

**Avian and Human Pandemic  
Influenza: Addressing the Need  
for Integration between Health and  
Agriculture in the Preparedness  
Plans in Latin America**

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## Acronyms

BSE	Bovine Spongiform Encephalopathy
CDC	United States Centers for Disease Control
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GF TADs	Global Framework for the Progressive Control of Transboundary Diseases
GLEWS	Global Early Warning and Reponse System
GNI	Gross National Income
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
IDB	Inter American Development Bank
IICA	Instituto Interamericano de Cooperación para la Agricultura (Inter-American Institute for Collaboration on Agriculture)
INCAP	Instituto de Nutrición de Centroamérica y Panamá (Central America and Panama Nutrition Institute)
OIE	World Organization for Animal Health
OIRSA	Organismo Internacional Regional de Sanidad Agropecuaria (International Regional Organization for Agricultural Health)
PAHO	Pan American Health Organization
PANAFTOSA	Centro Panamericano de fiebre Aftosa
RIMSA	Reunión Interamericana en Salud y Agricultura a Nivel Ministerial (Inter-American Meeting, at the Ministerial Level, on Health and Agriculture)
SARS	Severe Acute Respiratory Syndrome
TB	Tuberculosis
UBA	União Brasileira dos Avicultores (Brazilian Poultry Farming Union)
UN	United Nations
UNDP	United Nations Development Programme
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
vCJD	Variant Creutzfeldt-Jakob Disease
WFP	World Food Programme
WHO	World Health Organization



# I. Executive Summary

## Objective

The objective of this study is to highlight the importance of and evaluate the integration between the health and agriculture sectors in preparedness plans in Latin American countries, and provide recommendations on how to fill in the potential gaps.

## The link between animal and human health

The emergence of pathogenic infectious diseases in the past twenty years, and recent outbreaks of zoonotic diseases have increasingly drawn public attention to the fact that diseases move back and forth among species. Of the 1,415 known human pathogens, 61% are zoonotic. Among other things, it is estimated that the increase of emerging and reemerging livestock disease outbreaks around the world since the mid 1990s has cost the world \$80 billions.

## Avian Influenza, the current threat

As of 29 November 2006, the avian H5N1 strain of the influenza virus is confirmed to have caused 258 cases and 154 deaths in humans. While the H5N1 virus has not yet been detected in the Americas, it may only be a question of time. Because of the health risks it represents and the economic burden it may carry with it, it is important to prevent this pandemic.

## Actors in the preparedness to a possible pandemic, with emphasis on health and agriculture

Avian Influenza has been propelled at the forefront of the global health agenda, and many actors from the sectors of human and animal health and agriculture at different levels are working to prevent its spread and appearance in humans and a potential economic impact around the World. These actors are presented in this section.

## Importance of intersectoral action

This section of the document reviews the importance of intersectoral action in preventing and controlling zoonoses and Avian Influenza in particular, within areas that were defined as key to the interface between human and animal health: **surveillance that is integrated across sectors**, **adequate biosecurity** (in this case, ensuring that animals and human food supplies linked to them are protected), **adequate biosafety** (in this case, ensuring the protection of people in contact with the virus), and **adequate public information**.

## **Evaluation of the integration between health and agriculture preparedness plans in Latin America**

This evaluation is carried out by subregion and relies on a selection of questions from a checklist elaborated by PAHO's Veterinary Public Health Unit based on WHO, FAO and OIE documents. Data were gathered during a series of workshops organized by PAHO and some partners in 2006, during which countries responded to questions relevant to intersectoral action against the spread of Avian Influenza A/(H5N1), within the broader themes of the interface defined above. A first part of the evaluation consisted in contrasting the calculated percentage of integration with subregional demographic, socio-economic data related to aviculture, preparedness in the agriculture sector and health data in order to obtain a general view of the situation. The second part of the evaluation looks in detail at the responses to the questions in the checklist and what they mean in terms of more precise needs for more integration.

### **Main conclusions from the analysis**

- The Southern Cone, with major poultry-related industries (meat and eggs), shows high levels of integration of the health and agriculture sectors as represented by the series of questions used for this evaluation (70%).
- Central America shows the least integration and is the subregion with the most rural population, least income, most population under the poverty line, and highest percentage of workers in the agricultural sector. This suggests that the population of Central America could be strongly affected in case of an outbreak of Avian Influenza A/(H5N1) in animals.
- Central America and the Latin Caribbean are the subregions most dependent on poultry meat as a source of animal protein, yet show the lowest levels of poultry meat consumed per capita, almost half of the Southern Cone intake. This could be related to the higher levels of poverty, and suggests a potential problem of food security if an outbreak of Avian Influenza A/(H5N1) or another highly pathogenic avian influenza virus were to create poultry meat shortages there.
- Central America, with the lowest level of calculated integration health/agriculture, also presents the lowest number of physicians per 10,000 population and the lowest hospital beds per 1,000 population, followed by the Andean Area with the second lowest level of integration and health care indicators. The Southern Cone, with the highest level of integration health/agriculture, shows the highest levels of the indicators of access to care presented here. Again, the most worrisome situation seems to be that of Central America, particularly as it relates to the capacity for care in the eventuality of an Avian Influenza epidemic in animals.
- The Andean Area and Central America are least prepared in terms of intersectoral integration of activities in spite of relying heavily on poultry-related products for protein intake. These two subregions are also less prepared for a potential Avian Influenza epidemic, according to the data obtained from IICA and IDB studies, the PAHO core data initiative, and others; and socio-economic and health indicators show that Avian Influenza could have a major impact in these two subregions. It is particularly important to improve contingency plans and funds in order for these subregions to be ready if highly pathogenic influenza were to be found there.

- In the four categories defined to analyze the 10 questions, *intersectoral coordination* received the higher percentage of positives answers (91%), which suggests that the channel for cooperation between sectors is open. The other categories did not present high integration scores: *information exchange/surveillance* (46%); *outbreak intervention/biosafety* (35%); *and public communication/information* (50%).
- Even though the channel for cooperation between sectors is open in general, it remains superficial in most countries. While the intention of working intersectorally is shown in preparedness plans, at the practical level, there seems to be important gaps to fill for that cooperation to be efficient. Even in the subregions that seem to fare well in the integration criteria evaluated here, it is important to reinforce the need for a complete joint and coordinated response to a potential Avian Influenza A/(H5N1) pandemic at the different levels.
- Given the limitations identified in this document, it is important that operational aspects of intersectoral outbreak intervention, particularly those related to biosafety, be clearly defined in order to avoid problems in controlling a potential epidemic. This requires technical cooperation to the national epidemic response teams, particularly in the least prepared subregions and countries, to clearly define or refine the necessary guidelines on how to adequately respond to an outbreak, in order to protect the population as well as the outbreak investigators. This is an opportunity to review and improve practices that go beyond those evaluated here.
- The logistical and financial aspects of issues such as the stockpiling and provision of protective gear or seasonal influenza vaccines to people investigating suspected cases of highly pathogenic Avian Influenza should also be considered during technical cooperation activities.
- It is equally important that countries put in place mechanisms to inform the population on Avian Influenza, its potential for transmission to humans in prolonged, close contact with birds, and related food safety issues. This, and harmonizing the information to be used, should be another aspect of technical cooperation provided to all sectors involved in the issue.

### **Recommendations on how to improve the integration of health and agriculture in Avian Influenza preparedness plans in the Region of the Americas**

This analysis led to a series of recommendations to respond to the main areas of need. They include proposals within the following themes:

- a) Integration policy**, with specific mechanisms of technical cooperation to reinforce intersectoriality.
- b) Financial aspects**, with suggestions related to strategic funding for Avian Influenza intersectoral action.
- c) Training**, with several short and long-term options to enhance the intersectoral response to an Avian Influenza outbreak.
- d) Access to data and information dissemination**, with proposals on how to maximize access to information from and to all sectors involved.
- e) Interdisciplinary studies**, which would increase knowledge on the disease and allow for a better response from all sectors.

## II. Introduction

The recent outbreaks of highly pathogenic H5N1 influenza have once again brought the issue of the impact of animal diseases on humans to the forefront of the global health agenda, reminding the world, among other things, that 75% of all pathogens associated with emerging diseases in humans are zoonotic.<sup>1</sup> To adequately address the complex process through which a new zoonosis emerges and protect the population against these diseases, it is necessary that the human health, animal health, and agriculture sectors work in an integrated way. The need for integration between health and agriculture was never more important than now.

The objective of this document is to review if this integration exists in countries of the Americas, and in particular if and how it is reflected in the preparedness plans against avian and human pandemic influenza. For that purpose, we present a quick review of the link between animal and human health, and characteristics of the latest threat, Avian Influenza. We then define intersectoral action and its importance in this context, with specific public health measures at the interface between animal and human health that are most important for the prevention and control of zoonoses. These measures are reflected in the subsequent analysis, by subregion, of the intersectoral integration. Our diagnosis then leads us to a series of recommendations on how to improve intersectoral action in the context of Avian Influenza, but with a broader impact on the prevention and control of all zoonotic diseases.

## III. The Link between Animal and Human Health

The health of humans is closely linked to that of animals and vice versa. The emergence of pathogenic infectious diseases such as AIDS in the past twenty years, and recent outbreaks of diseases such as BSE and vCJD, SARS, or Avian Influenza A/(H5N1), have increasingly drawn public attention to the fact that diseases move back and forth among species, as zoonoses when they are transmissible from vertebrate animals to man (like anthrax, lyme disease, or Rift Valley Fever), or anthroozoonoses when they are typically found in humans but can be transmitted to animals (such as tuberculosis or measles).<sup>2</sup>

Of the 1,415 known human pathogens, 61% are zoonotic. Zoonotic pathogens are twice as likely to be linked to emerging diseases as non-emerging diseases and of the pathogens associated with emerging diseases, 75% are zoonotic.<sup>3</sup>

<sup>1</sup> Taylor L, Latham S, Woolhouse M. Risk factors for human disease emergence. *Phil Trans R Soc London B* 2001; 356:983-989.

<sup>2</sup> Karesh W, Cook R. The Human-Animal Link. *Foreign Affairs*. July/August 2005.

<sup>3</sup> Taylor L, Latham S, Woolhouse M. Risk factors for human disease emergence. *Phil Trans R Soc London B* 2001; 356:983-989.

A major factor in the emergence of new zoonoses is the closer contact with wildlife of both humans and their domesticated animals, caused in particular by increasing encroachment into wildlife habitats.<sup>4</sup> Other general factors include environmental changes, globalization of food production and trade, microbiological adaptation, and human behavioral factors.<sup>5</sup> Once established in humans, emergent diseases may affect relatively few people but represent a great threat due to their high case-fatality and lack of vaccine or therapy (such as Ebola virus hemorrhagic fever, Nipah virus encephalitis), or cause pandemics that are responsible for large mortality and morbidity (such as HIV/AIDS or pandemic influenza).<sup>6</sup>

The globalization of travel and trade and faster exchanges of people and products between countries allow for a rapid dissemination of infectious diseases from their initial focus.<sup>7</sup> It is difficult to estimate the burden of zoonoses on human health, particularly because endemic infections are largely under-reported around the world. It is undeniable, however, that emerging zoonoses have both direct (in terms of morbidity and mortality) and indirect (in terms of their impact on public health practice and structure) implications on public health.<sup>8</sup> Given that they involve a wide variety of animal species and often have a complex natural history, their surveillance, prevention, and control is often difficult to carry out, and they represent a great challenge to the public health sector.<sup>9</sup>

In the recent past, the potential threat of a wide spread of zoonotic diseases did not materialize (for instance ebola outbreaks remained localized), and the direct impact of new zoonotic diseases has remained small compared to many other infectious diseases such as AIDS, TB, malaria or measles. However, they have had important indirect consequences on public health preparedness and planning, and stressed the need for international cooperation as well as the importance of intersectorial collaboration for disease control and prevention.<sup>10</sup>

Further than the direct health effects on humans and animals, animal-related disease outbreaks bear a very heavy economic cost, with dramatic effects on the local and global economy, as well as on the livelihood of people.

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<sup>4</sup> Cunningham A. A walk on the wild side – emerging wildlife diseases. *BMJ* 2005; 331: 1214-1215

<sup>5</sup> WHO, FAO, OIE. Report of the WHO/FAO/OIE joint consultation on emerging zoonotic diseases; 2004 May 3-5; Geneva, Switzerland. Geneva; 2004.

<sup>6</sup> Daszak P et al. Conservation Medicine and a New Agenda for Emerging Diseases. *Ann. N.Y. Acad. Sci.* 2004; 1026:1-11.

<sup>7</sup> Gibbs EPJ. Emerging zoonotic epidemics in the interconnected global community. *Veterinary Record* 2005; 157:673-679.

<sup>8</sup> Meslin F.-X., Stöhr K, Heymann D. Public health implications of emerging zoonoses. *Rev. Sci. tech. Off. Int. Epiz.* 2000;19(1):310-317.

<sup>9</sup> WHO, FAO, OIE. Report of the WHO/FAO/OIE joint consultation on emerging zoonotic diseases; 2004 May 3-5; Geneva, Switzerland. Geneva; 2004.

<sup>10</sup> Meslin F.-X., Stöhr K, Heymann D. Public health implications of emerging zoonoses. *Rev. Sci. tech. Off. Int. Epiz.* 2000;19(1):310-317.

It is estimated that the increase of emerging and reemerging livestock disease outbreaks around the world since the mid 1990s, including BSE, foot-and-mouth disease, avian influenza, and swine fever, has cost the world \$80 billion.<sup>11</sup>

In particular, efforts to control the spread of avian influenza in Asian countries since 2003 have led to the death or destruction of more than 150 million chickens, with economic losses estimated at \$10 billion.<sup>12, 13</sup> While this does not seem to have happened so far during past outbreaks of Avian Influenza A/(H5N1) (contrary to what occurred during the SARS epidemic), indirect costs due to decrease in tourism could occur as well.<sup>14</sup> Fighting zoonotic diseases is a major goal of public health efforts globally, yet outbreaks of new zoonotic agents occur almost annually, with serious health and economic consequences.<sup>15</sup>

#### **IV. Avian Influenza A/(H5N1), the Current Threat**

The most recent example of this convergence of human and animal health is the current epidemic of Avian Influenza A/(H5N1) that has affected poultry and humans in South-East Asia, the middle East, and Europe.

The 16 subtypes of Influenza A viruses are present in wild birds, particularly waterfowl, around the world and coexist in a stable way within these natural hosts.<sup>16</sup> Before 1997, there was no evidence that H5 influenza viruses were able to spread and cause fatal disease in humans. A nonpathogenic H5 influenza virus is believed to have become highly pathogenic through transfers between wild and domestic avian species.<sup>17</sup> Since its first identification as a human pathogen in Hong Kong in 1997, where it caused 18 human cases with 6 fatalities, the highly pathogenic H5N1 virus has continued to spread and evolve among avian species. In mid-2003, it began to circulate widely in poultry in parts of South-East Asia and in December 2003, the first

<sup>11</sup> Karesh W et al. Wildlife trade and global disease emergence. *Emerging Infectious Diseases* 2005;11(7):1000-1002.

<sup>12</sup> World Health Organization. Avian Influenza: assessing the pandemic threat. Geneva: WHO; 2005. Document no. WHO/CDS/2005.29.

