

Document of
The World Bank

Report No: ICR2628

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IDA-H4190)

ON A

EMERGENCY RECOVERY GRANT
IN THE AMOUNT OF
SDR 1.00 MILLION
(US\$1.557 MILLION EQUIVALENT)

TO THE
REPUBLIC OF HAITI

FOR AN
AVIAN INFLUENZA CONTROL AND HUMAN PANDEMIC PREPAREDNESS
AND RESPONSE PROJECT

UNDER THE

GLOBAL PROGRAM FOR AVIAN INFLUENZA
AND HUMAN PANDEMIC PREPAREDNESS AND RESPONSE (GPAI)

December 12, 2012

Sustainable Development Department
Haiti Country Department
Latin America and Caribbean Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective December 12, 2012)

Currency Unit = Gourdes (HTG)
HTG 40.48 = US\$1
US\$ 0.625 = SDR 1

FISCAL YEAR
October 1 – September 30

ABBREVIATIONS AND ACRONYMS

AHI	Avian and Human Influenza
AI	Avian Influenza
APL	Adaptable Program Loan
CCID	Center for Control of Infectious Diseases
CDC	Centers for Disease and Control Prevention
CNIAH	National Commission on Avian and Human Influenza
DDA	Departmental Directorate for Agriculture
DELR	Department of Epidemiology, Laboratory and Research
DPSA	Directorate for Animal Production and Animal Health
DR	Dominican Republic
EMP	Environmental Management Plan
FAO	Food and Agriculture Organization
GoH	Government of Haiti
GPAI	Global Program for Avian Influenza Control and Human Pandemic Preparedness and Response
GSB	Gwoupman Sante Bèt
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
HPAI	High Pathogenic Avian Influenza
IADB	Inter-American Development Bank
ICR	Implementation Completion and Results Report
IDA	International Development Association
IICA	Inter-American Institute for Cooperation in Agriculture
ISO	International Organization for Standardization
LPAI	Low Pathogenic Avian Influenza
LVCQAT	Tamarinier Veterinary and Food Quality Control Laboratory
MARNDR	Ministry of Agriculture, Natural Resources and Rural Development
MEF	Ministry of Economy and Finance
MSPP	Ministry of Public Health and Population
MTR	Mid-Term Review
M&E	Monitoring and Evaluation
NGO	Non-Governmental Organization

OIE	World Organization for Animal Health
OP	Operational Policy of the World Bank
PAHO	Pan-American Health Organization
PCU	Project Coordination Unit
PDO	Project Development Objectives
PP	Project Paper
TCP	Technical Cooperation Project
UCS	Health Units under MSPP
UPS	Sanitary Protection Unit of MARNDR
USAID	United States Agency for International Development
WB	World Bank
WHO	World Health Organization

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REPUBLIC OF HAITI

**AVIAN INFLUENZA CONTROL AND HUMAN PANDEMIC PREPAREDNESS
AND RESPONSE PROJECT**

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A. Basic Information			
Country:	Haiti	Project Name:	AVIAN INFLUENZA CONTROL AND HUMAN INFLUENZA EMERGENCY PREPARDNESS AND CONTROL
Project ID:	P111667	L/C/TF Number(s):	IDA-H4190
ICR Date:	12/12/2012	ICR Type:	Core ICR
Lending Instrument:	ERL	Borrower:	GOVERNMENT OF THE REPUBLIC OF HAITI
Original Total Commitment:	XDR 1.00M	Disbursed Amount:	XDR 0.92M
Revised Amount:	XDR 1.00M		
Environmental Category: B			
Implementing Agencies: Ministry of Health and Population Ministry of Agriculture, Natural Resources and Rural Development			
Cofinanciers and Other External Partners:			

B. Key Dates				
Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	03/19/2008	Effectiveness:	04/06/2009	04/06/2009
Appraisal:	06/05/2008	Restructuring(s):		05/03/2010
Approval:	07/14/2008	Mid-term Review:	07/18/2011	07/18/2011
		Closing:	01/15/2012	06/30/2012

C. Ratings Summary	
C.1 Performance Rating by ICR	
Outcomes:	Moderately Unsatisfactory
Risk to Development Outcome:	Moderate
Bank Performance:	Moderately Unsatisfactory

Borrower Performance:	Moderately Unsatisfactory
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C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)			
Bank	Ratings	Borrower	Ratings
Quality at Entry:	Moderately Unsatisfactory	Government:	Not Applicable
Quality of Supervision:	Moderately Satisfactory	Implementing Agency/Agencies:	Not Applicable
Overall Bank Performance:	Moderately Unsatisfactory	Overall Borrower Performance:	Moderately Unsatisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Implementation Performance	Indicators	QAG Assessments (if any)	Rating
Potential Problem Project at any time (Yes/No):	Yes	Quality at Entry (QEA):	None
Problem Project at any time (Yes/No):	Yes	Quality of Supervision (QSA):	None
DO rating before Closing/Inactive status:	Moderately Unsatisfactory		

D. Sector and Theme Codes		
	Original	Actual
Sector Code (as % of total Bank financing)		
Agricultural extension and research	7	5
Animal production	5	20
Health	5	5
Public administration- Agriculture, fishing and forestry	63	60
Public administration- Health	20	10
Theme Code (as % of total Bank financing)		
Other communicable diseases	25	20
Rural policies and institutions	75	80

E. Bank Staff		
Positions	At ICR	At Approval
Vice President:	Hasan A. Tuluy	Pamela Cox
Country Director:	Alexandre V. Abrantes	Yvonne M. Tsikata
Sector Manager:	Laurent Msellati	Ethel Sennhauser
Project Team Leader:	Diego Arias Carballo	Jean-Claude Balcet
ICR Team Leader:	Diego Arias Carballo	

ICR Primary Author:	Gabriela Vaz Rodrigues	
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F. Results Framework Analysis

Project Development Objectives (from Project Appraisal Document)

To minimize the threat posed to humans by highly-pathogenic avian influenza (HPAI) infection and other zoonoses, and to prepare for, control, and respond to influenza pandemics and other infectious disease emergencies in humans.

Revised Project Development Objectives (as approved by original approving authority)

No revision

(a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Communal sections remain free of AHI infection in poultry			
Value quantitative or Qualitative)	0	24		24
Date achieved	02/04/2008	01/31/2012		06/29/2012
Comments (incl. % achievement)	100%			
Indicator 2 :	Communal sections that send weekly surveillance report on time			
Value quantitative or Qualitative)	2	25		20
Date achieved	02/04/2008	01/31/2012		06/29/2012
Comments (incl. % achievement)	80%			
Indicator 3 :	Decrease in the time taken to report information on poultry diseases at local level (number of days it takes to report information)			
Value quantitative or Qualitative)	7	4		2
Date achieved	02/04/2008	01/31/2012		06/29/2012
Comments (incl. % achievement)	200%			
Indicator 4 :	Backyard poultry farmers currently applying at least three prescriptions to protect their poultry and/or family			
Value	0	2800		Not Known

quantitative or Qualitative)				
Date achieved	02/04/2008	01/31/2012		06/29/2012
Comments (incl. % achievement)	The indicator likely intended to measure the individual contribution of the project to 2800 vaccinations following the training of farmers (impact of the training).			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Laboratory staff trained in AHI diagnosis by the project			
Value (quantitative or Qualitative)	0	12		6
Date achieved	02/04/2008	01/31/2012		06/29/2012
Comments (incl. % achievement)	50%			
Indicator 2 :	Communal sections adequately covered by trained staff			
Value (quantitative or Qualitative)	Not known	40		484
Date achieved	02/04/2008	01/31/2012		06/29/2012
Comments (incl. % achievement)	1000%+			
Indicator 3 :	Development of communications strategy			
Value (quantitative or Qualitative)	None	Approved		Approved
Date achieved	02/04/2008	01/31/2012		06/29/2012
Comments (incl. % achievement)	Accomplished			
Indicator 4 :	Health Personnel receiving training under the project			
Value (quantitative or Qualitative)	0	42		400
Date achieved	02/04/2008	01/31/2012		06/29/2012
Comments (incl. % achievement)	1000%			

