doctoral students and organises training courses for foreign veterinary surgeons and technicians (Ukraine, Morocco, Azerbaijan and Tunisia).

Website: <http://www.afssa.fr>

Contact: v.jestin@afssa.fr



Federation of Development Research Institutes

Agence Inter-établissements de Recherche pour le Développement (AIRD).

AIRD federates French research institutes (universities, CIRAD, CNRS, INSERM, Institut Pasteur, IRD) to give impetus to France's development research effort.

A research programme on the conditions of emergence of the avian influenza virus and the impact on human and animal populations was prepared at a seminar attended by 50 scientists from France and the South in October 2006.

Three thematic areas were chosen:

- **Social and human sciences:** public policies, environmental histories, industry practice and behaviour of actors in response to avian influenza risk: China, Egypt, France, UK, India, Niger, Thailand, Vietnam (contact: yannick.jaffre@univmed.fr).

- **Environment and transmission:** evolutionary ecology and modelling the circulation of avian influenza viruses in the environment: Algeria, Tunisia, Senegal, Thailand (contact: Gauthier-Clerc@tourduvalat.org).

- **Therapeutic and vaccination strategies:** New therapeutic and vaccination strategies for the avian influenza viruses: Chile, Turkey, Cameroon, Côte d'Ivoire (contact: svdwerf@pasteur.fr and lina@univ-lyon1.fr)

CNRS, INSERM, Institut Pasteur, CIRAD and IRD support this programme, which has been endowed to date with €2 million for a three-year period (2007-2010).

Website: <http://www.aird.fr>



CaribVET

The CaribVET network links 20 countries and territories in the Caribbean region with the overarching goal of coordinating actions on surveillance and control of animal diseases in the region.

The network is managed by a steering committee, a coordination unit and working groups comprising the heads of the veterinary services, regional and international organisations and scientists from the region. CaribVET is supported by the French Ministry of Foreign and European Affairs and CIRAD Guadeloupe.

1. Avian influenza surveillance protocol and harmonised regional performance indicators



CaribVET set up a working group consisting of some 10 people. A collaborative working platform was organised on the Internet via a participatory website and a mailing list to which some 30 people contributed.

A harmonised regional surveillance protocol was designed (downloadable from CaribVET's website). The protocol is divided into ten sections that set out in detail all the organisational and practical stages in surveillance of avian influenza in a disease-free country. The protocol includes a list of 21 performance indicators designed to help countries evaluate and monitor their networks.

The protocol was approved by the heads of all the veterinary services in the region at the steering committee meeting in May 2007. The veterinary services can rely on CaribVET's group of expert epidemiologists trained in evaluating networks and setting up disease surveillance protocols.

2. Support for laboratories in the Caribbean region for diagnosis by PCR

CIRAD Guadeloupe set up molecular diagnosis of avian influenza in coordination with Central Veterinary Laboratory in Weybridge (UK). It is currently the only veterinary laboratory in the Caribbean that can diagnose the disease by PCR, although many countries in the region (Barbados, Cuba, Trinidad & Tobago, Jamaica, Dominica and Belize) have the necessary equipment.

In order to transfer the technology, a technical workshop was organised to give each of these candidate countries an opportunity to practise RNA extraction, conventional PCR (M gene, H5) and real-time PCR (M gene, H5).

A regional diagnostics network is in the final stage of organisation.

3. Emergency preparedness

CaribVET gave a regional dimension to an exercise in simulation of an outbreak of avian influenza, held in the Dominican Republic in October 2006, by enabling the veterinary services of Cuba and Haiti to participate.

CIRAD and CaribVET teamed up with the Pan American Health Organization (PAHO), FAO and the United States Department of Agriculture to organise and fund the workshop on IATA procedures held in Trinidad & Tobago in October 2006. The workshop trained laboratory staff from the region in IATA rules on air shipment of samples and trained field veterinarians in avian influenza surveillance techniques. That contribution enabled the countries of the Greater Antilles, Cuba, Haiti and the Dominican Republic to be involved in the event.

Website: www.caribvet.net

Contact: caribinfo@caribvet.net



Cette publication présente les appuis de la France en matière de lutte internationale contre la grippe aviaire.

De 2006 à 2009, l'action de la France dans ce secteur représente un effort financier de 39,5 millions d'euros. C'est ainsi que :

- dix experts assistants techniques ont été affectés à l'Organisation mondiale de la santé animale (OIE), à l'Organisation des Nations unies pour l'alimentation et l'agriculture (FAO) et à l'Organisation mondiale de la santé (OMS).
- des partenariats entre le Centre de coopération internationale en recherche agronomique pour le développement (CIRAD), l'Institut Pasteur et l'Institut de recherche pour le développement (IRD) ont été renforcés avec les centres de diagnostic et de recherche d'Afrique et d'Asie du Sud-Est.
- des aides-projets de l'Agence française de développement (AFD) ont été mobilisées pour le renforcement des systèmes de santé en matière de surveillance et de réaction rapide.
- des actions d'urgence sont mises en oeuvre pour la détection précoce de la maladie et sa maîtrise.
- un appui à la formulation de plans nationaux intégrés en santé animale, santé humaine et communication a été fourni par les assistants techniques résidentiels ou les chercheurs qui, depuis 2005, contribuent à la préparation et au renforcement des administrations vétérinaires et des laboratoires des pays concernés.

Ce document de synthèse et d'information vise à favoriser les synergies et la complémentarité des actions entre les acteurs français et internationaux actifs dans ce domaine.