<sup>13</sup> Food and Agriculture Organization. World Organization for Animal Health. A Global Strategy for the Progressive Control of Highly Pathogenic Avian Influenza. November 2005.

<sup>14</sup> World Bank {homepage on the internet} Washington, DC: World Bank; 2006 [cited 27 September 2006]. Health, Nutrition, and Population in East Asia and Pacific. Economic Impact of Avian flu. Available from: <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/EXTEAPREGTOPHEANUT/0,,contentMDK:20713527~pagePK:34004173~piPK:34003707~theSitePK:503048,00.html>

<sup>15</sup> Daszak P et al. Conservation Medicine and a New Agenda for Emerging Diseases. *Ann N.Y. Acad. Sci.* 2004; 1026:1-11.

<sup>16</sup> Webster R, Peiris M, Chen H, Guan Y. H5N1 Outbreaks and Enzootic Influenza. *Emerging Infectious Diseases* 2006; 12(1):3-8.

<sup>17</sup> Webster R, Peiris M, Chen H, Guan Y. H5N1 Outbreaks and Enzootic Influenza. *Emerging Infectious Diseases* 2006; 12(1):3-8.

human case of this outbreak occurred in Vietnam.<sup>18</sup> As of 29 November 2006, the avian H5N1 strain of the influenza virus is confirmed to have caused 258 cases and 154 deaths.<sup>19</sup> This case-fatality rate (over 50%) is very high and a great cause for concern should the virus acquire the capacity to be transmitted person-to-person. This eventuality could lead to millions of human deaths. In comparison, the Spanish influenza pandemic of 1918, which is believed to have caused around 50 million deaths around the world, at a time when the population was barely 1/3 that of today, is estimated to have had an overall case-fatality between 2.5 and 5%.<sup>20</sup> This is mitigated by the fact that there is currently no evidence of person-to-person transmission.

Avian influenza is by nature a transboundary disease, traveling along specific routes with migratory birds. The role of migratory waterfowl in the initial spread of the H5N1 virus is unclear, but it is certain that they can be infected and may spread the disease among domestic poultry flocks.<sup>21</sup> While the Avian Influenza A(H5N1) virus has not yet been detected in the Americas, it may only be a question of time. Despite control measures in the countries where it was found to have infected birds, and increased awareness of the disease around the world, it continues to spread, causing heavy losses, threatening the livelihood of poor livestock farmers and potentially impeding trade between countries.<sup>22</sup> In today's globalized world, the rapid and frequent movements of both animals and humans reinforce the risk of a pandemic of the virus in animals and possibly in humans. Because of the health risks it represents and the economic burden it may carry with it, it is important to prevent this pandemic.

## **V. Actors in the Preparedness to a possible Pandemic, with Emphasis on Health and Agriculture**

### **At the global level**

On the human health side, WHO is coordinating the global response to human cases of Avian Influenza A(H5N1) and monitoring the corresponding threat of an influenza pandemic (Box 1). It is the authority on continuous risk assessment, surveillance, and containment activities. The Organization's network of 115 National Influenza Centers in 84 countries continuously monitor influenza activity, isolate influenza viruses worldwide, and report the emergence of any

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<sup>18</sup> WHO. Epidemiology of WHO-confirmed human cases of Avian Influenza A(H5N1) infection. *WER* 2006;81(26):249-260.

<sup>19</sup> World Health Organization [homepage on the internet]. Geneva: WHO; 2006 [updated 2006 Nov 29; cited 2006 Dec 1] Cumulative Number of Confirmed Human Cases of Avian Influenza A(H5N1) Reported to WHO. Available from: [http://www.who.int/csr/disease/avian\\_influenza/country/cases\\_table\\_2006\\_11\\_29/en/index.html](http://www.who.int/csr/disease/avian_influenza/country/cases_table_2006_11_29/en/index.html)<sup>19</sup> World Health Organization [homepage on the internet]. Geneva: WHO; 2006 [updated 2006 Nov 29; cited 2006 Dec 1] Cumulative Number of Confirmed Human Cases of Avian Influenza A(H5N1) Reported to WHO. Available from: [http://www.who.int/csr/disease/avian\\_influenza/country/cases\\_table\\_2006\\_11\\_29/en/index.html](http://www.who.int/csr/disease/avian_influenza/country/cases_table_2006_11_29/en/index.html)

<sup>20</sup> Bloom E et al. *Potential Economic Impact of an Avian Flu Pandemic on Asia*. Asian Development Bank ERD Policy Brief Series No. 42. Manila, Philippines 2005.

<sup>21</sup> Webster R, Peiris M, Chen H, Guan Y. H5N1 Outbreaks and Enzootic Influenza. *Emerging Infectious Diseases* 2006; 12(1):3-8.

<sup>22</sup> Food and Agriculture Organization. World Organization for Animal Health. *A Global Strategy for the Progressive Control of Highly Pathogenic Avian Influenza*. November 2005.

"unusual" influenza viruses immediately to WHO, all critical steps in an effective response to an influenza pandemic. In 2005, WHO issued a report: "Responding to the Avian Influenza pandemic threat: Recommended strategic actions",<sup>23</sup> which presents what can be undertaken by countries, the international community, and WHO to prepare the world for the next influenza pandemic. Advice on how countries can prepare for a human influenza pandemic is presented in the recently revised "WHO global influenza preparedness plan"<sup>24</sup> and a new "WHO checklist for influenza pandemic preparedness planning".<sup>25</sup> The updated International Health Regulations, which are due to be implemented as of June 2007, also contain provisions that are relevant to the threat of avian and pandemic influenza. WHO Member States are asked to comply, on a voluntary basis, with these provisions. WHO has been mandated to monitor this implementation and provide technical assistance to countries if needed.<sup>26</sup>

On the agricultural side, FAO's role is to monitor the occurrence and impact of animal diseases, including emerging diseases, and develop and coordinate strategies and policies for the effective prevention and control of major animal diseases. On the animal health side, the World Organization for Animal Health (OIE) is in charge of monitoring and informing on the situation of animal health, through a regular notification system as well as an alert system. The notification system is based on a list of diseases to be mandatorily reported by members of the Organizations. Highly Pathogenic Avian Influenza has been on the notification list since its inception.

In 2004, in collaboration with the OIE as part of their common Global Framework for the Control of Transboundary Animal Diseases (GF-TADs), FAO issued some "Recommendations on the Prevention, Control and Eradication of Highly Pathogenic Avian Influenza (HPAI) in Asia".<sup>27</sup> Then in 2005, both organizations, in collaboration with WHO, issued "A global strategy for the Progressive Control of Highly Pathogenic Avian Influenza (HPAI)",<sup>28</sup> which expands the Asian strategy to Central Asia, Africa, the Americas, and Europe. In July 2006, they launched a global early warning system for zoonoses, the Global Early Warning and Response System (GLEWS). It is the first joint system created for the purpose of predicting and responding to

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<sup>23</sup> WHO. Responding to the Avian Influenza pandemic threat: Recommended strategic actions. Geneva: WHO; 2005. Document no. WHO/CDS/CSR/GIP/2005.

<sup>24</sup> WHO. WHO Global Influenza Preparedness Plan. The role of WHO and recommendations for national measures before and during pandemics. Updated November 2005. Geneva: WHO; 2005. Document no. WHO/CDS/CSR/GIP/2005.5.

<sup>25</sup> WHO. WHO Checklist for influenza pandemic preparedness planning. Geneva: WHO; 2005. Document no. WHO/CDS/CSR/GIP/2005.4.

<sup>26</sup> UN System Influenza Coordinator (UNSIIC) on behalf of FAO, OCHA, UNDP, UNHCR, UNICEF, WFP and WHO. *Avian and Human Pandemic Influenza: Consolidated action plan for contributions of the UN system*. UN: New York, NY. July 2006.

<sup>27</sup> Food and Agriculture Organization. [internet homepage] Recommendations on the Prevention, Control and Eradication of Highly Pathogenic Avian Influenza (HPAI) in Asia. FAO Position Paper. 2004 Sept [cited 2006 Jul 11]. Available from: [http://www.fao.org/AG/AGAInfo/subjects/en/health/diseases-cards/avian\\_recomm.html](http://www.fao.org/AG/AGAInfo/subjects/en/health/diseases-cards/avian_recomm.html)

<sup>28</sup> FAO, OIE. *A Global Strategy for the Progressive Control of Highly Pathogenic Avian Influenza (HPAI)*. November 2005.

animal diseases, including zoonoses, worldwide, and combining and coordinating the tracking, verification and alert mechanisms of OIE, FAO and WHO.<sup>29</sup>

Given the potential cost of a globalized avian and human influenza pandemic, the World Bank is carrying out economic and social studies of this impact, as well as identifying financing frameworks for these costs and monitoring details of donor pledges. Along with Regional Development Banks, they help ensure that sustainable livelihood is maintained where Avian Influenza is a real threat. In January 2006, an International Pledging Conference on Avian and Human Influenza sponsored by the Government of China, the European Commission, and the World Bank, took place in Beijing, China in order to assess the financing needs at the country, regional, and global level. The international community pledged a total of \$1.9 billion.

Several other specialized United Nations (UN) agencies, such as UNICEF, UNDP, the WFP, and UNHCR ensure the needs of specific vulnerable populations are met in the case of a pandemic, support national pandemic preparedness, and analyze the potential impact of a pandemic on vulnerable populations, among other things. In January 2006, the UN system put in place a “Strategic Approach to Avian and Human Pandemic Influenza”, which brings together all the individual agencies’ plans. This approach was updated in July 2006.<sup>30</sup> (See Annex 1) Many governmental, non-governmental, or academic institutions are conducting research on avian influenza to understand better the ecology of the disease and identify efficient animal and human vaccines.

**Box 1: Main health and agriculture actors in Avian Influenza prevention and control at the global level**

- World Health Organization (WHO)
- Food and Agriculture Organization (FAO)
- World Organization for Animal Health (OIE)

## **At the regional level**

While the Region of the Americas has not been affected by the current Avian Influenza A/(H5N1) epidemic, there have been sporadic outbreaks of highly pathogenic Avian Influenza of the H5 and H7 subtypes detected and contained in Canada, the US, Mexico and Chile in the past

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<sup>29</sup> FAO. Rome, Italy: FAO; 2006 [cited 2006 Sept 15] FAO Newsroom [internet homepage] Global early warning system for animal diseases transmissible to humans: A joint FAO-OIE-WHO initiative. Available from: <http://www.fao.org/newsroom/en/news/2006/1000369/index.html>

<sup>30</sup> UN System Influenza Coordinator (UNSIC) on behalf of FAO, OCHA, UNDP, UNHCR, UNICEF, WFP and WHO. *Avian and Human Pandemic Influenza: Consolidated action plan for contributions of the un system*. UN: New York, NY. July 2006.

40 years.<sup>31</sup>, <sup>32</sup> To enhance the surveillance and prevention of the disease in both animals and humans at the regional level, efforts are being carried out.

On the human side, the Pan American Health Organization (PAHO), Regional Office of the World Health Organization, has drafted a strategic and operational plan to support Member States in responding to pandemic influenza, based on WHO's preparedness plan (Box 2). PAHO also has a long tradition of collaboration on health and agriculture through the organization of the Inter-American Meeting, at the Ministerial Level, on Health and Agriculture (RIMSA) every two years, agreements with agriculture organizations such as the IICA, and joint activities with the veterinary services in countries for the elimination of foot-and-mouth disease, zoonoses, and food safety. In particular, the RIMSA meeting, which has been organized by PAHO for more than 20 years, provides a unique regional forum that brings together the highest level of representatives from the health and agriculture sectors along with participation of the private sector to discuss themes of common interest. Avian Influenza was included in the agenda of the 14th RIMSA meeting in Mexico in April 2005 (Box 3).

PAHO's strategic and operational plan for responding to pandemic influenza includes guidelines for each phase of the potential pandemic. In particular, it includes in the pre-pandemic phase the necessary characteristics of an assessment of the countries' capacity in responding to the threat. This assessment should involve the participation of all sectors concerned with the preparedness to a possible human pandemic, including human and animal surveillance, health services, zoonosis, agriculture, disaster, civil defense and communication.

PAHO has recognized since its creation the importance of the relation between health and agriculture. The necessity for integrated work with the agriculture sector to guarantee food security and food safety and to work towards the hunger targets of the Millennium Development Goals, as well as the indispensable collaboration between human and animal health experts to prevent zoonoses, were among topics recently highlighted by PAHO's Director Dr. Mirta Roses in her internet web log.<sup>33</sup>

During the Hemispheric Conference on the Surveillance and Prevention of Avian Influenza, organized by PAHO, the Ministry of Agriculture of Brazil, IICA, FAO the OIE, and the Brazilian Union of Poultry Farming (UBA), that took place in Brasilia in December 2005, the official country representatives of the health and agriculture sectors, the representatives of producer associations, industry, and other entities representing the poultry production chain, and the representatives of international organizations in attendance signed the Brasilia Declaration supporting action to respond to the zoonotic and public health risks of Avian Influenza in the Region. On the agricultural side, the Inter-American Institute for Collaboration on Agriculture (IICA)'s mandate is to support its member states in strengthening their animal health, plant protection and food safety systems. As such, it is active in the inter-agency cooperation in the Region.

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<sup>31</sup> OIE[Internet homepage]. Paris, France: OIE; 2006 {cited 2006 Aug 10}. Animal Diseases Data. Highly Pathogenic Influenza. Available from: [http://www.oie.int/eng/maladies/fiches/a\\_A150.htm](http://www.oie.int/eng/maladies/fiches/a_A150.htm)

<sup>32</sup> United States Centers for Disease Control and Prevention [internet homepage]. Atlanta, GA; 2006 {cited 2006 Aug 10} Avian Influenza. Past Avian Influenza Outbreaks. Available from: <http://www.cdc.gov/flu/avian/outbreaks/past.htm>

<sup>33</sup> See <http://mirtaroses.paho.org/index.php?language=en-us>

At the subregional level, the International Regional Organization for Agricultural Health (“Organismo Internacional Regional de Sanidad Agropecuaria-OIRSA”) is active in Central America, Mexico, and the Dominican Republic to fight Avian Influenza as well. Its mandate is to assist countries in protecting their agricultural production through specific actions of prevention and control of diseases, actions of quarantine, legislation, and modernization, among others. OIRSA coordinates with the private sector the identification of problems and their resolution.

**Box 2: Main health and agriculture actors in Avian Influenza prevention and control at the regional level**

- Pan American Health Organization (PAHO)
- Inter-American Institute for Collaboration on Agriculture (IICA)
- International Regional Organization for Agricultural Health (Organismo Internacional Regional de Sanidad Agropecuaria -OIRSA)
- Food and Agriculture Organization (FAO) Regional Office
- World Organization for Animal Health (OIE) Regional Office

FAO’s and the OIE’s GF-TADS is present at the Regional level and includes PAHO (PANAFTOSA), the IICA, the OIRSA, the Permanent Veterinary Committee, representatives from the governments and the private sector, as well as others. Its Executive Committee met in February 2006 to approve strategic guidelines to prevent Avian Influenza in the Region, analyze the need for financial resources, and evaluate and discuss the role and actions of international organizations. The strategic guidelines for Avian Influenza prevention in the Americas were defined during the III Meeting of the Inter-American Committee on Avian Health (CISA), held in Buenos Aires that same week, with the presence of many international organizations, governments, and regional organizations representatives, as well as a strong contingent of private sector representatives. It was adopted during the GF-TADs meeting.