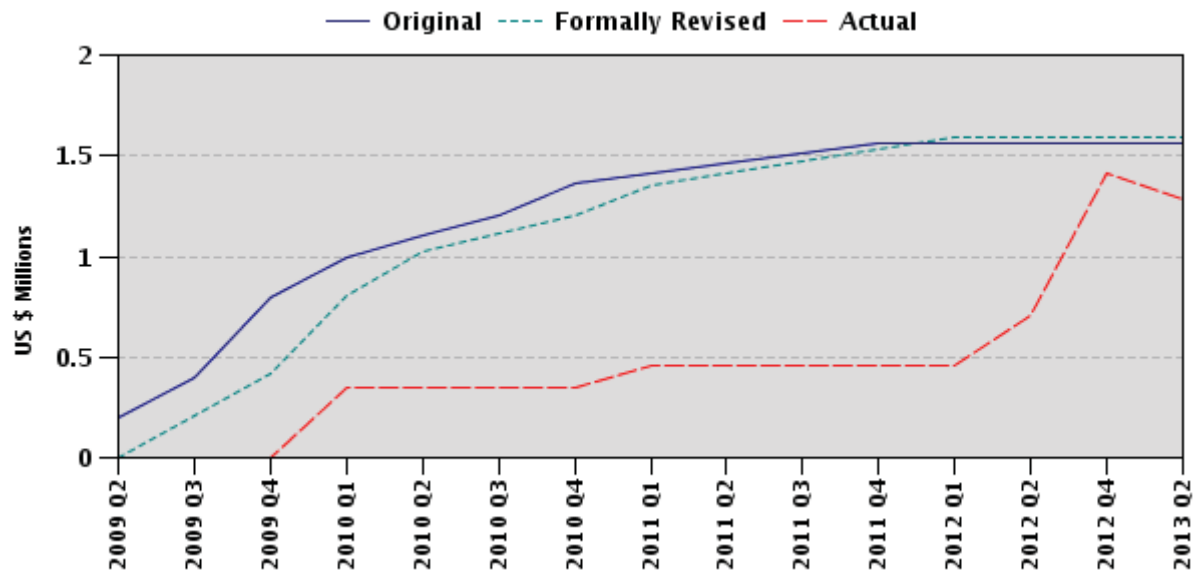
G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1	08/13/2008	Satisfactory	Satisfactory	0.00
2	02/20/2009	Moderately Satisfactory	Moderately Satisfactory	0.00
3	07/29/2009	Moderately Satisfactory	Moderately Satisfactory	0.00
4	11/17/2009	Moderately Satisfactory	Moderately Satisfactory	0.35
5	05/07/2010	Moderately Satisfactory	Moderately Unsatisfactory	0.35
6	12/02/2010	Moderately Satisfactory	Moderately Satisfactory	0.46
7	06/29/2011	Moderately Unsatisfactory	Moderately Unsatisfactory	0.46
8	12/28/2011	Moderately Unsatisfactory	Moderately Unsatisfactory	0.71
9	06/29/2012	Moderately Unsatisfactory	Moderately Unsatisfactory	1.41

H. Restructuring (if any)

Restructuring Date(s)	Board Approved PDO Change	ISR Ratings at Restructuring		Amount Disbursed at Restructuring in USD millions	Reason for Restructuring & Key Changes Made
		DO	IP		
05/03/2010	N	MS	MS	0.35	Earthquake of 2010 resulted in project extension and reallocation of expenditures.

I. Disbursement Profile



1. Project Context, Development Objectives and Design

1.1 Context at Appraisal

1.1.1 The Global Program for Avian Influenza Control and Human Pandemic Preparedness and Response. In 2005, the highly pathogenic avian influenza (HPAI) H5N1 virus emerged as a global threat. On January 12, 2006 the Bank's Board endorsed the Global Program for Avian Influenza Control and Human Pandemic Preparedness and Response (GPAI) as a horizontal, adaptable program providing up to US\$500 million of immediate emergency assistance to countries seeking support to address this threat to public health and economic activity world-wide. The GPAI was a Bank contribution to a broad international response launched at the ministerial conference in Beijing, China, in January 2006 with pledges of US\$1.9 billion from 35 donors. Throughout 2006, the virus spread rapidly with additional countries reporting cases of HPAI; by the end of the year, 55 countries in Asia, Europe, Africa and the Middle East had reported cases in poultry or wild birds.

1.1.2 Avian Influenza outbreak in Hispaniola: Following detection of the H5N2 subtype of Avian Influenza (AI) in the Dominican Republic (DR) in December 2007, the Bank started preparation of the Project as part of the global response effort. In May 2008, the virus was detected at four locations in Haiti. Suspected means of introduction of AI in Haiti were through its six ports and two main airports, trade along the Haitian-DR border and internal poultry movements (especially of fighting cocks), and through the migration of infected birds. The H5N2 flu detected in DR and later in Haiti was Low Pathogenic Avian Influenza (LPAI) and thus did not represent a significant threat to animal or human health (i.e., low risk of severe illness and death). However, concern existed over the spread of H5N2 and possible mutation of the virus into a Highly Pathogenic Avian Influenza (HPAI) subtype, which can cause severe illness and death (such as H5N1, see Annex 1).

1.1.3 Country Context. At the time of project appraisal, Haiti's population was estimated at 9.5 million, with an annual growth rate of 1.6%. Historically, Haiti was always the poorest country in the Western hemisphere and one of the most disadvantaged globally, with 78% of its population living below the poverty line (US\$2.00/day). It ranked 146th out of 177 countries in the 2007 Human Development Index. Estimates put the number of poultry in Haiti at approximately 5 million of which only 10-20% were owned by commercial enterprises¹. However, when compared to the results of the 2008-2010 Agricultural Census these numbers turned out to be a significant under-estimation of the actual numbers of poultry (8.9 million) and of the importance to livelihoods of traditional poultry farming (99.5% of 775,704 farms were raising poultry nationwide)², increasing the challenge of preventing, controlling and responding to potential outbreaks of AI. Haiti was also exposed to the risk of infection by zoonoses³ through imports of around 2.5 million chickens per month, including from the DR.⁴ The Human health situation also was quite dire at time of project

¹ Project Paper; *Plan Haitien de Préparation a une Pandémie d'Influenza* 2009. Based on FAO estimates from 2005.

² See Annex 2 for the preliminary results of the 2008-2010 Agricultural Census, released in September 2012.

³ Zoonoses are infectious diseases that can be transmitted between species, from animals to humans or vice versa. Zoonoses now account for 75% of infectious diseases affecting humans

⁴ In addition to the AI detected in 2008, many diseases had historically affected livestock in Haiti including Newcastle disease, Classical Swine Fever, Porcine Encephalomyelitis (Teschin disease), anthrax, screw-worm, rabies, brucellosis, tuberculosis and varroasis. Of these, only AI, rabies, anthrax, brucellosis and tuberculosis are potentially severe zoonoses.

appraisal, with an infant mortality rate of 75 per 1000 births and the highest incidence of HIV/AIDS outside Sub-Saharan Africa.

1.1.4 The National Commission, Steering Committee, and Plan for Avian Influenza.

The Haitian Government's awareness of AHI started in 2003, following cases of human deaths from H5N1 in Asia. A technical body, the National Commission on Avian and Human Influenza (CNIAH), under the Ministry for Public Health and Population (MSPP), was created in 2005 and institutionalized by decree in 2006. Tasked with preparing an Avian Influenza and Human Pandemic Preparedness Plan, CNIAH's life was short and its activities ceased with a change of Minister in 2006. The follow-on National Steering Committee on Avian Influenza intended to raise resources for surveillance activities and information sharing, but was never institutionalized although it did prepare the *National Program for the Epidemiologic Vigilance of Avian Influenza*. Under the Global Program for Avian Influenza (GPAI), the Government of Haiti (GoH) then prepared a *National Avian Influenza Control and Pandemic Preparedness Plan* (National Plan) covering the period 2006-2010, consistent with the global strategies developed by FAO/OIE and WHO-PAHO, and providing the basis for the Project and other donor support.

1.1.5 Animal health sector in Haiti. Key actors in animal health were and remain: (i) local voluntary Animal Health Groups (*Gwoupman Sante Bèt* or GSBs); (ii) the Animal and Plant Quarantine Service, legally responsible for surveillance and response at ports, airports, border posts, and internal posts; (iii) the Directorate for Animal Production and Animal Health (DPSA) responsible for coordinating and implementing policies on animal health and epidemiological surveillance; and (iv) the Tamarinier Veterinary and Food Quality Control Laboratory (LVCQAT, the National Laboratory), responsible for the diagnosis of animal diseases and food analysis. The last three organizations are part of the Ministry of Agriculture, Natural Resources and Rural Development (MARNDR). Annex 3 summarizes the roles of these actors and their deficiencies at the time of appraisal.

1.1.6 The Human health sector in Haiti. Concerning human health, expenditures in Haiti were and are among the lowest Latin America, and the sector is characterized by insufficient health workers, essential drugs, and equipment. Most hospitals have insufficient isolation rooms and equipment for patients with severe respiratory diseases. The constraints in the health sector at time of appraisal were mirrored in the National Center for Laboratory and Epidemiology (NCLE), which lacked sufficient human and financial resources and operational facilities.

1.1.7 Project appraisal. At the time of appraisal, USAID support to the GoH to get the AHI program up and running had been completed (US\$100,000 between 2006 and 2007). Six approved or ongoing projects were identified in the area of animal and human health (see Annex 3). Project appraisal was conducted in coordination with other donors. The project was part of GPAI under which all projects are processed using OP/BP 8.00 on Rapid Response to Crises and Emergencies. Funding was sourced from cancelled undisbursed balances of operations financed from Haiti's IDA-13 allocation, and was limited to the amount available from this source. Based on the GPAI framework and on lessons from Latin America (e.g. Guatemala, Honduras, Mexico and Chile) and other Regions in the World, the project adopted a multi-pronged approach, including dissemination of AHI information to the public, strengthening the early detection and warning system at the field level, and improving the capacity for rapid and effective response to an outbreak. At the time of appraisal, two complementary projects, supporting a regional approach for the whole island, had been signed

in March 2008 for Haiti and the Dominican Republic, the AHI Prevention and Control Program, a capacity building program financed by the AHI Facility (US\$1.0 million per country)⁵. These projects would complement the IDA-financed project and were intended to improve national and bi-national communications and emergency activities not covered by it.