Regional financial institutions such as the Inter-American Development Bank (IDB) have also been involved in studying the potential economic and social effects of an influenza pandemic, as well as funding specific research and prevention projects. Within this framework, and as part of the strengthening of activities to prepare the countries for a potential pandemic, the IDB is developing an action plan to contribute to the prevention and control of an outbreak of Avian Influenza A/(H5N1) in the Region.<sup>34</sup> PAHO is one of the partners in the elaboration of this plan, and is collaborating in several analysis to evaluate the preparedness of countries in the different aspects related to human and animal health and the link between them.

The avian sector in the Region, represented by national producer and consumer associations and others, is also an integral part of the picture, as population at risk, as well as potential elements in the surveillance and prevention of the pandemic.

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<sup>34</sup> Estupiñán J, IDB. *Plan de Acción del Banco Interamericano de Desarrollo para contribuir a la prevención y control de un eventual brote de influenza aviar de alta patogenicidad en aves y disminuir el riesgo de una pandemia de influenza en humanos en los países de Latinoamérica y el Caribe*. IDB: Washington, DC. Under review June 2006.

### **Box 3: Some regional intersectoral coordination mechanisms**

The *Inter-American Meeting, at the Ministerial Level, on Health and Agriculture* (RIMSA) has been organized by PAHO for more than 20 years and provides a unique regional forum that brings together the highest level of representatives from the health and agriculture sectors along with participation of the private sector to discuss themes of common interest.

FAO's and the OIE's *GF-TADS* is present at the Regional level and includes PAHO (PANAFTOSA), the IICA, the OIRSA, the Permanent Veterinary Committee, representatives from the governments and the private sector, as well as others.

### **At the national level**

At the national level, most of the countries of the Region are developing national avian and pandemic influenza preparedness plans involving different sectors (health, agriculture, and others). Many are creating national intersectoral committees at the presidential or vice-presidential level.

The intersectoral approach at the local level varies in each country and while some efforts are being done to address the issue at that level, because of the lack of information they will not be detailed here.

## **VI. Importance of Intersectoral Action**

Because of its pandemic potential and its economic impact, the current crisis provides an opportunity to bring together all sectors involved. It is clear that to protect humans from Avian Influenza, the disease must be controlled at the source of the infection: in poultry. First and foremost, the cooperation between the human and animal health sectors is vital to this endeavor and must be enhanced. Indeed as mentioned above, many factors enter into play in the emergence of zoonotic diseases in general, and in the appearance of a human and avian influenza pandemic in particular. They involve issues ranging from balanced farming and conservation, control of animal health through measures such as vaccination, to surveillance and protection of human health. Therefore many of the actions needed for the control and prevention of zoonoses are multidisciplinary and go well beyond just the veterinary or human health sectors. They directly reflect the need for an integrated approach to these diseases that incorporate all actors involved, including the human health, veterinary, and agriculture sectors. This integrated approach means that the interests of all sectors are brought together into one common goal of shared interest. This, by definition, will be reached through intersectoral action.

Intersectoral action was included by PAHO in the definition of essential public health functions, particularly as it relates to health promotion activities. A strategic intersectoral alliance between

the health, education, labor, environment, and agriculture Ministries has also become one of PAHO's basis strategy is to assist countries in reaching the Millennium Development Goals.

Intersectoral action is considered an indispensable characteristic of a public health system.<sup>35</sup>

It can take many forms and may be implemented through many different activities, but it usually leads to synergistic effects, particularly through horizontal collaboration across sectors, and vertical alignment of the purposes of this collaboration at the different levels of each sector.<sup>36</sup> Tackling complex health issues in an integrated way allows to pool resources, knowledge and expertise and reduce duplication of efforts. This was recognized in various instances and for various diseases in the Region, for example by Schneider on the topic of rabies transmitted by bats, by Ehrenberg and Ault on neglected diseases, or by Puertas and Schlessler on overall community health.<sup>37, 38, 39, 40</sup> At the interface between human and animal health, intersectoral action to prevent a zoonotic threat, and more specifically an Avian Influenza pandemic, involves in particular (Box 4):

- **Surveillance that is integrated across sectors.** Early detection, and notification are necessary for effective control programs to eradicate the infection in poultry. Therefore, surveillance is a key element and its main objective is to help define and control risks to public health. Surveillance priorities should include animal health indicators and current information on human health risks, in other words it should be integrated across sectors.<sup>41</sup> Indeed, better cooperation through information sharing is necessary for the development of an adequate animal and human health surveillance system and can lead to better strategies for risk assessment and management to reduce the social and economic impact of outbreaks in animals by containing them early. The integration of human and animal health and agriculture is also vital for the relevant analysis of all the data that is necessary to manage zoonotic threats to public health.<sup>42</sup>
- **Adequate biosecurity** (in this case, ensuring that animals and human food supplies linked to them are protected). It is an essential part of Avian Influenza control and must be given due importance in planning and control measures. Among other things, in the case of an epidemic, poultry from infected flocks should be disposed of by environmentally sound methods and not be processed for human consumption.

<sup>35</sup> PAHO. 46th Directing Council, 57<sup>th</sup> Session of the Regional Committee. *Regional declaration of the new orientations for Primary Health Care*. [Official paper] Washington, D.C., 26-30 September 2005.

<sup>36</sup> Health Canada. Population Health. *Intersectoral Action... Towards Population Health. Report of the Federal/Provincial/Territorial Advisory Committee on Population Health*. Ontario, Canada. June 1999.

<sup>37</sup> Schneider MC. *Rabia humana transmitida por murciélagos hematofagos en Brasil: Modelo de transmisión y acciones de control*. [Doctoral Thesis] Instituto Nacional de Salud Pública. México, 1996. In press: UMI Dissertation Services.

<sup>38</sup> Schneider MC. Reflexión sobre los Modelos para el Estudio de los Brotes de Rabia Humana por Murciélagos. *Cad Saúde Públ.* 1995;11(2):291-304.

<sup>39</sup> Ehrenberg JP, Ault SK. Neglected diseases of neglected populations: Thinking to reshape the determinants of health in Latin America and the Caribbean. *BMC Public Health* 2005;5:115.

<sup>40</sup> Puertas B, Schlessler M. Assessing Community Health Among Indigenous Populations in Ecuador with a Participatory Approach: Implications for Health Reform. *J Community Health* 2001;26(2):133-47.

<sup>41</sup> FAO. Avian Influenza Control and Eradication - FAO's Proposal for a Global Programme Rome, March 2006

<sup>42</sup> Donaldson LJ, Reynolds DJ. Integrated working. *Veterinary Record* 2005;157:680-681.

Cooperation with the national stakeholders in poultry production is important, as well as efficient implementation and effective monitoring through veterinary services.<sup>43, 44</sup>

- **Adequate biosafety** (in this case, ensuring the protection of people in contact with the virus) should be ensured for persons who may enter in contact with contaminated animals or materials. This involves training and proper use of personal protective equipment, as well as vaccination of poultry and health workers with seasonal influenza vaccines to reduce the risk of dual infection and reassortment.
- **Adequate public information** relying on scientific facts, to communicate risks and avoid a related economic crisis. Disease awareness is essential to prevent the spread of disease among infected animals and most importantly avoid transmission to humans. It needs to be raised to prevent infection for persons working with poultry, particularly in infected areas.<sup>45</sup>

**Box 4: Areas of intersectoral action at the interface of human and animal health**

- *Surveillance that is integrated across sectors*
- *Adequate biosecurity* (in this case, ensuring that animals and human food supplies linked to them are protected)
- *Adequate biosafety* (in this case, ensuring the protection of people in contact with the virus)
- *Adequate public information*

As far as Avian Influenza A/(H5N1) is concerned, many efforts are already being made in that regard at the international level. As mentioned above, a myriad of specialized institutions are working together to assist countries affected by the H5N1 virus, and to prepare those not yet affected for the eventuality of an epidemic. FAO and the OIE have also set up a network called OFFLU, to develop research on the issue, offer advice and veterinary expertise to member countries, and collaborate with the WHO animal influenza network.

This integration of the work of sectors to prevent an avian and human influenza pandemic must become a reality at the regional, subregional, national, and local levels.

***Possible institutional mechanisms to integrate sectors***

The need for coordination between the human health, veterinary, agriculture, and other sectors has been recognized, particularly in those countries of the world that have already gone through an Avian Influenza A/(H5N1) epidemic with human cases. In south-East Asia for example, in light of the recent outbreaks and their experience in controlling them, Ministers of Health have reiterated several times their commitment to ‘promote collaboration between all institutions and

<sup>43</sup> FAO/OIE/WHO. Technical Consultation on the Control of Avian Influenza. Geneva, February 2004.

<sup>44</sup> WHO. WHO guidance on public health measures in countries experiencing their first outbreaks of H5N1 Avian Influenza. Geneva, October 2005.

<sup>45</sup> FAO/OIE/WHO. Technical Consultation on the Control of Avian Influenza. Geneva, February 2004.

sectors involved in the response to the outbreak at local, national and regional levels, including those concerned with human and animal health, and also those working in other relevant areas.<sup>46</sup> In Vietnam for example, a *Task Force* was established under the Prime Minister's National Steering Committee for Avian Influenza Disease Control and Prevention, to be led by the *Ministry of Agriculture and Rural Development*. This task force comprises representatives of 11 ministries including Agriculture and Rural Development, Health, Public Security, Transport, Trade, Foreign Affairs, Culture and Information, Science and Technology, Natural Resources and Environment, Planning and Investment, and Finance. Together they developed the Integrated National Operational Program for Avian and Human Influenza for the period 2006-2010.<sup>47</sup>

In the European Region, Turkey recognized the importance of having convened all relevant players in a *multisectoral crisis committee within the Ministry of Health*. The Turkish Avian Influenza preparedness plan, prepared by the Ministry of Health, included elements of an intersectoral approach to pandemic preparedness, among other things a call for the creation of intersectoral teams and committees, which opened the channel of collaboration. They found that the process strengthened relations between the health and agriculture ministries and allowed to fill the gaps in information in a timely manner.<sup>48</sup>

Those two examples reflect the need for high-level coordination of intersectoral action, and the importance of a single convening authority to lead the discussion and reach agreements on specific strategy elements and interventions. Clearly, the integration mechanism will vary depending on the country's structure and institutions.

In order to understand better the situation in the Region, following is an evaluation of intersectoral integration on the issue of preparedness for Avian Influenza in countries of Latin America.

## **VII. Evaluation of the Integration between Health and Agriculture Preparedness Plans in Latin America**

### **Methodology**

The evaluation of the integration between the health and agriculture sectors relies on a selection of questions from a checklist elaborated by PAHO's Veterinary Public Health unit based on WHO, FAO and OIE documents. This checklist was used for the first time and reviewed during the discussions between representatives of the health sector working on zoonoses, and representatives of the agriculture sector during a workshop, organized by PAHO and the USAID,

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<sup>46</sup> WHO South East Asia Region. Senior Officials and Experts Meeting on Avian Influenza from ASEAN+3. countries, *Joint Ministerial Statement on Prevention and Control of Avian Influenza*; 2004 Nov 25; Bangkok, Thailand. New Delhi, India: WHO SEARO; 2004.

<sup>47</sup> World Bank [Internet homepage]; Washington, DC: World Bank; 2006 [cited 2006 Sept 20]. Ministry of Agriculture and Rural Development and Ministry of Health of Vietnam. Integrated National Operational Program for Avian and Human Influenza 2006-2010. Available from: [http://siteresources.worldbank.org/INTVIETNAM/Resources/vn\\_opi\\_2006\\_2010\\_en.pdf](http://siteresources.worldbank.org/INTVIETNAM/Resources/vn_opi_2006_2010_en.pdf)

<sup>48</sup> WHO Regional Office for Europe. *Making preparation count: lessons from the Avian Influenza outbreak in Turkey*. Copenhagen 2006.

on influenza pandemic preparedness planning for Central America and the Dominican Republic, in Panama in February 2006. The IICA and OIRSA also participated in this workshop and together with the countries, reviewed and completed the checklist. (See Annex 2). The questions selected relate to issues relevant to intersectoral action against the spread of Avian Influenza as mentioned in the previous section, within the broader themes of surveillance, biosafety, and risk communication. For instance, the surveillance theme is reflected in the existence of protocols to inform the Ministry of Health of suspected cases of Avian Influenza in birds, the biosafety theme is reflected in questions about availability of personal protective equipment and use of seasonal influenza in persons at risk, and so on.

The data gathered from Central American countries and the Dominican Republic during the February workshop was used as a source of information for this subregion. Mexico participated in this workshop only as an observer, and did not participate in the exercises following the checklist. For Southern Cone and Andean Area countries, Cuba, and Haiti, the information was obtained through two others workshops organized by PAHO with different partners in September of 2006. A new version of the checklist was used, but the questions used for this evaluation remained the same in all versions. Another workshop was developed for the English Caribbean and some French speaking territories in the Latin Caribbean other than Haiti, but in this occasion the checklist was reviewed but not answered by the participants. A broader evaluation on the level of advancement in the organization and execution of national plans for the prevention of highly pathogenic Avian Influenza, using the complete checklist, was carried out by Estupiñán in another IDB report.<sup>49</sup>

While using data gathered at different points in time potentially carries a bias, as preparedness plans have been evolving rapidly given the high profile of Avian Influenza, the purpose of this evaluation is merely to provide a general picture of whether the health and agriculture sectors are working together for the prevention and control of Avian Influenza. It does not pretend to reflect an exact level of integration, but rather, a general assessment of whether the different sectors are working in unison on activities identified to be of importance for the protection of human and animal health. It is in no way a reflection of the countries' response capacities, either. It is important to note that the information gathered through the checklist corresponds to an evaluation at one point in time and may have changed since the workshops, as countries go on improving their preparedness plans. Elements mentioned in a national plan are also not necessarily under development at the local level. This point in particular will require another type of evaluation.

A condition for inclusion in the evaluation was for the countries to have a general preparation plan against a potential Avian Influenza A/(H5N1) pandemic available and to have participated in the workshops organized by PAHO with different partners. Information was obtained from 19 countries, all of which have at least initiated their preparedness plan (Box 5). Because the checklist answers from the English Caribbean and Mexico were not available at the time of this evaluation, these subregions were not included. It is important to note however that Mexico has a

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<sup>49</sup> Estupiñán J, IDB. *Plan de Acción del Banco Interamericano de Desarrollo para contribuir a la prevención y control de un eventual brote de influenza aviar de alta patogenicidad en aves y disminuir el riesgo de una pandemia de influenza en humanos en los países de Latinoamérica y el Caribe*. IDB: Washington, DC. Under review June 2006.

complete preparedness plan available, as do other countries from the Caribbean. The scope of this study is subregional, and the specific analyses are not carried out at the national level, but at the level of subregions. Using this level of aggregation made it easier to compare results with data from other IDB studies. Obviously, variations do exist between countries of the subregions, as illustrated by the ranges shown in the analysis.