1.1.8 Rationale for Bank involvement. Bank involvement was justified on the following grounds: (i) the urgent need to reduce the threat of AHI and increase preparedness in Haiti; (ii) the regional and global public goods aspect of controlling AHI and other *zoonoses*; (iii) the need for countries to strengthen their veterinary services, disease surveillance, and the human health system; and (iv) the potential social and economic impacts of AHI on Haitian farmers and the Haitian population as a whole. The latter was consistent with general objectives of poverty alleviation and economic growth contained in the 2006 Haiti Interim Poverty Reduction Strategy prepared by the government of Haiti.

1.1.9 Implementation arrangements. The project had a clear focus on animal health and as such a Project Coordination Unit (PCU) was established within the Directorate for Animal Production and Health (DPSA) and responsible for coordinating technical execution of the entire Project. DPSA was responsible for the execution of Component 1, while MSPP was in charge of Component 2. Communication activities were to be outsourced and coordinated by the Ministry of Communication. Finally, Component 4, including the project's financial administration and procurement, was outsourced to the Inter-American Institute for Cooperation on Agriculture (IICA), which acted as a *fiduciary agent*⁶. The decision to choose to IICA was due in part to a preference expressed by MSPP in order to have a neutral management of funds, and in part to the Bank team's assessment (see Annex 4).

1.2 Original Project Development Objectives (PDO) and Key Indicators (as approved)

1.2.1 Project Development Objective. To minimize the threat posed to humans by highly-pathogenic avian influenza (HPAI) infection and other *zoonoses*, and to prepare for, control, and respond to influenza pandemics and other infectious disease emergencies in humans. The PDO reflected exactly the GPAI development objective.

1.2.2 PDO indicators. The Results Matrix shows Key Indicators as: (i) the number of communal sections sending weekly reports on time; (ii) the number of days taken to report information on poultry diseases at the local level in a representative sample of communal sections; and (iii) the number of backyard poultry farmers applying at least three prescriptions to protect their poultry and/or family from AHI. In the Main Text however, these indicators are shown as Intermediate Outcome with the Key Indicator being "the number of communal sections that remain free of AHI infection in poultry". All four indicators are considered as Key Indicators in this ICR. See Table 1, Section 3.2 for the complete Results Matrix.

1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/justification

N/A

⁵ The AHI Facility is a multi-donor grant-making mechanism supported by the European Commission and nine other donors, and administered by the World Bank.

⁶ IICA is a multilateral agency of the Inter-American system specialized in agriculture. It was contracted by the government as the project's fiduciary agency, and remunerated with project funds. The same arrangement was successfully implemented in the AHI project in DR.

1.4 Main Beneficiaries

1.4.1 The primary project beneficiaries were expected to be: (i) poultry farmers who would benefit from pilot community initiatives and from improved animal health; (ii) the Haitian population in general as potential beneficiaries of improved management of the threat of AHI; (iii) the *Gwoupman Sante Bèt* (GSBs)⁷; (iv) professionals of the DPSA, including of the National Laboratory; (v) health care institutions and personnel; and (vi) other participants in the animal health and human health systems receiving strengthening, equipment, training or information through the project. There were also (unquantified but likely substantial) cross-border benefits because by controlling disease outbreaks promptly and effectively, Haiti and the Dominican Republic could manage avian flu island-wide.

1.5 Original Components (as approved)

1.5.1 **Component 1: Animal health (US\$ 760,000)**, which represented approximately 50% of the Grant, financed support for prevention⁸, surveillance, and preparedness for any AI outbreak. It included activities to provide knowledge on the status of AI in Haiti; to strengthen facilities for early detection and mitigation of the potential impacts of AI, predominantly quarantine facilities; and to test sanitary measures in the context of small farm poultry production. It was designed to have national coverage and comprised three sub-components: (i) Pilot community actions through GSBs; (ii) Emergency actions (culling); and (iii) Sub-Institutional capacity building (MARNDR).

1.5.2 **Component 2: Human health (US\$ 212,500)** financed support for AHI prevention and mitigation at the national level, through capacity building and epidemiologic surveillance in the human health sector, and the establishment of an outbreak response mechanism. Activities included capacity building of health staff to improve the surveillance system and integration of routine surveillance systems and data; simulations to assess the state of implementation and effectiveness of public health measures; and information campaigns to increase the level of knowledge of public health staff and the population at large.

1.5.3 **Component 3: Communications (US\$ 379,000)** financed support for: (i) raising public awareness of AHI; (ii) securing political and civil society support; and (iii) preparing animal and human health institutions for increased demand for advice, products and services in case of an AHI outbreak. It sought behavioral change to control the spread of the virus, prevent infection, strengthen surveillance, adopt biosafety procedures and reporting mechanisms, and highlight the required investments in infrastructure and institutional reforms.

1.5.4 **Component 4: Project administration (US\$ 130,000)** financed support for the administration of grant activities including procurement and disbursement services provided by the fiduciary agency. It also covered project audits.

1.6 Revised Components

⁷ GSBs are independent, voluntary, local community structures responsible for the local planning and implementation of vaccination programs and for animal clinical surveillance, among other roles.

⁸ Prevention can be interpreted as actions to avoid the occurrence of any disease (e.g. surveillance, quarantine, risk analysis, biosafety, vaccination, communication); surveillance, reporting and control correspond to the constant monitoring of animal (and human health) to detect virus outbreaks; and preparedness, mitigation and response refer to the readiness of the animal (and human health) systems to react or respond to an outbreak of the highly pathogenic virus, should it occur.

N/A

1.7 Other significant changes

1.7.1 Complementary funding and effectiveness. The US\$1.0 million grant approved for Haiti from the AHI Facility was cancelled due to the GoH's failure to meet effectiveness conditions by the three-month deadline and to request an extension of this deadline. The Bank and GoH decided to continue with execution of the IDA project while GoH would continue to seek funds to fill the "financial gap". IDA financing was reprioritized to achieve project objectives, focusing mainly on animal health capacity building activities and reducing the focus on emergency response actions. The deadline for project effectiveness (August 18, 2008) was extended to April 2009 in January 2009 to provide more time for signature of the fiduciary agreement between IICA and MARNDR. The project became effective on April 6, 2009.

1.7.2 Extension of the closing date and reallocation of expenditures. On May 3, 2010, the Financing Agreement was amended as following: (i) reallocated US\$ 80,000 from Unallocated and US\$ 80,000 from Category 1 (Compensation payments) to Category 2 (Goods, consultants' services Training and Operating costs for Components 1, 2 and 3); and (ii) the original closing date (January 15, 2012) was extended to January 15, 2013. This restructuring was decided in the aftermath of the January 2010 earthquake which caused implementation delays in addition to those already caused by poor fiduciary management of the Project.

1.7.3 Early closing of the project. A second change of the closing date (to advance the date) was decided following the Mid-Term Review (MTR) and formalized on July 18, 2011. Despite accelerated implementation and improved fiduciary capacity, progress was not satisfactory at the time of the MTR. The Bank recommended that GoH advance the closing date to June 30, 2012 and included still-pending activities in another Bank-financed operation under preparation with the MARNDR (RESEPAG II – P126744).

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

2.1.1 Rapid and Global Response. The challenge posed by the H5N1 avian flu and pandemic threats necessitated a coordinated multisectoral response. The GPAI framework set out how multiple sectors and actors would have to work together and provided a template for the design of country responses, based on guidance from WHO, FAO, and OIE. The design built on relevant Bank operational experience, including in emergency responses to disasters, the global program to address HIV/AIDS, and other responses to outbreaks of animal-borne diseases. Given the context of the global AHI response, the threat of AHI to Haiti, the detection of H5N2 in the neighboring Dominican Republic, and despite an absence of Bank engagement with Haiti in the agriculture sector, the Bank responded swiftly to Government's request by launching project preparation and appraisal to prevent AHI – and particularly HPAI – from spreading into the country. The project was prepared and approved under OP 8.0 and was intended to be financed through several sources of funds including Government's own resources, AHIF Trust Funds and IDA Grant.

2.1.2 Government Commitment. The Government of Haiti took immediate measures - including closing the cross-border trade in livestock - and allocated their own budgetary resources to support the National Plan. Despite tensions between the DR and Haiti, the Bank supported both Ministries of Agriculture in a technical dialogue to deal with the problem bilaterally (island-wide) in order to achieve the objectives in both countries. With Bank support, both countries were able to maintain technical discussions on AI prevention and control. However, on the human health agenda, MSPP was not actively involved in the design of the project, resulting in: (i) a low level of funding of Human Health activities (Component 2) which only received 14% of the IDA grant and of the AHIF grant, and (ii) a lack of commitment from MSPP during project implementation.

2.1.3 Project financing. The project was designed and appraised with three sources of funding: IDA, AHIF and Government Resources (see Table below). This financing structure supported the same PDO and was allocated on a proportional basis per component. In particular, the AHIF TF was central to the design of the project and its cancellation would have a huge impact.