A total of 10 questions were selected from the original checklist for the purpose of this evaluation (Table 1) to best reflect elements of the joint work between the health and agriculture sectors on the topic of Avian Influenza as mentioned above. While in the Estupiñán study an ordinal scale was used for the responses to the questions (no activity / initial phase / intermediate phase / ready), in this evaluation, a binary variable was used (Yes/No whether the element was clearly included in the plan or not), so that the percentage calculated for each country (“% of integration”) reflects elements of the integration that are effectively in place at the time of the evaluation. Missing data are removed from the denominators in the calculations of the % of integration so as not to penalize countries without this information (see Table 1 for number of missing data).

**Box 5: List of countries included in the evaluation**

Southern Cone: Argentina, Brazil, Chile, Paraguay, Uruguay

Andean Area: Bolivia, Colombia, Ecuador, Peru, Venezuela

Central America: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama

Latin Caribbean: Cuba, Dominican Republic, Haiti

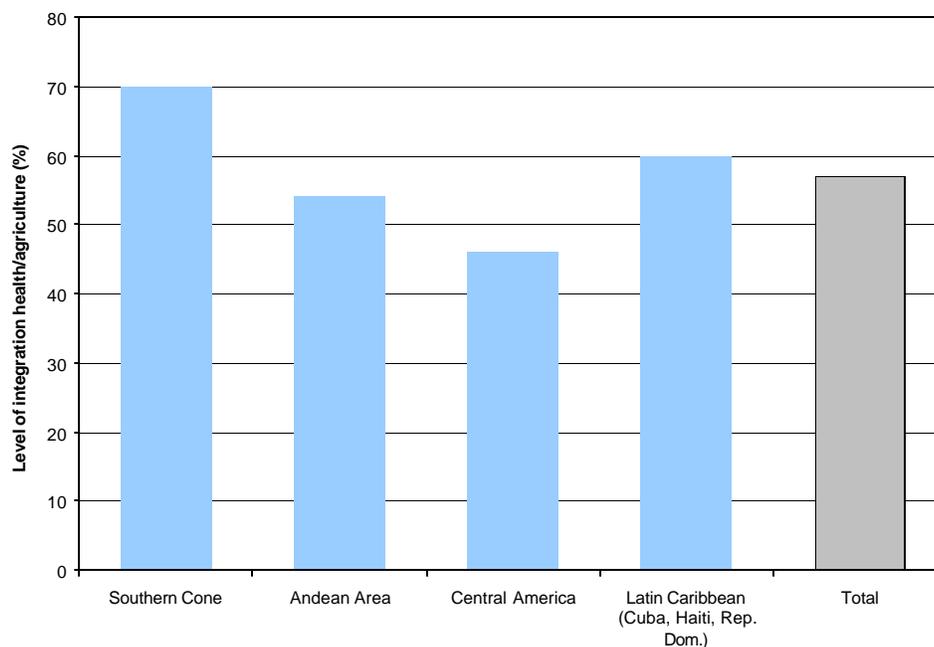
**Table 1: Questions used for the evaluation and response level**

	Questions	Missing
1	Are health, agriculture and other sectors included in the preparedness plan?	0
2	Are the professionals of the health and agriculture sectors meeting to discuss the topic of influenza?	0
3	Has a focal point been identified in the ministries to be contacted in the case of an emergency on Avian Influenza?	0
4	Is there a protocol to inform the Ministry of Health about human respiratory infection in personnel working with birds suspected to be infected with Avian Influenza?	0
5	Is there a mechanism for routine exchange of epidemiological information related to influenza among the health and agriculture sectors?	0
6	Would the people investigating an outbreak and carrying out the actions recommended by FAO/OIE have the personal protection equipments (PPE) recommended by WHO?	0
7	Would the people investigating an outbreak and carrying out the actions recommended by FAO/OIE be vaccinated against seasonal influenza?	0
8	When there is a suspicion of influenza in birds, is the health sector informed immediately?	0
9	Is there established knowledge of what should be done with people (farm workers, animal owners and their families and others) exposed to suspected birds?	0
10	Is it planned to distribute informative materials to give guidance to the general population on Avian Influenza, considering among others the aspects of poultry food consumption?	1 (5.3%)

## Analysis

The general levels of integration between the health and agriculture sectors were calculated for the Region (57%) and by subregion (Graph 1). The Southern Cone is the subregion with the highest level of integration (70%) and the lowest score was obtained in Central America (46%). As mentioned in the methodology, this subregion was the first one to be evaluated, with a time interval of six months between this and other subregional workshops. The Southern Cone was the subregion with the smallest range of the level of integration between countries (60 to 90%), while other subregions such as the Latin Caribbean presented a larger range (30 to 100%).

**Graph 1: Level of integration of the health and agriculture sectors in preparedness plans, as reflected in the 10 questions selected**



***Percentage of integration, demographic, socio-economic and aviculture-related aspects***

A first part of the evaluation consisted in contrasting the calculated percentage of integration with subregional demographic (PAHO Core Data) and socio-economic data (PAHO Core Data and another Avian Influenza-related report from the IDB), in order to obtain a general view of the situation.<sup>50 51</sup>

<sup>50</sup> PAHO. Health Situation in the Americas, Basic Indicators 2005. [Brochure]. Washington, DC: PAHO; 2005

<sup>51</sup> Nin Pratt A, Falconi C, IDB. *Análisis económico del impacto de la influenza aviar en el sector avícola de América Latina* (Borrador). IDB: Washington, DC. Under review June 2006.

**Table 2: Level of integration health/agriculture and demographic and socioeconomic aspects**

<b>Region</b>	Level of integration health/agriculture (%)	a Population in 2005 (thousands)	b % of rural population (2005)	c GNI (US\$ per capita) ppp value (2003)	d Population below the poverty line (1995-2002)	e % workers in agriculture sector (2001-2003)
<b>Southern Cone Range</b>	70 [60;90]	251,068	15.1	8,198	7.2	0.17
<b>Central America *</b>	46 [30;70]	39,731	46.8	4,586	21.2	1.55
<b>Andean Area Range</b>	54 [30;70]	122,727	23.5	5,132	13.3	0.10
<b>Latin Caribbean **</b>	60 [30;100]	28,692	39.9	...	...	...
<b>Total Range</b>	57 [46;70]	442,218	22.1	7,318	10.1	0.32

\* Not including Belize. \*\* Latin Caribbean is represented in this evaluation by Cuba, Dominican Republic and Haiti.

Sources: PAHO Core Health Data 2005 (a,b,c,d); authors' calculation from IDB report (based on FAO data) (e).<sup>52</sup>

Table 2 suggests that the more economically advantaged subregions (higher GNI per capita and lesser population below the poverty line) are those that show more integration of health and agriculture activities in the Avian Influenza national plans. Central America as a whole shows the least integration in its approach to the Avian Influenza issue. As shown in table 2, this subregion also has the most rural population, least income, most population under the poverty line, and highest percentage of workers in the agricultural sector. This suggests that the population of Central America, with higher levels of poverty and more people working in the aviculture sector, could be strongly affected in case of an outbreak of Avian Influenza.

<sup>52</sup> Nin Pratt A, Falconi C, IDB. Análisis económico del impacto de la influenza aviar en el sector avícola de América Latina (Borrador). IDB: Washington, DC. Under review June 2006.

**Table 3: Level of integration health/agriculture and aviculture economic indicators**

Region	Level of integration health/agriculture (%)	a Production 2001-2003		b Participation of aviculture in agriculture GDP (%) (2000)	c Poultry meat (% of the GDP) (2001-2003)	d Trade in poultry meat (2001-2003)	
		Meat (1,000 tons)	Eggs (1,000 tons)			Exports (1,000 tons)	Imports (1,000 tons)
<b>Southern Cone</b>	70	Brazil:7,196 Other countries Southern Cone: 1,389	Brazil:1,607 Other countries Southern Cone: 534	Brazil:15.9 Other countries Southern Cone: 8.4	Brazil: 1.2 Other countries Southern Cone: 0.9	Brazil: 1720 Other countries Southern Cone: 68	Brazil: 0 Other countries Southern Cone: 14
<b>Central America</b>	46	544	283	8.6	1.88	4	40
<b>Andean Area</b>	54	2,399	877	15.3	2.18	4	46
<b>Latin Caribbean *</b>	60	246	146	...		0	156.9
<b>Total</b>	57	11,744	3,447	15.0**	1.0**	1,796	256.9

\* Latin Caribbean is represented in this evaluation by Cuba, Dominican Republic and Haiti.

\*\* Include Mexico and the Caribbean. Sources: IDB report (based on FAO data) (a,b,c,d)<sup>53</sup>. Latin Caribbean data collected by author in FAO data 2006.

Aviculture is an important part of the economy of many countries in the Region. It represents 1% of the Regional GDP.<sup>54</sup> As shown in table 3, Brazil is the most important poultry meat and eggs producer in the Region, and participation of aviculture in the agricultural GDP is around 16% for this country. Exports of poultry meat are particularly important for Brazil as the first exporter of this type of meat in the world.<sup>55</sup> For this reason, even though the scope of this study is subregional, the average for the Southern Cone including Brazil was not calculated for agricultural production. For this subregion without Brazil, aviculture is also important for trade, and exports of poultry meat are almost 5 times larger than imports. The Southern Cone, with strong poultry-related industry and trade, shows high levels of integration of the health and agriculture sectors as represented by the series of questions used for this evaluation.

In the Andean Region, levels of integration were calculated at 54%, and aviculture economic indicators show that poultry meat is an important commodity for the subregional economy, with aviculture representing around 15% of the agricultural GDP. For the countries analyzed, poultry meat and eggs production are around 11,7 million tons and 3,4 million tons, respectively,

<sup>53</sup> Nin Pratt A, Falconi C, IDB. Análisis económico del impacto de la influenza aviar en el sector avícola de América Latina (Borrador). IDB: Washington, DC. Under review June 2006.

<sup>54</sup> Estupiñán J, IDB. *Plan de Acción del Banco Interamericano de Desarrollo para contribuir a la prevención y control de un eventual brote de influenza aviar de alta patogenicidad en aves y disminuir el riesgo de una pandemia de influenza en humanos en los países de Latinoamérica y el Caribe*. IDB: Washington, DC. Under review June 2006.

<sup>55</sup> Nin Pratt A, Falconi C, IDB. Análisis económico del impacto de la influenza aviar en el sector avícola de América Latina (Borrador). IDB: Washington, DC. Under review June 2006.

suggesting that these are important commodities and sources of animal protein for the Region. Poultry meat represents about 2% of the GDP for Central America and the Andean Area, which both have calculated levels of integration around 50%. For both subregions, the production is mainly for internal consumption, and they still have to import to meet national needs.

**Table 4: Level of integration health/agriculture and poultry meat consumption aspects**

Region	Level of integration health/agriculture (%)	a Total poultry meat consumption (million tons) (2001-2003)	b % of poultry meat in total meat consumption (2001-2003)	c Poultry meat consumption per thousand pop. (tons) (2001-2003)
<b>Southern Cone</b>	70	6.8	33	27.1
<b>Central America</b>	46	0.6	42	15
<b>Andean Area</b>	54	2.4	39	19.6
<b>Latin Caribbean*</b>	60	0.4	45**	13.9
<b>Total</b>	57	10.2	35	23.1

Latin Caribbean is represented in this evaluation by Cuba, Dominican Republic and Haiti.

Sources: IDB report<sup>56</sup> (based on FAO data) (a,b); authors' calculation based on IDB report data (c).

Latin Caribbean data obtained by authors in FAO database.

Poultry meat and eggs represent the cheapest sources of animal proteins, and up to 50% of all animal protein consumed in the Region as a whole.<sup>57</sup> As seen in table 4, for the countries considered here, poultry meat represents on average 35% of the total meat consumption. The Southern Cone consumes the least poultry meat as a percentage of total meat consumption, but has the highest poultry meat consumption per capita in the Region, probably because it also presents the highest subregional income. Poultry meat represents 42% of the total meat consumption in Central America and 45% of the Latin Caribbean, yet both subregions have the lowest poultry meat consumption per million people, and Central America has the lowest level of intersectoral integration as calculated here. The fact that Central America and the Latin Caribbean are the subregions most dependent on poultry meat as a source of animal protein, yet show the lowest levels of poultry meat consumed per capita could be related to the higher levels of poverty mentioned in table 2, and suggests a potential problem of food security if an outbreak of Avian Influenza were to create poultry meat shortages there.

Table 5 contrasts the level of integration for each subregion with elements of an evaluation instrument proposed by the IICA and the OIE, to assist national veterinary services in assessing their level of performance (see Annex 2 for the questions used).<sup>58</sup> This analysis is part of the

<sup>56</sup> Nin Pratt A, Falconi C, IDB. Análisis económico del impacto de la influenza aviar en el sector avícola de América Latina (Borrador). IDB: Washington, DC. Under review June 2006.

<sup>57</sup> Estupiñán J; IDB. Plan de Acción del Banco Interamericano de Desarrollo para contribuir a la prevención y control de un eventual brote de influenza aviar de alta patogenicidad en aves y disminuir el riesgo de una pandemia de influenza en humanos en los países de Latinoamérica y el Caribe. IADB, Washington, DC. Under review.

<sup>58</sup> IICA, OIE. Performance, Vision, and Strategy for National Veterinary Services. Version 2.1.

Estupinan report and because those aspects are so important to the interface between animal and human health on Avian Influenza, it is also repeated here.<sup>59</sup>

**Table 5: Level of integration health/agriculture and veterinary services aspects**

Region	Level of integration health/agriculture (%)	Emergency response capability (average %)	Emerging issues (average %)	Training (average %)	Contingency Funds (average %)	Contingency plan (%)	Surveillance (%)
<b>Southern Cone</b>	70	NA	NA	NA	NA	68	40
<b>Central America</b>	46	41.33	32.5	13 **	15.2 **	40.28	34.72
<b>Andean Area *</b>	54	44.67	19.5	14	30.67	40	40
<b>Latin Caribbean ***</b>	60	NA	NA	NA	NA	54.17	45.8
<b>Total</b>	57	NA	NA	NA	NA	50.61	40.13

\*Three countries of the Andean Region participated in this evaluation, \*\* Five countries participated. NA: not available, \*\*\* Latin Caribbean is represented in this evaluation by Cuba, Dominican Republic and Haiti, but for contingency and surveillance plans at the time of the IDB report, only two countries had the information available. Source: Authors' calculation using data from IDB report<sup>60</sup>; IICA; and data gathered during the USAID/PAHO meeting on influenza in Panama (February 2006).

When it comes to the response to an emergency caused by a sanitary threat and the detection of an emergency situation before it happens in the country, the IICA study data show that the two subregions studied, Central America and the Andean Area, with results under 50%, need to improve these capacities to adequately respond to Avian Influenza or any other threat.

The IICA also evaluated training plans for veterinary services, and the results for these two subregions showed a need for great improvement as well. The availability of contingency funds in case of emergency was also low, as found by the IICA's study. Their surveillance capacity also needs to be urgently enhanced, with all results under 50%.

About the contingency plans, the results of the Estupinan study showed that 68% of Southern Cone countries have included this topic in their plans, very close to the percentage of integration between health and agriculture in the Avian Influenza plans estimated in this study (70%).<sup>61</sup> While not a very high score, it is higher than the other subregions, which show levels between 40 and 54%.