Table 1 : Summary Project Costs (US\$)			
Component / Sub-Component	IDA Grant (P111667) ⁹	AHIF TF (TF091637) ¹⁰	Government Funds
1. Animal Health	760,000	800,000	300,000
1.1 Pilot community activities	300,000	-	-
1.2 Emergency actions	150,000	-	300,000
1.3 Capacity building for prevention and response	310,000	800,000	-
2. Public health	212,500	135,000	-
3. Communication	379,000	-	-
4. Administration	130,000	65,000	-
5. Un-allocated	75,500	-	-
TOTAL	1,557,000	1,000,000	300,000

2.1.4 Quality at entry. Quality at entry is rated Moderately Unsatisfactory. The Global response and the detection of avian flu in neighboring Dominican Republic created pressure to rapidly submit the Project for Board approval. The Bank allocated a total of US\$9,000 for project preparation. The team was composed of agriculture and human health specialists. The quality of Safeguards analysis was satisfactory, however design elements and conditions on the ground merited closer scrutiny, in particular borrower capacity and fiduciary arrangements. Two agencies were identified for fiduciary management during preparation: IICA, and MARNDR. The decision to use IICA was due in part to MSPP's preference for the neutral management of funds, and in part to the Bank team's assessment. IICA's fiduciary capacity was over-estimated (IICA had no experience in managing Bank projects), and with

⁹ This is the allocation as of project approval (not at restructuring).

¹⁰ This funding was approved but TF never became effective and was cancelled.

hindsight MARNDR, which had experience in managing several Inter-American Development Bank (IADB) projects (loans), would have been a better choice.

2.1.5 Project development objectives and key indicators. The Project's PDO and components were consistent with the GPAI and were consistent with respect to the overall financing plan (including IDA, AHIF, and Government resources). However, following the cancellation of the AHIF grant (35% of the overall financing plan), the PDO of the IDA Grant was ambitious with respect to the level of financing available. The Project was aligned with the National Plan, and the IDA (and AHIF) funds were expected to provide flexible financing for filling the gaps throughout the course of its implementation. The Project monitoring and evaluation (M&E) framework was relied on the government system for monitoring and reporting. The project's broad scope allowed the Borrower and the Bank to refocus project activities during implementation on a more holistic approach extending beyond AHI. Finally, project indicators were appropriate, but over-estimated MARNDR's M&E capacity to capture outcomes at the local and national levels, such as the use of secure and systematic reporting on the status of AHI at communal level.

2.1.6 Risk assessment. The major risks identified at appraisal included political commitment, institutional, fiduciary and technical capacity, and public criticism of social distancing during a pandemic. These risks were relevant, reflecting an evolving disease threat in an environment of limited institutional capacity; however the mitigation measures were not appropriate for risks related to fiduciary capacity and political commitment. The hiring of IICA as a fiduciary agency did not solve the fiduciary capacity problem and the measures for inter-institutional collaboration were not enough to engage MSPP in executing the human health activities.

2.2 Implementation

2.2.1 Overall Bank portfolio implementation. Performance of the overall portfolio in Haiti is helpful in assessing the outcome of this project. During the project period, the WB's portfolio was characterized by high risk and severe implementation challenges. Very weak institutional capacity combined with limited IDA resources, led to unrealistic expectations with regard to Government leadership and diligence in implementing the bulk of IDA projects over this period. In addition, Haiti was subject to several external shocks, including 4 severe storms which caused 15% of GDP in losses and the massive earthquake of 2010. These shocks led to further inability on the part of the Government to exercise due diligence in implementation and created substantial obstacles in implementation.

2.2.2 Impact of changes in the external and domestic environment. Diminishing international attention to the risk of a pandemic over the project period (with a marked decline especially since 2009 when the H1N1 flu pandemic proved to be much less severe than feared) resulted in decreasing support for this kind of multisectoral activity and an increasing focus on animal health to control the disease at source. In response, government and donor partners accorded progressively lower priority to implementation of the National Plan. Furthermore, the earthquake that struck Port au Prince on January 12, 2010 affected implementation directly. Obviously survival, relief, and recovery became the first priority in Haiti, but also it affected facilities, communication between agencies, and implied changes in personnel and shortages of equipment. MSPP staff was displaced to a new location; DPSA was not in condition to receive materials to perform epidemiological tests. Providers of goods and services were affected, resulting in a reduced offer from the local markets and procurement delays. Finally, after the earthquake, in mid-2010, the cholera outbreak further

distracted MSPP's attention from the project and its participation in project activities and follow up further declined.

2.2.3 Government's Capacity and Commitment. In addition to the external and domestic environment factors (exogenous to the project) mentioned above, the following were some of the factors regarding capacity and commitment from the borrower that impacted implementation:

a. Ministry of Economy and Finance (MEF). The MEF provided initial funding for the emergency activities related to the project but was quickly disengaged from the avian and human influenza agenda, and did not follow up on ensuring that the AHIF TF became effective therefore losing such funding by letting the effectiveness deadline elapse.

b. Ministry of Agriculture (MARNDR) The MARNDR was the main counterpart and champion of the AI agenda in the country, and even with the reduction on the Global and Domestic priority dedicated to Avian Flu, they saw the project as an opportunity to strengthen their animal health services. Initially, MARNDR prioritized activities supporting the prevention and control of AI, launching a culling campaign in areas where AI was originally detected (with financing from public sector budget resources). Later, the MARNDR focused on broader capacity building on animal health, and quarantine and laboratory services, moving towards a programmatic (rather than project) approach to tackling diseases like AI. This led to activities related to animal health to advance faster than other components.

c. Ministry of Public Health (MSPP). The MARNDR made significant efforts and showed dynamism and leadership to reach to the MSPP and involve other actors and donors in addressing the problem early on. However, although an inter-institutional agreement on AI was reached between MARNDR and MSPP for project execution, no MSPP staff were appointed to liaise with the project (with the exception of one consultant), despite MARNDR's efforts to get a counterpart nominated. Given the small amount of resources and the changes in health agenda priorities at the global and national level, MSPP disengaged from the project, resulting in health activities underperforming compared to other components.

2.2.4 Poor performance of the fiduciary agency. In the first year, technical and procurement documents held by IICA were not processed due to IICA's ignorance of Bank procedures and lack of commitment to the project, creating serious implementation delays. Procurement requests were frequently incomplete, incorrect or in the wrong format, creating long lead-times for procurement processes. No fiduciary training was anticipated for IICA as the reason for hiring a fiduciary agent was to avoid having to spend resources and time in building fiduciary capacity. Supervision actions helped address this problem (e.g. hiring of procurement specialists by the PCU and IICA respectively, and IICA dedicating a project coordination to follow up on project activities). IICA did improve procurement processes and quality, but only towards the end of the project.

2.2.5 Mid-Term Review (MTR). Like for most of the Haiti portfolio the MTR was conducted 1 year later than originally planned (mid 2011 instead of mid 2010) because the closing date was pushed back by 1 year due to the earthquake and the Bank team didn't consider appropriate to conduct a MTR only months after the earthquake with a cholera outbreak in the country. Recommendations by the Mid-term Review (MTR) helped narrow project activities down to a handful of key outcomes, focus on strengthening general disease surveillance capacity rather than on strengthening AHI surveillance alone (as the actual threat of HPAI proved to be very low during implementation), and improve fiduciary performance

by identifying problems and recommending measures to accelerate procurement. IICA's improved pro-activity in leading periodic reviews of procurement requests also helped accelerate procurement following the MTR.

2.2.6 Evolution of approach to communications. Initial work centered on the development of a national Avian Influenza Strategic Communications Plan, the development of conventional printed materials, targeted training of health and veterinary workers and market traders, and an avian influenza phone-in program on national radio. During this phase, activities were principally driven by dedicated funding provided by the project. By 2010, problems with the consultant and dwindling interest from MSPP, encouraged MARNDR to take the lead in concluding activities under the communications component, printing communications materials and distributing them throughout the country through GSBs and local MARNDR offices. The Strategic Communications Plan is an important contribution in the case of a future outbreak, even if the general population campaigns were not executed.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

2.3.1 M&E design. The Project used the National Plan indicators, which were developed in a collaborative manner, notwithstanding the fact that a number of the indicators related to activities for which financing did not materialize. This was a deliberate choice to show support to the National Plan and lessen burden on government capacity to manage different sources of funding. The choice of project indicators, which was not based on the GPAI, required a monitoring system that was not yet in place in Haiti. The project lacked a clear M&E methodology, M&E capacity building activities, and clear responsibilities and procedures. The results framework had a mixture of output and outcome indicators for each component. In retrospect the Project might have only used indicators which related directly to what the IDA Grant financed, however given the emergency nature of the Project it is possible that pre-selected Project-specific indicators would have had to be revised during the implementation based on the support which the Project ultimately provided.

2.3.2 M&E implementation and utilization. MARNDR used their existing M&E system (based mainly on mobile phone communications with GSBs). Values were regularly reported by MARNDR (though sometimes with delay and only on request), but MSPP was absent from reporting on the human health indicators. The MARNDR maintained the complete set of indicators throughout implementation of the Project and strengthened GSB's reporting system. The aide-mémoires of supervision missions captured all the indicators, but with some of them, it was difficult to verify independently given that most of the information was captured through phone conversations and with no written records. Annex 3 provides a critical assessment of each indicator.

2.4 Safeguard and Fiduciary Compliance

2.4.1 Safeguard compliance. The safeguard triggered by the Project was for the Environmental Assessment. Requirements included the preparation of an Environmental Management Plan (EMP), which was drafted during preparation, and finalized within the 6 months after project effectiveness. The EMP was disclosed in Haiti and by the Bank after consultation with key stakeholders. The Project was required to comply with standards of the International Organization for Standardization (ISO) but standards achieved were considered modest, in part due to practical difficulties in complying with such standards in Haiti (limited capacity; lack of infrastructure; resistance to adopting new practices). Supervision at the sites of the quarantine posts revealed a lack of adherence to proper environmental construction

etiquette in one of them (Belladere Quarantine Facility). Although the site was not yet operational as of project closing, the issues were raised with MARNDR to be addressed expeditiously before the opening of the post.

2.4.2 Financial management. The Fiduciary Agency (IICA) had suitably qualified financial management staff to support implementation of the Project. Hiring of the audit firm was delayed, but project compliance with the requirement to present Quarterly Intermediate Financial Reports, maintain the financial management system, and present annual financial audits was satisfactory.

2.4.3 Procurement. Procurement under the Project was managed by the Fiduciary Agency (IICA). As mentioned in Section 2.2 above, during the first 2 years of project execution, procurement requests were frequently incomplete, incorrect or in the wrong format, creating long lead-times for procurement processes. No fiduciary training had been anticipated for IICA as the reason for hiring a fiduciary agent was to avoid having to spend resources and time in building fiduciary capacity. Supervision actions helped address this problem and IICA did improve procurement processes and quality, but only towards the end of the project.

2.5 Post-completion Operation/Next Phase

2.5.1 The Project was closed early, on June 30, 2012 with several activities still to be completed. Implementation of the National Plan improved some core animal health and human health capacities and allowed for coordination between the two systems. The achievements are, however, modest relative to the remaining capacity gaps. The government will require substantial financial and technical assistance for further development of capacity and for operations and maintenance of the assets already acquired. During project implementation, the Bank worked closely with DPSA and Development Partners to develop a programmatic approach to animal health, including pending AI activities within the animal health program of MARNDR (financed by various donors), including the RESEPAG II Project (P126744), to secure funding. However, activities under the responsibility of MSPP were not included in RESEPAG II, and mobilization of such resources for human health systems is not a priority for donor financing, and investments in prevention tend to be grossly neglected.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

3.1.1 The Project objectives were relevant and important to the Haiti economy, public health, and poverty-reduction goals. It was designed quickly as an emergency operation and as part of a financial package to meet the needs of the country for rapid support for its response to an emergency and for strengthening of the veterinary and public health systems, and their capacity to work together in detecting and controlling outbreaks of HPAI H5N1 and prepare to respond to pandemics and similar emergencies. These capacities are dual-purpose, relevant to other disease outbreaks as well. It also supported preparedness at the national and local levels to respond to pandemics and similar emergencies. Relevance was maintained even though conditions on the ground (and thus the focus of human health and communications activities, for example) changed throughout implementation.

3.1.2 The objectives remain highly relevant even now as outbreaks of HPAI H5N1 in poultry continue in more than 12 countries, including countries like Mexico. The risk to economies and public health of outbreaks of zoonotic and other infectious diseases persists and represents a substantial contingent liability on the economy and the government's budget. In the future the government will need to resource and coordinate the veterinary and human public health services to respond rapidly to any HPAI H5N1 outbreaks in poultry, monitor for signs of transmission of the H5N1 virus to the human population, as well as detect and respond to other infectious disease outbreaks. The Project's lessons learnt in this regard are a precedent on which the government and its partners can build.

3.1.3 The global risk of pandemics that originate in livestock or wildlife is rising; capacity for early detection and control of zoonotic pathogens at their animal source thus remains an important goal. This goal is embodied in the International Health Regulations (IHR 2005), which have been adopted by all countries, including Haiti, and in a growing recognition of risks at the interfaces between animal, human, and the environmental health. Concern with mitigation of these risks leads to acceptance of One Health approaches, which entail strengthening public health systems and animal health systems and enabling communication and collaboration at the interface.

3.1.4 Pandemic preparedness remains relevant to Haiti as well since a pandemic could occur in the future. This is all the more likely because prevention of pandemics through control of pathogens at their animal source is currently hindered by pervasive weaknesses of public veterinary health and human public health systems, in Haiti and in many other developing countries. OIE's assessment of Haiti's veterinary services in 2011 found that capacities are extremely weak and preclude performance of nearly all essential functions; moreover, many government staff with veterinary training will be retiring in the next decade and there is no pipeline of replacements. The Project's objectives thus remain relevant from both country and regional/global perspectives.

3.2 Achievement of Project Development Objectives

3.2.1 The Project partially achieved its PDO, but there are problems of attribution (magnitude of the PDO indicators) and of the reliability of some values reported (see Annex 5). The objectives as stated can be divided into two: (i) minimization of the threat posed by HPAI and other zoonoses: and (ii) increasing prevention, control and preparedness. Annex 6 contains the Results Matrix with achievements as of the closing date, and the overall achievements are measured in the four overarching outcome indicators (Table below).

Indicator	Baseline	Target	Achieved
Outcome indicators (PDO)			
24 communal sections remain free of AHI infection in poultry	0	24	24
Half of the 50 communal sections that send weekly surveillance report on time	2	25	20
Decrease in the time taken to report information on poultry diseases at local level (days)	7	4	2
2800 of backyard poultry farmers currently applying at least three prescriptions to protect their poultry and/or family	0	2800	767*

(*) Estimate based on pilot initiatives financed by the project.

(a) Minimizing the threat posed by HPAI and other zoonoses (partially achieved)

3.2.2 The 24 communal sections targeted by the PDO indicator are reported to remain free of AHI infection in poultry (these 24 communes are based on a domain of 50 communal sections¹¹). At the National level, according to DPSA, all 570 communal sections of the country remain free of HPAI, and over 80% are free of LPAI. Nevertheless, it is difficult to objectively state whether the threat of HPAI was minimized at the country level, as LPAI did spread beyond its source (border communal sections)¹². However, since: (i) it is difficult to know what would have occurred without the Project in terms of dissemination of LPAI within Haiti, (ii) the potential mutation of the virus is unknown, and (iii) given the increased number of reporting and capacity building of GSBs and human health agents; this objective is considered to be partially achieved.

(b) Increasing prevention, surveillance and preparedness (partially achieved)

3.2.3 **Prevention measures (partially achieved).** There was no estimate of how many farmers were applying prescriptions¹³, or how many prescriptions were applied and which kind, by closing. However, it is estimated (through Census data) that 767 farmer were applying prescriptions by project closing, as they were benefiting from prevention and epidemiological surveillance promoted through the confinement of poultry (59 units of 150 hens in lay were financed across 9 departments¹⁴), a total 8,850 hens in lay. This increase represents an 18% increase in the number of farms practicing modern poultry farming techniques in the country (4,172 farms raised poultry using modern techniques according to the agricultural census) and possibly applying prescriptions. According to DPSA, an estimated 85% of communal sections (i.e. 484) had adequately trained GSBs (farmers and veterinarians) as of June 30, 2012. The Project trained 5,000 farmers and 40 veterinary agents across 484 communal sections, and 400 health professionals. These included 70 veterinarians and 330 human health professionals. The Project also financed the preparation of a training manual on AHI and other acute respiratory infections which was distributed to public health professionals. Limitations to decision-making on prevention and control of AI have been reduced by the strengthening of the GSBs and communications with MARNDR, however some still persist, such as: (i) the limited access to vaccines and medicines for logistical reasons or lack of resources; (ii) farmers' knowledge that the sub-type of AI present in Haiti poses little risk to human health; and (iii) limited knowledge by MARNDR about the current distribution of AI in the country.

3.2.4 The AHI communications strategy was finalized in November 2011 but the communication campaign while ready to launch in February 2012, was not fully implemented. This was due to a delays in preparing the communications strategy document (consultant became ill), obtaining formal approval, and to a lack of coordination between the PCU, MSPP and IICA. The Project conducted preventive communication campaigns at a smaller scale by distributing 5000 flyers and 1000 posters with basic information on AI to farmers and local MARNDR offices and GSBs.

¹¹ These corresponded to: (i) the 44 communal sections of the 16 communes having a border with the DR; plus (ii) the 6 communal sections of the 2 communes that were the original source of the infection (Miragoane and Limonade). Priority was given to these areas for monitoring because they appeared more vulnerable to an influenza outbreak

¹² Although no mutation of the H1N2 virus was observed in Haiti, the threat from LPAI can be regarded as a potential source of HPAI threat, due to the possible mutation of the virus.

¹³ Prescriptions are methods to prevent disease transmission among animals and from animals to humans.

¹⁴ All departments except Grande Anse.