<sup>59</sup> Estupiñán J, IDB. Plan de Acción del Banco Interamericano de Desarrollo para contribuir a la prevención y control de un eventual brote de influenza aviar de alta patogenicidad en aves y disminuir el riesgo de una pandemia de influenza en humanos en los países de Latinoamérica y el Caribe. IDB: Washington, DC. Under review June 2006.

<sup>60</sup> Estupiñán J, IDB. Plan de Acción del Banco Interamericano de Desarrollo para contribuir a la prevención y control de un eventual brote de influenza aviar de alta patogenicidad en aves y disminuir el riesgo de una pandemia de influenza en humanos en los países de Latinoamérica y el Caribe. IDB: Washington, DC. Under review June 2006.

<sup>61</sup> Estupiñán J, IDB. Plan de Acción del Banco Interamericano de Desarrollo para contribuir a la prevención y control de un eventual brote de influenza aviar de alta patogenicidad en aves y disminuir el riesgo de una pandemia de influenza en humanos en los países de Latinoamérica y el Caribe. IDB: Washington, DC. Under review June 2006.

Different analyses are being carried out by PAHO on the potential human health impact of an Avian Influenza epidemic in the Region. In order to provide some notion of how the subregions fare with regards to integration health/agriculture and levels of health, table 6 presents a few recent health indicators.

**Table 6: Level of integration health/agriculture and human health indicators**

Region	Level of integration health/agriculture (%)	Infant Mortality (per 1,000 live births)	Physicians per 10,000 pop. (2001)	Hospital beds per 1,000 pop. (2004)
<b>Southern Cone</b>	70	15.0 <sup>c</sup>	24.8	3.3
<b>Central America *</b>	46	31.7* <sup>d</sup>	11.4*	0.9*
<b>Andean Area</b>	54	25.6 <sup>d</sup>	14.1	1.1
<b>Latin Caribbean **</b>	60	43.8 <sup>e</sup>	28.4 <sup>e</sup>	1.9 <sup>e</sup>
<b>Total</b>	57	24.8 <sup>f</sup>	18.3 <sup>f</sup>	2.9 <sup>f</sup>

\* includes Belize, <sup>a</sup> 2002, <sup>b</sup> 2004, <sup>c</sup> 2003, <sup>d</sup> c. 2000, <sup>e</sup> includes Guadeloupe, French Guiana, Martinique and Puerto Rico. <sup>f</sup> includes all countries of Latin America and the Caribbean.  
 \*\* Latin Caribbean is represented in this evaluation by Cuba, Dominican Republic and Haiti.  
 Source: PAHO Core Health Data Brochure 2005.

The highest infant mortality by subregion is in the Latin Caribbean. While this study does not look at individual countries, it is important to mention that Haiti, which is one of the three countries studied in this subregion, presents the highest infant mortality of Latin America (three times higher than the Regional average). Central America, with the lowest level of calculated integration health/agriculture, also presents the second highest infant mortality and lowest indicators of access to health care, with the lowest number of physicians per 10,000 population and the lowest hospital beds per 1,000 population.

The Andean Area, which is the subregion showing the second lowest level of indicators, also shows low levels of the indicators of access to care shown here, with levels about half those of the Southern Cone.

The Southern cone, with the highest level of integration health/agriculture, shows the highest levels of the indicators of access to care presented here, as well as the lowest infant mortality. Again, the most worrisome situation seems to be that of Central America, particularly as it relates to capacity for care in the eventuality of an Avian Influenza epidemic.

***Percentage of positive responses for each question and categories of integration activity***

- In almost all countries (16 out of 19), the health and agriculture sectors are intended participants in the response to a potential Avian Influenza epidemic, as reflected in the preparedness plan.
- In only 3 of 19 countries with information available is there a clear protocol to inform the Ministry of Health about human respiratory problems in people in contact with potentially infected birds.
- In 9 of 19 countries with information available, there is a clear mechanism in place to exchange information on influenza between the health and agriculture sectors.

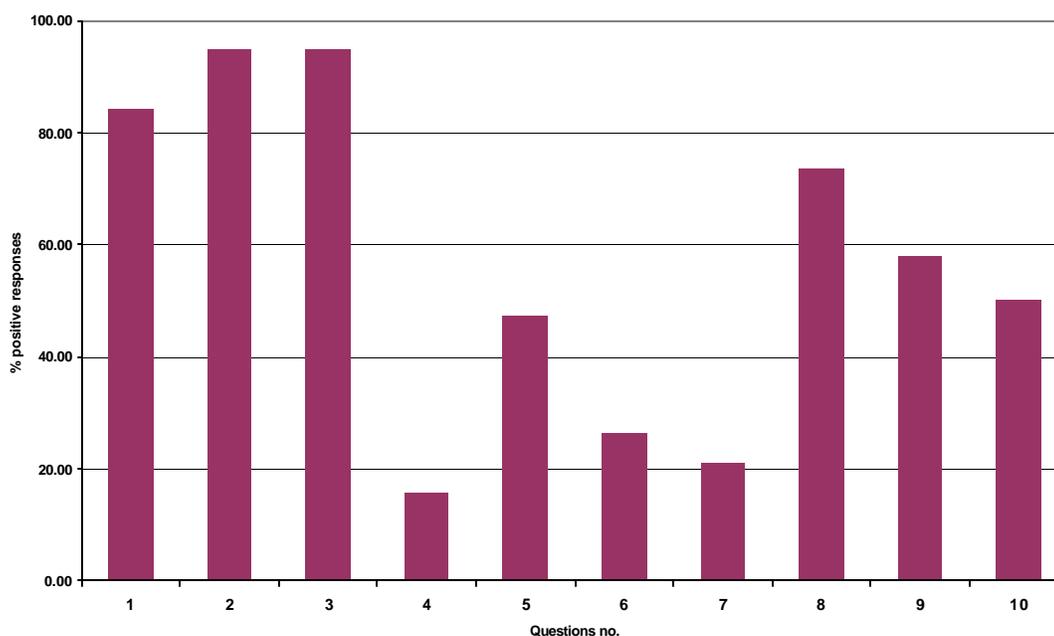
- In only 5 of 19 countries is it planned that the people investigating a potential Avian Influenza A/(H5N1) outbreak in animals would have access to personal protective equipment (PPE) recommended by WHO.
- In only 4 of 19 countries would these investigators be vaccinated against seasonal influenza.
- In 14 of 19 countries with information available, the health sector is informed immediately in case of suspicion of influenza in birds.
- In 11 of 19 countries there is established knowledge of what protocols should be followed for persons exposed to suspected birds.

Table 7 also shows for each area of the intersectoral action reflected by each question, which international organizations are involved, and how this responsibility is reflected within the PAHO organizational structure, as it surely is within other organizations.

**Table 7: Percentage of positive responses, category of integration activity, level of the activity , and organizations involved, for each question**

	<b>Question</b>	<b>% positive responses</b>	<b>Category of integration activity</b>	<b>Level of the activity</b>	<b>Main international actors concerned</b>	<b>Main partners inside PAHO</b>
1	Are health, agriculture and other sectors included in the preparedness plan?	84.21	Intersectoral coordination	National to local	<b>WHO/PAHO</b> , FAO, OIE, IICA, OIRSA, IDB, WB, USAID and other UN agencies	<b>Veterinary Public Health Unit</b> , Communicable Diseases Area
2	Are the professionals of the health and agriculture sectors meeting to discuss the topic of influenza?	94.74	Intersectoral coordination	National to local	<b>WHO/PAHO</b> , FAO, OIE, IICA, OIRSA	<b>Veterinary Public Health Unit</b> , Communicable Diseases Area
3	Has a focal point been identified in the ministries to be contacted in the case of an emergency on Avian Influenza?	94.74	Intersectoral coordination	National to local	<b>WHO/PAHO</b> , FAO, OIE, IICA, OIRSA	<b>Veterinary Public Health Unit</b> , Communicable Diseases Area
4	Is there a protocol to inform the Ministry of Health about human respiratory infection in personnel working with birds suspected to be infected with Avian Influenza?	15.79	Information exchange/surveillance	Local to national	<b>WHO/PAHO</b>	<b>Health Services Unit</b> , <b>Communicable Diseases Area</b> , Veterinary Public Health Unit
5	Is there a mechanism for routine exchange of epidemiological information related to influenza among the health and agriculture sectors?	47.37	Information exchange/surveillance	National	<b>WHO/PAHO</b> , FAO, OIE, IICA, OIRSA	<b>Communicable Diseases Area</b> , Veterinary Public Health Unit
6	Would the people investigating an outbreak and carrying out the actions recommended by FAO/OIE have the personal protection equipments (PPE) recommended by WHO?	26.32	Outbreak intervention/biosafety	National to local	<b>WHO/PAHO</b> , FAO, OIE, IICA, OIRSA, USAID	<b>Communicable Diseases Area</b> , Veterinary Public Health Unit
7	Would the people investigating an outbreak and carrying out the actions recommended by FAO/OIE be vaccinated against seasonal influenza?	21.05	Outbreak intervention/biosafety	National to local	<b>WHO/PAHO</b> , FAO, OIE, IICA, OIRSA	<b>Immunization Unit</b> , Communicable Diseases Area, Veterinary Public Health Unit, Procurement
8	When there is a suspicion of influenza in birds, is the health sector informed immediately?	73.68	Information exchange/surveillance	Local to national and international	<b>FAO, OIE, IICA, OIRSA, WHO/PAHO</b>	<b>Veterinary Public Health Unit</b> , Communicable Diseases Area
9	Is there established knowledge of what should be done with people (farm workers, animal owners and their families and others) exposed to suspected birds?	57.89	Outbreak intervention/biosafety	National to local	<b>WHO/PAHO</b> , FAO, OIE	<b>Communicable Diseases Area</b> , Veterinary Public Health Unit

**Graph 2: Percentage of positive responses for each question of the evaluation checklist**



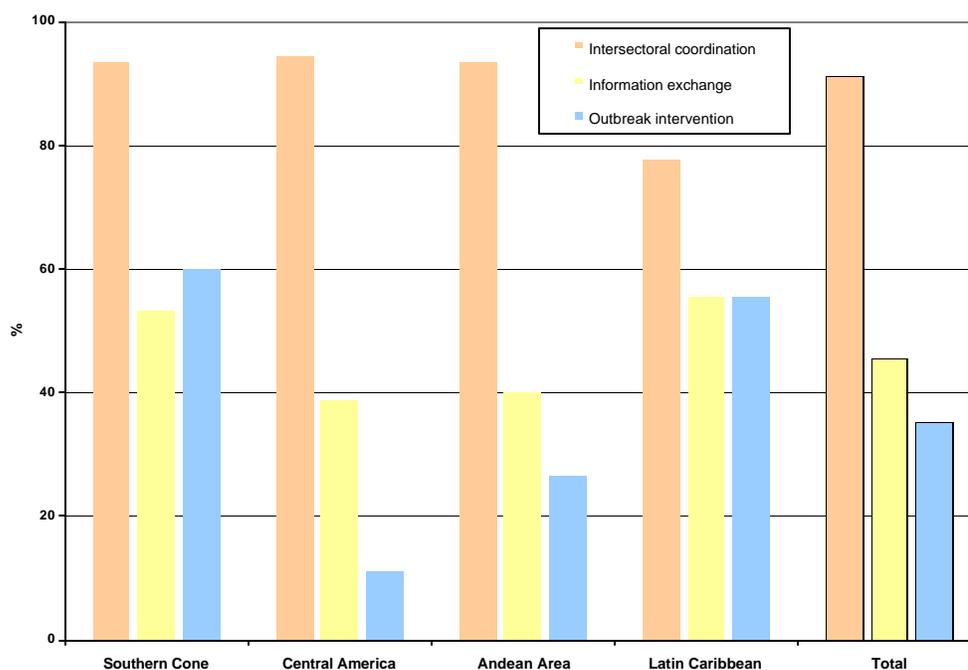
For a more precise evaluation and in order to avoid overlaps and repetitions of topics within the analysis of the questionnaire, the ten questions selected were grouped by category of integration activity. Four categories were defined: *intersectoral coordination*, which addresses general basic issues considered necessary for joint work to be facilitated (such as the mention of all sectors in the main preparedness plan, existence of regular meetings and focal points in ministries); *information exchange/surveillance*, which reflects whether mechanisms are in place for the flow of information to circulate among all sectors (such as existence of protocols for information sharing); *outbreak intervention/biosafety*, which addresses technical and logistical issues related to the intersectoral response to an outbreak that are considered important (such as availability of protective gear or vaccination for Avian Influenza outbreak investigators, existence of protocols post-exposure for farm workers, etc.); and *public communication/information* regarding Avian Influenza, including food safety. This last category only includes one question, which is also missing one response, and these limitations were taken into account in the analysis.

The percentage of positive responses was calculated for each category of activity and each subregion. The results are shown in table 8 and graph 3 below:

**Table 8: Positive responses by category of integration activity, by subregion**

	Southern Cone (%)	Central America (%)	Andean Area (%)	Latin Caribbean (%)	Total (%)
<b>Intersectoral coordination (%)</b>	93.3	94.5	93.3	77.8	91.2
<i>Range</i>	[67;100]	[67;100]	[67;100]	[67;100]	
<b>Information exchange/surveillance (%)</b>	53.3	38.9	40	55.5	45.6
<i>Range</i>	[33;100]	[0;67]	[0;67]	[33;100]	
<b>Outbreak intervention/biosafety (%)</b>	60	11.1	26.7	55.6	35.1
<i>Range</i>	[33;100]	[0;33]	[0;67]	[0;100]	
<b>Intersectoral public information (%)</b>	80	20	60	33.3	50
<i>Range</i>	[0;100]	[0;100]	[0;100]	[0;100]	

**Graph 3: Positive responses by category of activity, by subregion and for the regional sample as a whole**



These data reflect that there is *good coordination* between the health and agriculture sectors in the preparedness plans of the countries sampled here. Overall in the Region, the integration level for this category is 91.2 %, with no subregion below 77%. While this does not necessarily mean that the work of the sectors on this issue is well integrated, the channel for intersectoral work is open and only needs to be strengthened, not only for influenza but for all zoonotic diseases. This collaboration on the link between human and animal health could improve public health, food security, and social development.

*Information exchange serving for surveillance* at the national level between sectors is at the intermediate level (around 46% as calculated here). Mechanisms or instruments to facilitate this

exchange or access the information in all sectors could be suggested, in particular for the type of information that will be important to respond to the Avian Influenza threat. As with many zoonotic diseases, information is a sensitive issue in dealing with Avian Influenza because of the potential economic loss and possibility of public alarm about the threat. Question 4 that deals with the issue of bringing up information from the local to the national level on surveillance of severe respiratory infections in persons in contact with birds received a low percentage (15.8%), perhaps because the Region has not faced any outbreak of Avian Influenza A/(H5N1) in animals or humans yet and therefore remains unprepared for rapid notification. This type of surveillance activity is nevertheless very important in areas of intensive poultry production, including small, backyard producers.