3.2.5 Surveillance (partially achieved). Concerning *clinical surveillance*, DPSA reported that in 20 out of 25 communal sections reports were sent on time (reports provided by GSB veterinary agents via the DDAs¹⁵), thanks to the strengthening of GSBs. These reports are based on information provided by DPSA, but no systematic recording, archiving or monitoring system for reports was in place as of project closing. DPSA estimated that the time to report information on poultry diseases at the local level (by GSBs to DDAs) was reduced to two days due to the use of cellular phones. . Concerning active *epidemiological surveillance*, the number of laboratory-tested samples increased from 3,131 in 2009-2010, to 3,884 in 2010-2011, and 169 and 16 cases respectively were positive for LPAI, indicating a decrease in LPAI prevalence. The National Laboratory underwent restructuring (IADB-financed) lasting 1.5 years and was therefore non-operational for part of the Project (so there was an inability to process samples), but its virology section remained open. Compared to the pre-project period, the number of laboratory-tested samples increased, but active epidemiological surveillance declined due to restructuring works and laboratory reorganization. Despite these temporary issues, it is admitted that the Laboratory capacity to carry out tests was strengthened by the Project.

3.2.6 The surveillance capacity of some 5,000 farmers, 40 veterinary agents, and 400 health professionals was strengthened by the Project. No information was available to assess the effectiveness or impact of training. The project also trained 6 laboratory staff in AHI diagnosis and 15 inspectors for animal quarantine. However, the extent to which this contributed to improving disease control at the border and within the country is limited by the continued weakness of quarantine structures. The Project also financed a taxonomic study on migratory birds, which identified the species of migratory birds in Haiti and collected updated data on their migratory patterns. This study supports future assessments of AI risk in the island. Project activities included a census of the poultry sector and the creation of a monitoring system. Software was developed but the census coverage was smaller compared to what it could have been (190,000 questionnaires compared to an estimated potential of 400,000 based on interest expressed by GSBs), and as of project closing, the questionnaires were not fully digitized.

3.2.7 Actual preparedness and response (partially achieved). Preparedness for an AI outbreak was integrated in the content of trainings for farmers, veterinarians, quarantine agents and public health professionals. The indicator for the number of additional outbreaks responded to in a given period is difficult to measure, since the lack of an additional outbreak could be due to the Project or due to external factors (e.g., lack of global/regional outbreaks). However, the successful completion of a simulation exercise of HPAI outbreak and the farmer compensation mechanism put in place by the Government to undertake culling activities in 2 boarder areas to try to eradicate LPAI early on, is a notable achievement. Implementation arrangements were efficient and rates were attractive enough to encourage farmers to report suspect events. Prompt reporting is essential for preventing spread of the disease. This success can be explained, in part, by the existence of a compensation scheme that the MARNDR had already put in place before the Project started. However, an important project accomplishment that is key for preparedness and response, was the strengthening of the GSBs: 50 communal federations of GSBs were established by the Project out of a total 100. In addition, two departmental federations were established (in the North-West and Center departments). Overall, in addition to helping reinforce the prevention, surveillance and

¹⁵ DDAs are MARNDRs offices at the department level

response system in the country, the strengthening of GSBs has helped improve cooperation and trust between government authorities and local communities. Finally, the public health system did improve its core capacities through training of human health agents for: surveillance and response to infectious disease outbreaks.

3.3 Efficiency

3.3.1 The investments under the National Plan were worthwhile from an economic perspective. The total financing package was US\$ 2.877 million, but only US\$1.4 million materialized and was spent. The IDA grant disbursed US\$1.27 million of US\$1.56 million (81% of the Grant), while the US\$ 1million AHIF TF never materialized. Most resources were disbursed within the final year and months before project closing and have led to the strengthening of public services and GSBs. The specific outcomes are described above and in the results framework indicators. They show partial achievement in improved performance in response to outbreaks (resulting in their effective containment) and in core public health capacity related to AHL. Today HPAI is spreading in a number of developing countries, including in the LAC region, but not in Haiti.

3.3.2 The benefits of these partial achievements, in particular in animal health, are clear. In the improvements in disease monitoring and control (i.e., early detection, correct diagnosis, and implementation of all necessary control measures), the poultry sector would have been less prepared in case of an outbreak, and controlling the disease would have become far more costly. Plausible assumptions about disease spread yield a benefit from preventing such a spread of between US\$50 and 60 million (80% of the value of poultry production are expected to be lost due to HPAI). The capacity for effective disease prevention and control that has been acquired for animal health will persist into the future as the GoH is committed to maintain the necessary budget allocation.

3.3.3 As noted above, substantial additional investments are warranted to strengthen animal health systems, in particular, to enable control of zoonotic diseases at the animal source, where contagion can be stopped most cost-effectively. Public health systems also need further investments. If such investments are made in the coming decade then, using conservative assumptions, the expected annual costs of prevention would be 2.14% of the overall value of the annual poultry production value. These attractive rates of return reflect the very strong economic case for disease prevention. However, some activities financed by the IDA Grant, such as did not produce sustainable outcomes as of project. Others were not fully implemented as of project closing, but with a significant likelihood of being put in place by MARNDR under other programs such as RESEPAG II. Such activities include: (i) the communications strategy; (ii) the survey of livestock producers; and (iii) the quarantine posts.

3.3.4 Finally, efficiencies were achieved mainly by emphasizing coordination so as to avoid duplication and using common inputs (e.g., training materials and communication strategy) in activities financed by the project and Government. More broadly, and especially during the later years of the National Plan, a shortage of donor financing and limited funding available from resources managed by the World Bank encouraged a focus on extracting the greatest impact from the resources available.

3.4 Justification of Overall Outcome Rating

Rating: Moderately Unsatisfactory

3.4.1 Justification of the overall outcome rating is as follows: (i) Relevance: Project objectives and activities, although ambitious, remain relevant to the animal and human health priorities of the country and the need for cross sector collaboration; (ii) Achievement of PDO: There were moderate shortcomings in the Project's achievement of its stated development objectives and partial achievement of PDO indicators as measured by the executing agency; and (iii) Efficiency: If the fully funded project is considered, overall investment sustainability of project activities are questionable with 50% of the original financing package disbursed (81% of the IDA Grant), some activities (in particular the human health component) not completed, and the limited impact and benefits of the Project. However, there are still large net benefits to be accounted for from the fact that no HPAI outbreak materialized in the country and that improvements in the public sector animal health framework and GSBs were achieved (see Section 3.2 above for detailed justification).

In terms of the Justification of the outcome rating by component:

- a. Animal Health: The rating for outcomes on animal health is Moderately Satisfactory (MS) due to the commitment of MARNDR to use project activities and funding towards building capacity at the Government and GSB level on prevention, surveillance and response. MARNDR was able to lead the inter-sectoral coordination on AI, as well as the bilateral collaboration with the Dominican Republic. Given the sustainability of activities related to animal health provided by the preparation, approval and financing of a programmatic approach, an MS rating is appropriate.
- b. Human Health: The rating for outcomes on human health is Unsatisfactory (U) due to the lack of commitment and participation of MSPP in project activities, and the delays and lack of execution of planned activities under Component 2. Furthermore, financing of activities human health activities related to AHI is uncertain as of project closing, and thus investments in capacity building and communications may not be able to be sustained and/or implemented going forward.
- c. Communications: The rating for outcomes on communications related to AHI is Moderately Unsatisfactory (MU) given that the strategic communication plan was indeed prepared and approved by MARNDR, MSPP, and endorsed by Donors; but it was done with significant delays and never fully implemented.

3.5 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

3.5.1 **Poverty impact and gender aspect.** H5N1 influenza outbreaks initially affect the poultry population, but, if not contained, they could directly and indirectly affect the majority of the human population of the country since most households raise poultry. In particular, in Haiti, more than half of farming households have poultry living in, or within 5 meters of, their house. Poultry keeping is widespread among family farms throughout Haiti, though with some concentration in the Centre Department. It is estimated that over 90% of family farms keep some poultry, mostly chicken of local breed (*poulet créole*) usually with 3 to 18 head per farm (also, in some farms, 2 to 5 heads of turkeys, ducks or guinea fowls) including adults and young birds. Traditional poultry production provides a major income-generating activity for farm households from the sale of birds and eggs and it represents one of the few opportunities for saving and investment by rural households. Income generation is the primary goal of family poultry keeping. Eggs can provide a regular, albeit small, income while the sale of live birds provides a flexible source of cash as and when needed, for instance

to pay school fees, for a wedding or unexpected expenses such as medicines. Occasional consumption provides a valuable source of protein in the family diet. Poultry also plays an important socio-cultural role in Haiti, including cock fights and religious practices. Poultry is often raised by women and children in Haiti. Spread of avian influenza in Haiti would thus have had a devastating impact on these vulnerable groups. Since such disease outbreaks did not occur, the poor benefited. If the capacity created under this Project is further developed, improved livestock health would reduce a major source of vulnerability of the poor and improve Haiti's prosperity, food security, and nutrition. The Project contributed through the strengthening of GSBs (20% of GSB composition are women) as well to prevention of pandemic influenza (to an unknowable extent) and to preparedness. A pandemic would hit the poor the hardest, in Haiti and elsewhere. Preparedness to mitigate the impact of this potentially catastrophic shock thus has an important pro-poor bias; this benefit will be realized when a pandemic occurs.