There was also little integration in the preparedness for *outbreak intervention, particularly as it relates to biosafety* as reflected by the questions considered here. The overall percentage (35.1%) masks important variations between subregions (11.1% in Central America, 60% in the Southern Cone). In general, this may reflect an urgent need to support the countries of Latin America in outbreak interventions where the health and agriculture sectors could work hand in hand for a better-integrated response. It involves logistical issues (availability of protective gear), technical responses (what to do if a person is exposed to a suspect bird), as well as preventive measures (vaccination of outbreak investigators), all linked to the management of communicable diseases.

The question of *public communication/information*, in particular related to food safety aspects of Avian Influenza received a score of 50%. Only half of the plans reflect the countries' intention to provide information to the general population, including on food safety issues. Again, while this aspect was evaluated by only one question, we can conclude that there needs to be improvements in that regard. Indeed, this is not only a very important issue related to food safety, but also an inappropriate message could have drastic effects on the consumption of poultry meat, which would affect food security and the economic livelihood of many, as an important number of people depend on bird products as economic livelihood and as a source of protein intake.

## VIII. Main Conclusions from the Analysis

Intersectoral action is key in addressing zoonotic threats, which impact spreads over human and animal health as well as human food security issues. In the case of Avian Influenza as with many zoonoses, issues of surveillance, biosafety, and biosecurity, as well as adequate public information on the disease are fundamental elements in protecting the human populations. While the work of international organizations seems well integrated at the global level, this integration trickles down only superficially at the national level in the Region. In that respect, from the analysis above we may conclude that:

- In the Region of the Americas, the subregion with major poultry-related industries (meat and eggs), the Southern Cone, show high levels of overall integration of the health and agriculture sectors as represented by the series of questions used for this evaluation (70%).
- Central America and the Andean Area are the least prepared in terms of intersectoral integration of activities in spite of relying heavily on poultry-related products for protein

intake. These two subregions are also less and probably insufficiently prepared for a potential Avian Influenza epidemic, according to the data obtained from IICA and IDB studies, the PAHO Core Data Initiative, and others; and socio-economic and health indicators show that Avian Influenza could have a major impact in these two subregions. It is particularly important to improve contingency plans and funds in order for these subregions to be ready if highly pathogenic influenza were to be found there.

- The channel for cooperation between sectors is open in general but remains superficial in most countries. While the intention of working intersectorally is shown in preparedness plans, at the practical level, there seems to be important gaps to fill for that cooperation to be efficient. Even in the subregions that seem to fare well in the integration criteria evaluated here, it is important to reinforce the need for a complete joint and coordinated response to a potential Avian Influenza pandemic at the different levels. Any technical cooperation activity linked to the review and organization of the countries' preparedness plans should include explicit exercises to reinforce this point.
- Planning for joint work in outbreak interventions, information exchange among sectors, and public information are key elements to reinforce in almost all subregions, but particularly in Central America and the Andean Area, showing least integration in preparedness plans.
- Given the limitations identified here, it is important that operational aspects of intersectoral outbreak intervention, particularly those related to biosafety, be clearly defined in order to avoid problems in controlling a potential epidemic. This requires technical cooperation to the national epidemic response teams, particularly in the least prepared subregions, to clearly define or refine the necessary guidelines on how to adequately respond to an outbreak, in order to protect the population as well as the outbreak investigators. This is an opportunity to review and improve practices that go beyond those evaluated here.
- The logistical and financial aspects of issues such as the stockpiling and provision of protective gear or seasonal influenza vaccines to people investigating suspected outbreaks of highly pathogenic Avian Influenza in animals should also be considered during technical cooperation activities.
- It is equally important that countries put in place mechanisms to inform the population on Avian Influenza, its potential for transmission to humans in prolonged, close contact with birds, and related food safety issues. This, as well as harmonizing the information to be used, should be another aspect of technical cooperation provided to all sectors involved in the issue.

This evaluation revealed potentially important deficits in the Americas in the intersectoral response to a potential outbreak, particularly in biosafety issues; in information exchange, which impedes adequate joint intersectoral monitoring and surveillance of the disease; and public information about Avian Influenza. Following are proposals on how to improve this situation.

## **IX. Recommendations on how to Improve the Integration of Health and Agriculture in Avian and Pandemic Influenza Preparedness Plans in the Region of the Americas**

The short analysis presented above detected problem areas linked to the integration of health and agriculture in Avian Influenza preparedness plans in countries of the Region. These problem areas are not comprehensive but cover the information available and used for this evaluation. They form the basis of the recommendations that follow, in spite of the mentioned limitations of both the method and data used, in particular because many are commonly identified as issues to address in the global research on the capacities for prevention and control of zoonoses.

Preparing the countries of the Region to prevent and respond to Avian Influenza will also enhance their preparation against other diseases. When the new International Health Regulations come into force in June 2007, the countries will have to be ready to notify all potential public health emergencies of international concern, as well as investigate and control them. From the agricultural perspective, the OIE International Animal Health Code needs to be enforced as well. Beyond those technical aspects, the occurrence of zoonotic diseases in the Region could mean tremendous impacts on trade as well as large economic losses. Improving the capacity of sectors to work in an integrated way to reach common goals will be very important to the Region, with or without Avian Influenza.

Figure 1 presents a partial problem tree with the identified lack of integration as the main issue, the main *problem areas* at its source identified by this evaluation, as well as *potential areas of response* to remedy the documented problem areas. Public information was included as a problem area even if it is very poorly represented in the evaluation (only one question was used from the checklist to reflect this aspect), because it is widely recognized in many countries as largely lacking even though it is a critical component of Avian Influenza prevention and control.<sup>62</sup> These problem areas allow us to identify three *categories of needs*, also included in figure 1.

The potential areas of response helped in defining *specific actions* that are proposed as potential solutions to respond to the three categories of needs and address the problem of integration observed in the Region. These actions, and how they would hopefully help to address the needs and reach a better integration, are presented in figure 2. They are also discussed more in detail below.

### **Integration Policy**

- The integration between the health and agriculture sectors to address the interface between human and animal health activities to prevent and control a zoonotic threat, and more specifically an Avian Influenza pandemic, is fundamental. As mentioned above, there are

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<sup>62</sup> Gibbs EPJ. Emerging zoonotic epidemics in the interconnected global community. *Veterinary Record* 2005;157:673-679.

mechanisms in place at the Regional level to strengthen intersectoral collaboration, such as the Inter-American Meeting, at Ministerial Level, on Health and Agriculture (RIMSA), which is carried out every two years under the coordination of PAHO's Veterinary Public Health Unit. Such regional forums are indispensable because they create a specific space for receiving political support to intersectoral activities, which can then reverberate at the national level. *Such mechanisms should be identified and strengthened* so that they may be reflected in the intersectoral coordination on zoonoses with such potential high impact as Avian Influenza.

- At the same time, it is important that *countries in the Region assign (internal or external) resources to the development of intersectoral action*. In the same spirit, it should be ensured that *any technical cooperation activity linked to the review and organization of the countries' preparedness plans include explicit exercises to reinforce this point*. The intersectoral approach in the countries' preparedness to Avian Influenza will strengthen their capability for a joint response to any other emergency that could occur in the future.
- The issue of intersectorality should be a priority in the prevention and control of Avian Influenza in the Region, starting with addressing the problem in birds, which will remove the public health threat and prevent potentially large economic losses. This evaluation showed the need for advocacy to integrate the work of the different sectors in the Region. One way to advocate for better integration is to provide countries with guidelines on how to go about building intersectoral action against Avian Influenza. Many guiding principles for action against Avian Influenza were prepared by the different international organizations involved and made available to assist countries in addressing the need for better surveillance and enhanced biosafety and biosecurity. However, *guidelines presenting all issues relevant to the human/animal interface in an **integrated** way, and directly adapted to this Region* could be prepared and proposed to the countries (See proposal: "Propuesta de integración de los lineamientos técnicos relevantes para mejorar la acción intersectorial para la prevención y el control de la influenza aviar y otras zoonosis"). Based on official documents, these guidelines could be organized around three major topics: surveillance that is integrated across sectors, adequate biosecurity/biosafety, and adequate public information. It would reinforce the practical aspects of intersectoral action, while facilitating the work of countries against the disease by bringing together all important aspects, in the context and languages of the Region. These guidelines should be provided in priority to the subregions identified at higher risk in this study: Central America and the Andean Area, as well as to the least prepared countries from other subregions to be identified.

## **Financial Aspects**

- The issue of financial preparedness mentioned in the evaluation is fundamental, as it relates to the prevention of the disease through biosafety equipment and others, as well as to measures of compensation post-outbreak that can be very important for producers who lose their birds, and their livelihood, to the disease. *It is important that regional financial institutions, in particular the Inter-American Development Bank, consider investing strategically to assist countries in surmounting the financial burden of Avian Influenza preparedness and response, through the allocation to special lines of credit when relevant,*

and through the financing of specific technical cooperation activities that can reinforce the intersectoral coordination against the disease.

- PAHO and the IICA, in collaboration with the countries and other organizations, should prepare a *proposal to create a strategic fund to support countries* in the Region with emergent problems linking human and animal health where the health and agriculture sectors could act jointly. The issues of biosafety through stockpiling of personal protective equipment or vaccines as needed should be a priority here.

## Training

- Joint intersectoral response is an important part of managing efficiently a zoonotic outbreak.<sup>63</sup> One way to improve this response in the Americas would be to provide short-term on-site *training on how the veterinary and human health services can respond jointly to an outbreak of Avian Influenza and other zoonosis*, with a special emphasis on joint surveillance and how to handle new or unusual diseases, to those countries without this experience or in need of reinforcement. Models to emulate could be the United States Center for Disease Control (CDC) field epidemiology training or training provided by the USDA. Sectors could also carry-out cross-training where they train each others' staff in their own guidelines and techniques, in order to raise awareness of the others' work and responsibilities and therefore facilitate intersectoral action. The audience for this type of training could include public health and veterinary outbreak response teams starting at the local level up to the national level. Again, priority recipients should be Central American and Andean countries.
- In order to insert the concept of intersectorality and leadership in the official, formal training programs of all sectors involved in the management of zoonotic diseases, it could be valuable that the global institutions in charge of education and technical cooperation on those diseases join hands to offer longer-term *high-level virtual academic post-graduate courses on the control and prevention of zoonoses*, as well as courses training trainers in the same topics. The audience in that case would be national or state health and agriculture representatives in charge of control strategies for diseases that link animal and human health (See document: "Preliminary proposal for intersectoral, inter-institutional post-graduate training on prevention and control of zoonoses").
- In case of an outbreak of Avian Influenza, communication of the risks and realities of the disease to a variety of audiences is very important to avoid undue panic and limit the economic and social effects on the population. A communication strategy involving all sectors should be readily available in all countries. In order to maximize its effects, this strategy should include *training of relevant staff on outbreak communication, risk communication*, and when necessary, on the characteristics and risks of the disease itself, potentially carried out by the existing regional communication interagency group.

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<sup>63</sup> Donaldson LJ, Reynolds DJ. Integrated working. *Veterinary Record* 2005;157:680-681.

## Access to data and Information Dissemination

- An important aspect of intersectoral work is the development of a strong information and evidence base on the topics of interest.<sup>64</sup> For the purpose of the present analysis, information was put together from different sources such as the PAHO Core Health Data Initiative, FAO database, IDB and IICA studies, etc. The access to different types of information on a topic of common interest to all sectors should be facilitated by concentrating them in a single place, were it a paper publication or a web site. Further to working as a stimulus for discussion and further work, this allows for canals of communication and information exchange to be created, and if well designed and made sufficiently available, a database with information of common interest coming from all sectors may facilitate analyses and decision-making. In the context of diseases that affect humans and animals and more particularly of Avian Influenza, a simple core database could be created, using indicators to be determined by the different agencies involved, which data would be published in a *periodical inter-agency brochure* as well as on the internet. The audience for the brochure would be, among others, international organizations, decision-makers at the national and subnational levels on the animal and human impact of zoonoses, private sector, researchers, and the public in general (See document: “Proposal for an intersectoral core data brochure on zoonoses in the Region of the Americas”).
- As mentioned in this document, many organizations are involved with avian and human pandemic influenza, and there are many guidelines and other documents of importance available on the subject in the official web sites of these organizations, but most documents are in English and most of the time not accessible to the persons working on these topics at the local level. Selecting the most relevant information and facilitating their access to local professionals would be very useful. For this purpose, an intersectoral portal could be developed to integrate all relevant information from the health and agriculture official sectors (See document: “Propuesta preliminar para el desarrollo de un portal de integración salud y agricultura para facilitar el acceso a información sobre influenza aviar de los profesionales locales”). It could also facilitate the exchange of information at the Regional level, another important aspect for the control of a transboundary disease such as Avian Influenza.
- In spite of the fact that Avian Influenza has seemingly become a worldwide concern, it is often found that as is often the case with zoonotic or other diseases, there is a lack of effective communication with the public about the diseases themselves and their impact.<sup>65</sup> This is certainly even more flagrant in rural areas of less industrialized countries, where many small poultry farmers are among the first links to the disease and a potential human epidemic. In that context, in the Americas, it would be important to *ensure that all countries have defined a complete communication strategy with regards to Avian Influenza* that includes all elements of communication considered to be key to managing a health crisis: public information, outbreak and crisis (risk) communication, education, social mobilization, and health promotion and prevention.

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<sup>64</sup> Health Canada. Population Health. Intersectoral Action... Towards Population Health. Report of the Federal/Provincial/Territorial Advisory Committee on Population Health. Ontario, Canada. June 1999.

<sup>65</sup> Gibbs EPJ. Emerging zoonotic epidemics in the interconnected global community. *Veterinary Record* 2005;157:673-679.

- Another important aspect is to assist countries in *defining the appropriate technical contents of intersectoral information materials* for various audiences, including poultry workers, small farmers, as well as the public in general. This content should include public health facts about the disease, as well as veterinary/agricultural elements, to enhance knowledge of the signs and symptoms as well as the adequate handling of potentially sick poultry and how to protect humans in their contact. Again, all sectors working together on this matter would be a sign of increased integration on the issue of Avian Influenza.

### **Interdisciplinary Studies**

- The need for collaboration between the human and animal health sectors in applied public health studies has been recognized in published research at the global level.<sup>66</sup> In the Americas, *a methodology for countries to carry out joint studies involving public health and veterinary services* could be developed, incorporating information on health services, veterinary services, surveillance, production systems (including biosafety), and environmental aspects such as those linked to the migration of birds. Geographic Information Systems could be used to do this type of studies. This could help evaluate more precisely the risks linked to the introduction of Avian Influenza in the Region and would be particularly relevant in areas identified as least prepared for that eventuality (Central America and the Andean Area). It would yield important information about various aspects of the response that need improvement. Working jointly on this type of activity could also foster stronger ties between the sectors and eventually lead to more a stable intersectoral collaboration.
- To address the issue of food security, *studies to evaluate the impact of an outbreak of Avian Influenza on the poultry-related food supply* could be carried out, in particular in vulnerable areas relying on them the most for protein intake, such as Central America and the Latin Caribbean. To further address the issue, studies and analysis of possible temporary low cost sources of protein in case of an outbreak could be carried out, in cooperation with INCAP.

These proposals have the common concern of assisting countries in enhancing the coordination between the health and agriculture sectors in their preparedness plans for Avian Influenza. They also have the larger aim to strengthen the countries' response capacities against any other threat, be it natural or man-made, zoonotic or not. They also pretend to assist them in meeting their responsibilities in terms of international agreements and guidelines, such as those of the International Health Regulations or the OIE International Animal Health Code.

Recent sanitary events have brought the link between the animal and human health to the forefront of the global health agenda. It is important to remember that 75% of the known pathogens associated with emerging diseases are zoonotic. Integrating the work of the health and agriculture sectors is therefore a priority, which this analysis has tried to point out and address.

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<sup>66</sup> Khan L. Confronting zoonoses, linking human and veterinary medicine. *Emerging Infectious Diseases* 2006;12(4):556-561.

## X. Strategies to Operationalize the Recommendations

The main objective of this document is to achieve a better integration in Avian Influenza preparedness between the health and agriculture sectors at the regional level and in the countries. To achieve this goal, it was important to identify and analyze the issues at the interface between public health and veterinary services in the Region. Another important aspect is to define how to reach the integration goal and what resources are necessary, which is the purpose of this section.

The operationalization of the recommendations above should occur at different levels. Some will be regional, others national and some local, depending on the country's structure and size. It will also involve the different actors cited in this document, at the global level for guidelines, at the regional level to define how these recommendations could be adapted to the Region, and at the regional and local level for planning and policy making to implement these recommendations. All these actors need to be working in a coordinated way to achieve the best results.

The role of international organizations is to provide general recommendations to the countries. The implementation and operationalization will depend on the individual situation of each country. However, it is possible to detail a number of strategies to be carried out by the national authorities as well as the cooperation agencies working on the subject of Avian Influenza.

The strategies presented below are complementary and together represent a generic action plan to *improve the integration between health and agriculture in the preparedness for Avian Influenza*. Figure 1 charts the main conclusions and recommendations and figure 2 presents a summary of the proposed actions to achieve the general objective of better integration between the health and agriculture sectors at the regional level and in the countries. This type of analysis helps in operationalizing the recommendations.

### a) **Strategy 1: Mobilize a strong regional and national commitment for intersectoral action in the prevention and control of zoonoses, in particular Avian Influenza**

To develop this commitment, international cooperation agencies involved in the prevention of zoonoses should:

*Create a working group* with participants to the GF-TADS, representatives from the health sector from PAHO's Epidemic Alert and Response Task Force, UNICEF for communication aspects, and IDB, to review the proposals of this document and their potential implementation. Several subgroups could be considered, for specific topics such as training, surveillance, outbreak intervention, biosecurity/biosafety, intersectoral core data, and information.

These subgroups could review the specific aspects of the interface, based on available official documents or experiences, and elaborate recommendations at different levels.

#### *Activities:*

- Create an interagency group and subgroups and define their membership.
- Meetings to review the proposals of these documents and their implementation.

- Create secretariat for the interagency group.

*Indicators:*

- Interagency group created.
- Number of interagency group meetings per semester.
- Intersectoral subgroups in different subjects created.
- Intersectoral subgroups recommendations and translations published.

*Identify needs* for further review and improvement of national preparedness plans, ensuring that the human, animal health, and agriculture sectors are active players in every relevant aspect of the plan, and provide assistance to countries to improve their plans further. To guarantee intersectorality, the review should be carried out by an interdisciplinary team with members from all agencies involved (such as a subgroup from point 1).

*Activities:*

- Carry out three workshops to review intersectoral aspects of plans.
- Carry out review to identify needs for further review of plans.
- Interagency consultations to determine standards for the review.
- Consultations with countries to review or follow-up the national plans.

*Indicators:*

- Number of plans reviewed.
- Number of plans evaluated as truly “intersectoral”.

*Assist neediest countries* in the elaboration of proposals to present to regional financial institutions, in particular the IDB, to obtain funding for critical strategic activities related to Avian Influenza preparedness and response that reinforce the intersectoral coordination against the disease.

*Activities:*

- Create a database of potential consultants to assist countries in the proposals
- Consultations with countries to assist in identifying activities and writing the proposals
- Identify needs for contingency and other funds
- Allocate funds to specific activities

*Indicators:*

- Number of countries assisted
- Number of proposals funded

*Provide longer-term high-level virtual post-graduate courses on the control and prevention of zoonosis* to leaders working in all sectors, with an emphasis on the concept of intersectorality.

*Activities:*

- Define content of curriculum for training (to be done by a group of the interagency group mentioned in point 1)
- Find qualified institutions to participate in the training pool
- Determine suitable institutions to receive training (starting with neediest countries)
- Elaborate a project for this training and submit for financing

*Indicators:*

- Completed project for the training (curriculum ready, trainers identified, trainees identified).

**b) Strategy 2: Develop a responsive, participatory national response system to zoonotic threats, in particular Avian Influenza, including integrated surveillance, logistical preparedness, and a communication strategy that addresses the need for information of all audiences.**

To develop this capacity, institutions at the international level should act at the national level to:

*Provide countries with specific, Region-adapted, integrated guidelines to put in practice intersectoral actions at the interface of human and animal health to respond to a zoonotic threat, in particular Avian Influenza.*

*Activities:*

- Create an intersectoral group at the level of international organizations dealing with Avian Influenza (such as a subgroup of point 1).
- Develop the content of the guidelines, including translation of existing materials to the languages of the Region.
- Elaborate, publish, and distribute the guidelines throughout the Region.

*Indicators:*

- Elaborated guidelines.
- Number of guidelines distributed.
- Number of countries receiving them.

*Provide materials to countries of the Region identified to be in need but not included in other projects, to enhance their intersectoral preparedness in terms of biosafety (personal protective equipments, vaccines, etc.), biosecurity, and surveillance capacity (laboratories, etc.).*

*Activities:*

- Identify needs for biosafety, biosecurity, and laboratory materials.
- Purchase the materials.

*Indicators:*

- Number of countries with their needs identified.
- Number of countries with materials purchased.

*Provide short-term on-site training on how the veterinary and human health services can respond jointly to an outbreak of Avian Influenza and others zoonoses, with a special emphasis on joint surveillance and how to handle new or unusual diseases.*

*Activities:*

- Define content of curriculum for training (to be done by a subgroup of the interagency group mentioned in point 1).
- Find qualified institutions to participate in the training pool.
- Determine suitable institutions to receive training (starting with neediest countries).
- Organize and carry-out training.

*Indicators:*

- Course created (curriculum ready, trainers identified, trainees identified).
- Number of students trained.
- Number of countries receiving such training program.
- Level of evaluation of the course by the trainees.

*Coordinate activities related to the interface between human and animal health within the Inter-agency Communication Framework for Avian and Pandemic Influenza in the Americas, including in particular training on outbreak and risk communication, as well as clear, appropriate technical contents of intersectoral information materials for various audiences.*

*Activities:*

- Define content of media training for the agriculture sector, including economic journalists.
- Identify needs where a communication strategy doesn't exist.
- Organize and carry-out media training.
- Define technical contents of information materials for identified audiences.

*Indicators:*

- Defined content of media training.
- Defined content of information materials.

At the regional level, they should:

*Create a regional intersectoral portal to integrate all relevant information from the health and agriculture official sectors, in all languages of the Region, in order to facilitate 1) access to information for local professionals, and 2) exchange of information between countries.*

*Activities:*

- Develop the portal architecture and design.
- Develop the contents of the portal.
- Translate official documents in the languages of the Region when necessary.
- Create and publish the portal.

*Indicators:*

- Portal developed.
- Number of registered users.
- Number of countries represented among the users.
- Number of monthly consultations of the portal.

**c) Strategy 3: Develop a better knowledge base of the overall situation of zoonotic diseases, in particular Avian Influenza, in the Region of the Americas, including on a variety of indicators of the human, animal health, and agricultural situation and the potential effects of a pandemic on socioeconomic, health, and environment indicators.**

To develop this evidence base, at the international level organizations should:

*Create a core database* with information of common interest to all sectors with indicators produced at the national level and collected by various agencies, and publish a selection of indicators in a periodical brochure that could be of use to a wide range of audiences from the local to the international levels.

*Activities:*

- Create intersectoral, inter-agency advisor group for the database (potentially a subgroup from point 1).
- Develop the list of indicators to be included.
- Collect data.
- Produce the brochure.
- Distribute to the targeted/identified audience.

*Indicators:*

- Number of brochures produced and distributed.

*Develop a methodology for countries* to carry out joint studies involving public health and veterinary services, in order to evaluate more precisely the risks of an epidemic for the Region, and in priority in the neediest Regions and countries.

*Activities:*

- Identify need for risk evaluation in the Region.
- Develop methodology.
- Identify specific audience for using the methodology.
- Organize and carry-out workshops for methodology application.

*Indicators:*

- Developed methodology.
- Number of workshops organized and carried-out.
- Number of countries using the methodology.
- Number of finished (published) studies in the Region.

*Carry out studies to evaluate the impact of an outbreak of Avian Influenza on the poultry-related food supply, to determine the potential effects of an avian epidemic on regional food security.*

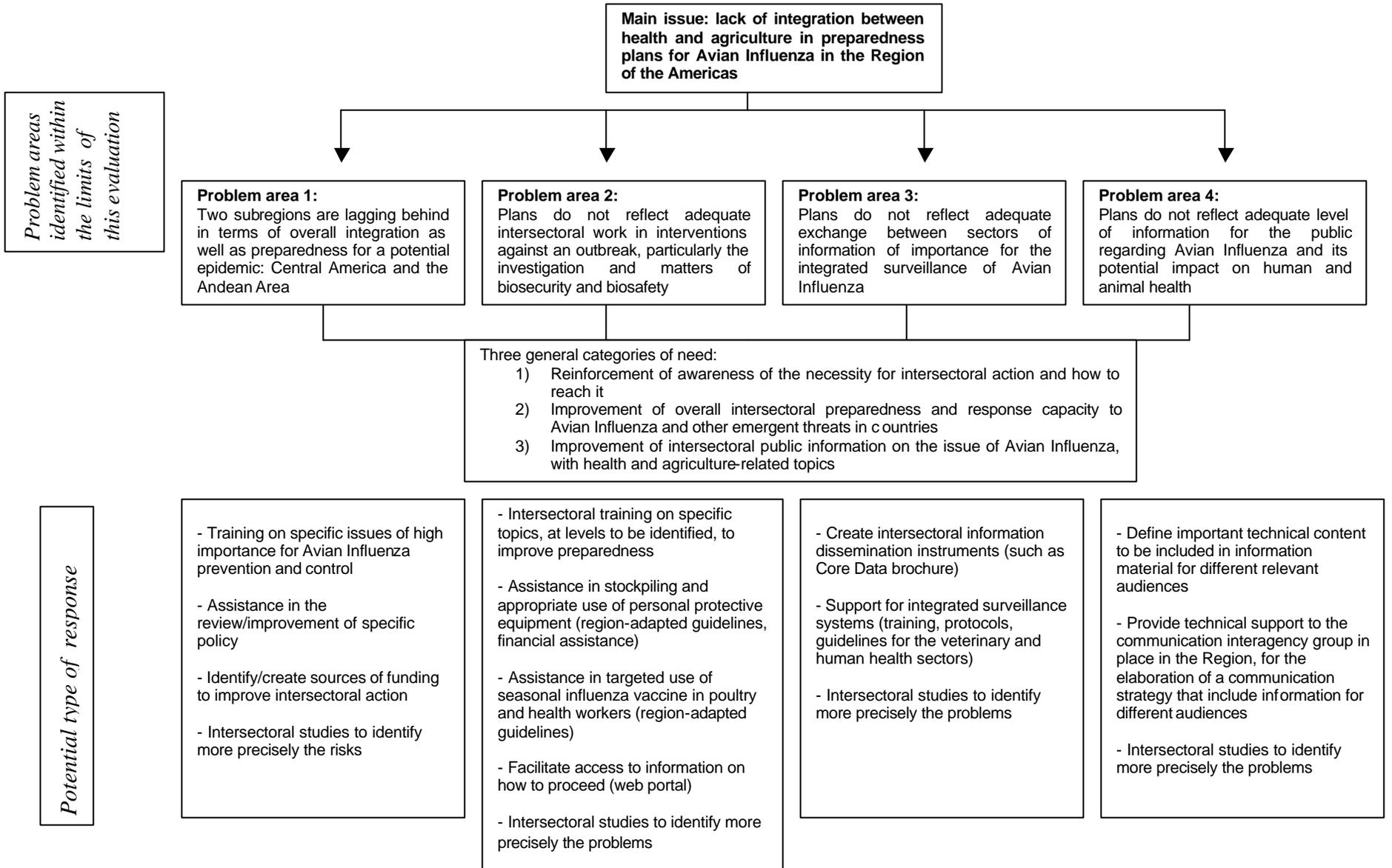
*Activities:*

- Identify neediest areas.
- Identify team to carry-out the studies.
- Organize and carry-out the studies.

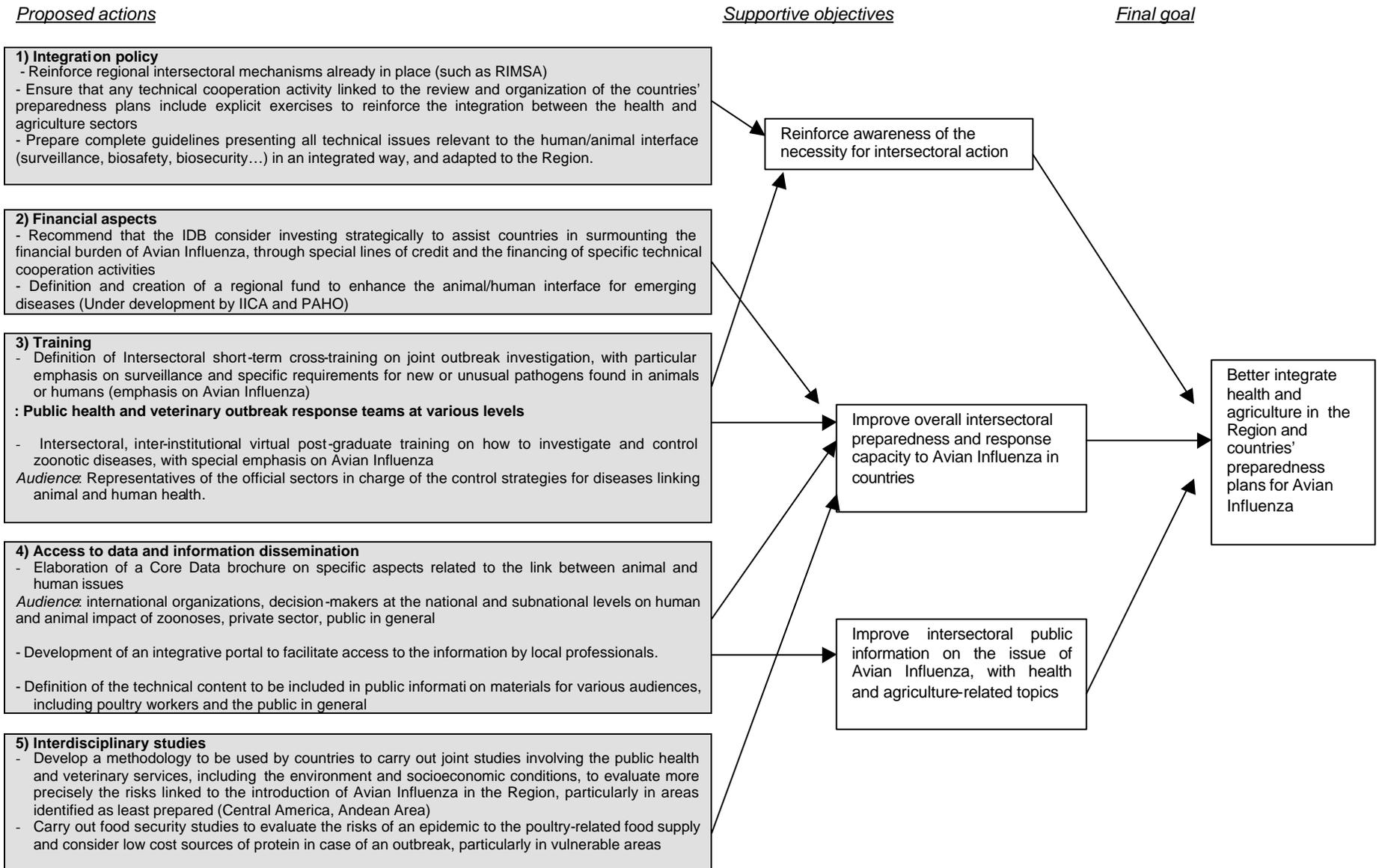
*Indicators:*

- Number of studies carried-out.