3.5.2 Social development. Without the Project in Haiti (and in neighboring Dominican Republic), the spread of HPAI would have been more likely in Hispaniola. A severe pandemic could have occurred instead of, or in addition to, the 2009 H1N1 pandemic. In those events, the entire Hispaniola population would have been affected, possibly with severe economic and social disruptions and increases in poverty, as mentioned above. The project helped strengthen animal health capacity and developed a communication strategy that would help in the prevention of such potentially devastating impacts on the entire society. However, the communications plans, and the inter-institutional collaboration and monitoring plan for AHI will need to be periodically exercised through simulations and updated as warranted for the expected benefits (mitigation of pandemic impact on society and the economy) to materialize.

(b) Institutional Change/Strengthening

3.5.3 Adoption of an integrated approach to disease control. An important project outcome was the change of paradigm in animal disease management from one focusing on specific diseases, to a holistic approach focusing on all diseases. Furthermore, the Bank and Development Partners, supported MARNDR's adoption of a programmatic approach to animal health, developing a five-year investment plan, and identifying the different sources of financing. This holistic and programmatic approach is expected to improve the efficiency in dealing with emerging infectious diseases and *zoonoses* in the future.

3.5.4 Bi-national cooperation. The DR and Haiti prepared a draft to expand a phyto-sanitary agreement signed by both countries in 1996, in particular to include other ministries. This new draft is not yet signed, but the two governments have met annually to coordinate actions. The DR also prepared a bi-national document to determine the perimeter of areas infected with H5N1. Several training events are planned under the stewardship of WHO and PAHO or IICA, in the DR and in Haiti.

(c) Other Unintended Outcomes and Impacts (positive or negative)

3.5.5 Adoption of a policy strategy and draft legal code for animal health. A policy strategy document on animal health covering the period from 2010 to 2014 was prepared by

MARNDR¹⁶. It delineates the GoH's specific strategy for animal production and health, which is estimated to require investments of US\$20 million. DPSA prepared a draft Code of Laws on Animal Health and Veterinary Public Health, which was reviewed with the assistance of a mission of the World Organization for Animal Health (OIE) in February 2012, and sent to the office of the Prime Minister for consideration. This draft is preliminary and would require specific laws for its implementation; but it constitutes a first effort to institutionalize surveillance procedures in Haiti. DPSA intends to continue improving this draft with the help of a legal specialist (financed by the IADB). Important changes proposed by this draft law include the legal status of GSBs, the transfer of food safety prerogatives from MSPP to MARNDR, and a system to identify livestock and regulate slaughter. Though this was an intended outcome supported by the Bank during project implementation, it serves to illustrate how a program based on a single-disease impetus can generate wider and lasting policy and investment reform.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

N/A

4. Assessment of Risk to Development Outcome

Rating: Significant

4.1.1 On animal health and communications, the risk to development outcomes is moderate given the adoption of a programmatic approach to investments in animal health and the existence of a communications plan (with certain activities implemented). Progress was also made in improving the performance of veterinary services (GSB). It is likely that capacity strengthening and institutional integration will be maintained in the medium term as financing has been secured. The outcomes of project-financed training are likely to be maintained over the next five years due to the identification of an animal health program financed by the Government and Donors, however the long-term remains uncertain if there is no follow-up on some of the basic reforms identified by the OIE.

4.1.2 On human health, the risk to development outcomes is significant, as several outputs remain unachieved due to the early closing of the Project and the lack of commitment from MSPP during project implementation. The national human health and animal health laboratories will need sufficient resources for their operations and maintenance. There is a risk that these resources will not be provided on a regular, sustained basis, in particular on human health. The animal health laboratory has secured financing through 2016. As noted above, coordination across sectors of the multisectoral actions required for zoonotic disease control and prevention was a strong feature of the National Plan, but incentives for participation were not adequately design. MSPP did not participate in regular meetings due to persistent weak capacity and shift in priorities. Institutionalizing a One Health approach under the leadership of the Prime Minister or Minister of Planning could be an option that could support essential work on zoonotic disease control and prevention; this would mitigate an important risk to the sustainability of the partial outcomes of the Project.

4.1.3 Coordination among partners worked well originally primarily because the World Bank, FAO, and USAID provided the necessary coordination services. This has now

¹⁶ *Grandes lignes d'action pour le développement de la santé animale en Haiti*. 2010-2014. MARNDR. 2010. http://agriculture.gouv.ht/view/01/IMG/pdf/Texte_SanteAnimale_-_MARNDR_2010.pdf

diminished, and partners have re-focused on other programs, in particular in human health. On animal health, they did engage in the preparation of a 5 year investment program, which is now fully funded. Also, OIE prepared the assessment of Performance of Veterinary Services (PVS) and Gap Analysis.

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry

Rating: Moderately Unsatisfactory

5.1.1 Bank performance in ensuring quality at entry is rated Moderately Unsatisfactory because although the Bank responded in a timely fashion to a growing global and local threat of AHI, there were shortcomings in the Project's design and preparation. First, the Bank under-estimated the fiduciary capacity of MARNDR to manage project funds and procurement. IICA's capacity as fiduciary agency, in turn, was not adequately assessed. Another shortcoming was the dependency of funding of activities on a full financial package that did not materialize with the cancelation of the AHIF grant, making the objectives of the IDA Grant too broad and unrealistic with respect to the funding available. Indicators lacked a supporting M&E methodology, hindering the independent assessment of project outcomes. Nevertheless, the Project and component's objectives permitted flexibility in prioritizing activities and adapting to a changing AHI context, maintaining the Project's relevance throughout implementation.

(b) Quality of Supervision

Rating: Moderately Satisfactory

5.1.2 Bank supervision is rated Moderately Satisfactory given that it proactively addressed the main obstacles to implementation, conducting regular missions, candidly rating ISRs, and ultimately, closing the Project early due to systemic delays.

5.1.3 Satisfactory identification, follow up, and action to confront the main threats to implementation. The Bank was proactive in identifying and attempting early on and throughout implementation to resolve procurement delays, including considering the possibility of transferring procurement responsibilities to MARNDR (from February 2009), and by systematically evaluating IICA's capacity, proposing actions and verifying progress (see Annex 6 for a description of Bank actions). It could be argued that the Bank should have closed the project even earlier, but it was not possible to predict how IICA would react to requests from both the GoH and the Bank to improve performance. In sum, the approach undertaken by the Bank was risky but justifiable in view of Project objectives, the ownership and commitment demonstrated by MARNDR, and the lack of an alternative acceptable to the GoH. The Bank also played an important role in stressing the importance of integrating all diseases into the GoH's prevention, surveillance and control strategy, and to prepare a medium term program for all animal health activities; which represents an important paradigm shift for disease management in the country. Finally, supervision missions were done regularly by both livestock and human health specialists, as well as by the environmental safeguards specialists.

5.1.4 Project's Indicators and M&E system. The Bank had the opportunity to assess and improve the Project's M&E methodology throughout implementation, but priority was placed in trying to get project activities to accelerate. Nevertheless, the Bank did request frequent updates on progress of the indicators and received complete reports from DPSA.

(c) Justification of Rating for Overall Bank Performance

Rating: Moderately Unsatisfactory

5.1.5 Overall Bank performance is rated Moderately Unsatisfactory due to the Bank's under performance during project preparation and designed, tempered by an appropriate response to a potential crisis and an acceptable performance during supervision. Main deficiencies include weak institutional arrangements and capacity (across ministries and in fiduciary matters), which could have been predicted or prevented with actions to promote efficiency and improved borrower capacity¹⁷.

5.2 Borrower Performance

(a) Government Performance

Rating: Moderately Unsatisfactory

5.2.1 The National Steering Committee of Avian Influenza met infrequently and irregularly and was not reactivated as proposed in the National Plan. The GoH acknowledged disbursement delays early in implementation, flagging the project as a risky operation, but was not proactive in proposing a solution. It also allowed for the AHIF TF to expire and 35% of the overall financing package not to materialize. However, it did work with the Bank to transfer pending animal health activities into RESEPAG II and requested the early closing of the project. Finally, the lack of MSPP involvement in the Project did not produce a better integration between participants of the National Commission, which was an important aim of the National Plan.

(b) Implementing Agency or Agencies Performance

Rating: Moderately Unsatisfactory

5.2.2 **MARNDR-DPSA.** The performance of MARNDR-DPSA is rated **Satisfactory**. DPSA demonstrated strong project ownership and leadership, significant co-financing resources. The DPSA was proactive in identifying, monitoring and seeking to resolve problems with a strong focus on delivering outcomes. DPSA closely monitored procurement requests and approvals, sought improvements in performance from IICA (mostly unsuccessfully), sought other funds to implement project activities (e.g. resources from the Haitian public treasury during the first year of the project as well as IADB), and led the exercise to develop a programmatic approach to animal health investments in Haiti. DPSA also tried to involve MSPP in the Project proactively. Finally, it provided timely feedback on progress of project indicators. Shortcomings included poor oversight of Safeguards in the construction of one of the Quarantine Posts (not yet operational) and the missed opportunity to strengthen their M&E system.