**Figure 1: Partial problem tree and potential solutions**



**Figure 2: Proposed actions and the general objectives they support to meet the final goal of better integration**





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## Annex 1

### Key elements of the UN System Consolidated Action Plan

**Shared vision of a coordinated global response:**

- a) Control highly pathogenic Avian Influenza in poultry, and reduce the risks that this disease poses for members of the human population exposed to it
- b) Watch out for sustained human to human transmission of highly pathogenic influenza through vastly improved surveillance, and be ready to contain it; should containment not be successful
- c) Mitigate the impact of a pandemic on human health, society, economic systems and governance.

**Six factors for success:**

- 1) Consistent high level political engagement and direction.
- 2) Procedures and systems for rapidly scaling up implementation of priority actions.
- 3) Strong risk analysis, information dissemination and communication systems to encourage compliance with reporting and social mobilization.
- 4) Mechanisms to sustain vulnerable livelihoods and relieve distress.
- 5) Strategic alliances across all levels of government, engaging private and voluntary sectors and
- 6) Management systems that engage all stakeholders, encourage synergy, analyze progress review results and shift programme emphasis when necessary.

<u>Seven Objectives</u>	<b>Emphases pursued by National Authorities with the support of the UN System and its partners</b>	<b>Lead(s) and UN agencies involvement</b>
<b>1. Animal Health and Biosecurity</b>	Ensuring, through a global, cohesive framework in response to Avian Influenza in birds, that animal health is safeguarded, bio-security is brought up to standard, and capacity is there, when needed, for scaling up veterinary services to detect and stamp out new avian infections through prompt movement restrictions and culling, and for sustaining vaccination of poultry and other interventions when they are indicated. Clarifying how the emergence of pandemic agents, food and agricultural practices, land use and ecosystem management are related.	FAO Collaboration with UNHCR for refugee camps
<b>2. Sustaining Livelihoods</b>	Ensuring that the economic and poverty impact of Avian Influenza as well as related control measures are monitored and rectified; limiting any adverse repercussions on the Millennium	UNDP and FAO Collaboration with WFP(food security),

	Development Goals; seeking fair and equitable compensation for those whose livelihoods are endangered by Avian Influenza and control measures.	UNICEF (child focus), WHO (health system focus) and UNHCR (refugees)
<b>3. Human Health</b>	Strengthen public health infrastructure, including surveillance systems, to (i) reduce human exposure to the H5N1 virus; (ii) strengthen early warning systems, including early detection and rapid response to human cases of Avian Influenza; (iii) intensify rapid containment operations and responses for a newly emerging human influenza virus; (iv) build capacity to cope with a pandemic, including surge capacity for a pandemic; and (v) coordinate global science and research, particularly as this pertains to the availability of a pandemic vaccine and antiviral drugs. Strengthen community based treatment of acute respiratory infections, including pre-positioning of medical supplies in peripheral areas to enhance capacity to respond as well as to enhance nutrition security and access to micronutrients to minimise the impact of infection on susceptible populations.	WHO Collaboration with UNICEF (child focus) and UNHCR (refugees)
<b>4. Coordination of National, Regional and International Stakeholders</b>	Ensuring that national government ministries work together in a focused way, bringing in civil society and private sector groups, in pursuit of sound strategies for Avian Influenza control and pandemic preparedness.	UNDP in collaboration with WFP (food), WHO (MoH and partners), FAO (MoA), UNDG and UNSIC
<b>5. Public Information and Communication to Support Behaviour Change</b>	Strategic communication to provide clear and unambiguous risk and outbreak information to the general public and key groups of people with the highest potential for stemming the spread and impact of the disease. This will include communicating with the public, households and communities to involve and mobilize them to adopt appropriate behaviours to reduce risks and mitigate the impact of any outbreaks or pandemic.	FAO and WHO for outbreak communication, UNICEF in collaboration with FAO, WHO, WFP and UNHCR for behavioural change communication
<b>6. Continuity under Pandemic Conditions</b>	Ensuring the continuity of essential social, economic and governance services, and effective implementation of humanitarian relief, under	OCHA and UNDP Collaboration

	pandemic conditions.	with all UN agencies
<b>7. Common Services Support</b>	Ensuring that - in the event that national capacity is overwhelmed by pandemic conditions - agreed emergency operating procedures are invoked and benefit from information technology and logistics capacity set up and made operational beforehand.	All UN agencies working within the inter-agency process
<b><u>Three intensities of implementation:</u></b>	<b>UN System (with partners) level of intervention</b>	
<b>1. Countries with Strong Capacity to Implement (SIC)</b>	Convene stakeholders, set norms and standards, harmonize external cooperation; maintain support through regional and international technical networks, and monitor progress.	
<b>2. Countries with Moderate Capacity to Implement (MIC)</b>	In addition to the above, provide substantial and sustained technical and financial assistance so as to enable the realization of the international norms and standards.	
<b>3. Countries with Restricted Implementation Capacity (RIC)</b>	In addition to the above, provide direct assistance - to help with aspects of programme implementation until the in-country response is adequate.	

## Annex 2

### **Complete Checklist Used in the PAHO/USAID Workshop on Pandemic Influenza Preparedness in Panama (February 2006)**

Lista de verificación para programas de prevención y contingencia para influenza aviar en la Región de las Américas integrando aspectos de salud pública

#### Coordinación y participación

1. ¿Cuenta el país con un plan general de preparación para la posible pandemia?
2. ¿En el plan de preparación se incluye la salud, agricultura y otros sectores?
3. ¿Existe un plan de prevención y control de influenza aviar?
4. El componente de influenza aviar ¿Está previsto en el plan nacional de preparación de pandemia?
5. ¿Este plan fue elaborado conjuntamente con la participación de los sectores de salud y de agricultura y otros (medio ambiente, etc.)?
6. ¿Existe una estructura de coordinación nacional y un Comité de preparación para una pandemia?
7. ¿Existe coordinación regional en (Centroamérica, Área Andina, Cono Sur, Caribe, América del Norte), ante una respuesta de emergencia de IA?
8. ¿Los profesionales de los sectores salud y agricultura se están reuniendo conjuntamente a discutir sobre el tema de la influenza?
9. En caso que se estén reuniendo: ¿El sector productivo avícola está participando de éstas discusiones durante la elaboración del plan y subsecuentemente?
10. ¿Se ha identificado un punto focal a ser contactado en los Ministerios en el caso de una emergencia en influenza aviar?
11. ¿Sería posible proporcionar un listado de profesionales (veterinarios y otros) que podrían actuar en un caso de brote?
12. ¿Qué grado de importancia tiene la avicultura en la economía del país?

13. ¿Se han realizado análisis para estimar la repercusión económica y social de un brote de IA?

Vigilancia y diagnóstico:

14. ¿Se cuenta con un censo actualizado de población de granjas comerciales?

15. ¿Se cuenta con una estimación poblacional sobre la avicultura de traspatio y distribución geográfica?

16. ¿Existe una descripción de los sistemas productivos avícolas más importantes y su zonificación?

17. ¿Tiene caracterizado los locales más importantes de paso y alimentación de las aves migratorias en su país?

18. ¿Se han realizado estudios de evaluación del riesgo de la introducción de la influenza aviar al país ?

19. ¿Existe una unidad de epidemiología encargada de la vigilancia de enfermedades avícolas con recursos humanos y financieros pertinentes?

20. ¿Existen actividades de vigilancia pasiva y activa de influenza en aves domésticas? Describa cuales.

21. ¿Existen actividades de vigilancia pasiva y activa en aves silvestres? Describa cuales.

22. ¿Existe un laboratorio de diagnóstico para influenza aviar en el país con recursos humanos y financieros pertinentes?

23. En caso que exista ¿que pruebas procesan?

24. ¿Existen laboratorios privados con capacidad de diagnóstico ?

25. En caso que no exista laboratorio ¿Está definido que las muestras deben ser enviadas al laboratorio de Referencia del USDA, APHIS, NVSL, Ames IO?

26. ¿Existe un protocolo para envío de muestras siguiendo las líneas del USDA o de OMS, OIE, FAO?

27. ¿Existe algún protocolo para informar al Ministerio de Salud, sobre infección respiratoria humana, en personal relacionado con el manejo de aves con sospecha de IA?

28. ¿Existe algún mecanismo de intercambio rutinario de información epidemiológica relacionado con influenza entre los sectores de salud y de agricultura?

29. ¿Existen bases de datos con la información sobre vigilancia epidemiológica para IA compartida entre salud y agricultura?

### Educación sanitaria

30. ¿Existe un programa de capacitación sobre IA dirigido a veterinarios, técnicos, avicultores, población rural y otros relacionados? ¿Puede incluir una lista de los funcionarios capacitados sobre influenza aviar en vigilancia, laboratorio y control?
31. ¿Existe un programa continuo de educación sanitaria para promover la notificación?
32. ¿Existe material divulgativo e incentivos para promover la notificación?

### Respuesta en el caso de sospecha u ocurrencia de un brote

33. ¿Existen instrucciones escritas en un plan de contingencia de cómo se debe proceder en caso de una sospecha de brote de IA de acuerdo con las recomendaciones de la OIE/FAO?
34. ¿Las instrucciones escritas (manuales de procedimientos operativos, MPO) del plan de contingencia siguen las orientaciones OIE/FAO y tiene respaldo legal?  
¿Puede anexar una lista de los manuales de procedimientos operativos?
35. ¿Existe un fondo de contingencia para una emergencia por IA?
36. ¿Está establecido en el plan de emergencia la activación de un grupo ejecutor del mismo y las funciones de cada integrante?
37. El personal que eventualmente integraría el grupo ejecutor, ¿Ha sido capacitado para sus respectivas funciones ?
38. ¿Se han realizado ejercicios de simulación para entrenar a los participantes y probar el plan de contención?
39. ¿Existe un sistema de cuarentena animal establecido aplicable a la prevención y control de la influenza aviar en el país que incluya:
- Control de la movilización interna
  - Control de la movilización internacional
  - Requisitos de importación
  - Cuarentenas precautorias
  - Cuarentena focal y perifocal hacia y dentro de un foco
40. Las personas que van a investigar el brote y realizar las acciones recomendadas en las guías de la FAO/OIE ¿Cuentan con los equipos de protección personal recomendados por la OMS?

41. ¿Existen disposiciones sobre normas de bioseguridad que eviten la contaminación de las aves y de los trabajadores que están en contacto con las aves?
42. Las personas que van a investigar el brote y realizar las acciones recomendadas en las guías de la FAO/OIE ¿Están vacunados contra influenza estacional?
43. ¿Cuando hay una sospecha de influenza en las aves, se informa al sector salud inmediatamente?
44. ¿Está establecido que se debe hacer con las personas (trabajadores de granjas, dueños de los animales y sus familias y otros) expuestas a aves sospechosas?
45. De tener estas instrucciones, ¿tendría como actuar de acuerdo con lo recomendado por las agencias especializadas?

### Comunicaciones

46. ¿Existe un plan de comunicación que defina las estrategias de comunicación y establezca:
  - Línea de comunicación
  - Responsable de comunicación del ministerio de agricultura
  - Coordinación con el Ministerio de Salud.
47. ¿El Comunicador social del Ministerio de Agricultura está entrenado en Comunicación de riesgo?

### Inocuidad de los alimentos

48. ¿Se prevé la distribución de materiales informativos para orientar a la población en general sobre la influenza aviar, considerando entre otros los aspectos del consumo de alimentos avícolas?
49. ¿Existe un sistema de inspección y control que garantice la inocuidad de los alimentos de origen aviar (huevos y carne)?

### Marco Regulatorio:

50. ¿Existen legislaciones/normativas actualizadas que apoyan las acciones relacionadas con la prevención, control y erradicación de influenza aviar?
51. ¿Las diversas acciones de un plan de emergencia están legalmente sustentadas?
52. ¿Existen los elementos necesarios para ejercer y hacer cumplir efectivamente las normativas?
53. ¿Está(n) prevista(s) alguna(s) forma(s) de compensación a los dueños de los animales a ser sacrificados?

54. ¿Existen recursos humanos y financieros pertinentes, previstos para la ejecución del plan?

Información complementaria:

55. ¿Cómo se podría reforzar la integración entre los sectores salud y agricultura, el sector privado y otros sectores relacionados para responder adecuadamente a la preparación para una posible pandemia de influenza humana?

## Annex 3

### **Fundamental Components of the IICA/OIE Performance, Vision, and Strategy for National Veterinary Services study**

**I. Technical capability** (The capability of the veterinary services (VS) to establish and apply sanitary measures and science-based procedures)

*Critical competencies:*

- 1) Diagnostic capability
- 2) Early detection and emergency response capability
- 3) Quarantine
- 4) Epidemiological surveillance
- 5) Quality systems
- 6) Risk analysis
- 7) Technical innovation

**II. Human and financial capital** (Institutional and financial sustainability as evidenced by the level of professional talent and financial resources available)

*Critical competencies:*

- 1) Human talent
- 2) Training
- 3) Funding sources
- 4) Stability of policies and programs
- 5) Contingency funds
- 6) Technical independence
- 7) Capability to invest and grow

**III. Interactions with the beneficiaries** (The capability of the VS to collaborate with and involve the beneficiaries (including farmers and/or industry) in the implementation of programs and activities)

*Critical competencies:*

- 1) Communication
- 2) Consultation of beneficiaries
- 3) Official representation
- 4) Accreditation/Delegation
- 5) Statutory body
- 6) Joint action programs implementation

**IV. Access to markets** (The capability and authority of the VS to provide support in order to access, expand and retain regional and international markets for animals and animal products)

*Critical competencies:*

- 1) Compliance with regulatory norms
- 2) Formulation of regulatory norms
- 3) International harmonisation
- 4) Certification
- 5) Equivalency agreements
- 6) Traceability
- 7) Transparency
- 8) Zoning
- 9) Compartmentalisation