5.2.3 **MSPP.** The performance of MSPP was **Unsatisfactory**. There was very little participation by MSPP in the Project. MSPP relied almost exclusively on a consultant (hired

¹⁷ According to the latter, when the rating of quality at entry is in the unsatisfactory range and the rating of supervision is in the satisfactory range, the overall rating must be based on the Outcome rating.

by the project) to liaise with DPSA and implement project activities. The PCU met with MSPP several times to develop activities, but MSPP lacked adequate personnel involved in the Project to follow up on decisions. Lack of prioritization of AHI within the national human health agenda was a key factor, as well as the reduced amount of resources allocated to human health within the project (14% of project costs).

5.2.4 **IICA.** IICA performance as fiduciary agency is rated **Unsatisfactory**. IICA's lack of fiduciary capacity and poor performance caused continuous implementation delays. As fiduciary agency, they did not provide a solution to its inability to handle procurement requests until very late in the Project, despite requests from the Bank and the GoH. Ultimately, IICA hired a procurement specialist dedicated to the Project but very late in November 2011, following recommendations by the MTR. Procurement processes did improve after the MTR and the hiring of a dedicated procurement specialist, but they did not accelerate implementation to execute all project activities before the closing date of the project.

(c) Justification of Rating for Overall Borrower Performance

Rating: Moderately Unsatisfactory

5.2.5 Overall Borrower Performance is rated Moderately Unsatisfactory on balance taking into account strengths and weakness of the various institutions (MSPP, MARNDR, IICA) measured against mitigating circumstances (earthquake, cholera outbreak, swine flu) which were beyond the control of the implementing agency and aggregate achievement of objectives. The borrower achieved most of the targets in the results framework, but fell short in others, and sustainability of actions, in particular in human health, is not guaranteed.

6. Lessons Learned

6.1.1 The following lessons are among the most important:

- **Close coordination and cooperation between animal health and human health are key to successful implementation of investments.** The involvement of all concerned partners from the government (MARNDR, MSPP, MEF), with sound inputs from technical international agencies and vision from the donors' community led initially to the design of a comprehensive plan, which prioritized activities, avoided overlaps and major gaps in the activities. However, incentives for participating in the implementation of the plan were not thoroughly addressed in the plan, and MEF and MSPP did not follow up on the implementation phase, in particular as the sense of urgency diminished and the intensity of consultations decreased. A minimum level of coordination was sustained thanks to the MARNDR's and Bank's persistent emphasis on the need for multi-sectorality. The lesson for this project, and numerous GPAI projects world-wide, is that collaboration across sectors remains a challenge beyond the initial formulation of the strategic plan and requires substantial dedicated resources and strong Government Leadership above technical ministries (such as Prime Minister or MEF).
- **The establishment of a medium to long-term prevention and control program is required.** Transitioning from emergency response to medium-term system strengthening was envisaged in the design of the National Plan. Emergency response mainly consisted of establishing a compensation mechanism, procuring materials, and active communications efforts. The transition was successful in the area of animal health with the preparation and approval of a 5 year programmatic investment plan on

animal health, but not successful in the area of human health. The lesson for this project and other animal health interventions is that even if responding to a disease-specific emergency, interventions also need to focus on systemic improvements and basic capacity building which are sustainable in the medium to long term.

- **Mitigation measures to close a financing gap should be part of appraisal.** The PDO and indicators were established based on a financing plan that included other sources of funding aside from the IDA Grant (including AHIF TF and Government resources), so the objectives were broad and several activities were structured based on shared financing. Although broad project objectives allowed for a single project being designed under several sources of financing as well as allowed flexibility during implementation to adjust activities as the emergency situation evolved, the lesson learnt from this project is that a balance must be found between allowing for such flexibility and structured financing, and introducing mitigation measures to ensure the achievement of results even when original financing sources do not come through. One such mitigation measure could be a narrower definition of project objectives, in particular when operating in a country where institutional capacity is weak and policy strategies are still in the making.
- **Institutional strengthening in project management is the pillar to success in fragile contexts, in particular for emergency operations.** As implementation capacity is *sine qua non* for the smooth implementation of any project, it is a crucial part of project appraisal, particularly in institutionally weak States and in emergency operations. In the case of this project, the contracting of a fiduciary agency was seen as an alternative to be able to rapidly implement the project, but in hindsight, it was to the detriment of the project. The lesson learnt is that for emergency projects in particular, an assessment of institutional needs (personnel, training, facilities, logistics and equipment), including the fiduciary agency, needs to be thoroughly carried out during project preparation to identify the most efficient implementation arrangements, and to provide for the strengthening of project management throughout the life of the Project.
- **A flexible and timely response is critical.** In this project, as well as globally, there were high uncertainties and limited knowledge about the likelihood of a HPAI outbreak. The preparation of a project in response to the request of the GoH was timely and the design of the project allowed for refocusing the project interventions during implementation, prioritizing the strengthening of animal health systems (over human health systems) in order to be able to detect and respond rapidly to any HPAI H5N1 outbreaks in poultry, monitor for signs of transmission of the virus to the human population, as well as detect and respond to other infectious disease outbreaks. The achievement under the project demonstrated the importance of understanding the evolution of AI epidemiology so that control measures may be adapted to achieve the maximum sustainable impact. The project also showed that strengthening local capacity for early detection and control of zoonotic pathogens at their animal source should be a priority for decision-makers to confront real and immediate threats to human and animal health.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

7.1.1 DPSA disagreed with the decision of the Bank and the MEF to close the project early, stressing that this decision was taken when implementation activities had finally taken off.

Bank's response: This reaction is understandable considering the commitment of DPSA and efforts to accelerate the project. However, the joint decision of the Bank and GoH came after several unsuccessful attempts to accelerate project implementation and was also motivated by the opportunity to group fiduciary management under RESEPAG II for higher efficiency.

7.1.2 DPSA has also questioned the imposition of environmental precautions that are difficult to implement in Haiti.

Bank's response: environmental management standards were clearly stated in the EMP submitted by the MARNDR and which underwent consultations.

7.1.3 The Borrower was very satisfied with the ICR, saying it provided an exhaustive synthesis of Project activities and of the challenges it faced throughout implementation.

(b) Cofinanciers

N/A

(c) Other partners and stakeholders

N/A

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD Million equivalent)

Components	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
1. Animal Health	0.76	0.66	87%
2. Public health	0.21	0.17	80%
3. Communication	0.38	0.34	89%
4. Administration	0.13	0.11	85%
5. Un-allocated	0.07	0	-
Total Project Costs	1.56	1.27	81%
Total Financing Required	1.56	1.27	81%

(b) Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Borrower		0.57	0.3	52%
AHIF TF		1.00	0	0%
IDA Grant		1.56	1.27	81%

Annex 2. Outputs by Component

The indicators related to Components were the following:

Results Indicators (Component Level)	Baseline	Target	Achieved
At least two additional outbreaks responded in a given period	0	2	*
12 laboratory staff trained in AHI diagnosis by the project	0	12	6
40 communal sections adequately covered by trained staff	Unknown	40	484
Development of communications strategy	Draft	Approved	Approved
Health Personnel receiving training under the project	0	42	400

* No outbreak was recorded during project implementation.

The main results per component are the following:

Component 1: Animal health: financed support for prevention, surveillance, and preparedness for any AI outbreak. It included activities to provide knowledge on the status of AI in Haiti; to strengthen facilities for early detection and mitigation of the potential impacts of AI, predominantly quarantine facilities; and to test sanitary measures in the context of small farm poultry production. It had a national coverage and comprised three sub-components: (i) Pilot community actions through GSBs; (ii) Emergency actions; and (iii) Sub-Institutional capacity building (MARNDR). The outputs achieved were the following:

- a. Taxonomic study of wild bird species in Haiti: This study identified the different migratory birds and collected information through 8 different areas in the country between 2010-2011.
- b. Laboratory testing of Samples: During 2009/2010 3131 samples were tested for Avian flu and 169 resulted positive; while during 2010/2011 3884 were tested and 16 resulted positive.
- c. Strengthening of the epidemiological surveillance network through the establishment of 2 GSB federations at the Departmental level (for 2 Departments bordering the Dominican Republic) and 50 at communal level.
- d. Avian flu simulation exercise: The MARNDR led a simulation exercise of the outbreak of HPAI in the country, with participation of GSBs and staff from the Ministry of Agriculture.
- e. Pilot initiatives for improved poultry management: 59 pilot initiatives in 9 Departments were implemented to train and provide materials to improve the animal health and productivity aspects of poultry production.
- f. Training: The following training activities were undertaken on animal health and avian flu by the project:
 - i. 5000 farmers
 - ii. 70 veterinary doctors
 - iii. 15 quarantine inspectors
 - iv. 6 laboratory technicians
 - v. 40 veterinary agents
- g. Strengthening of quarantine posts: 2 quarantine posts were constructed at Belladere and Ounaminthe border crossing. MARNDR hired 5 new inspectors and the project trained them.
- h. Improvement of internal management procedures at DPSA: A manual for administrative and financial procedures of DPSA was prepared in order for DPSA to be able to better administer government and donor funding going forward.

Component 2: Human health: the project initially planned to financed support for AHI prevention and mitigation at the national level, through capacity building and epidemiologic surveillance in the human health sector, and the establishment of an outbreak response mechanism. Activities planned included capacity building of health staff to improve the surveillance system and integration of routine surveillance systems and data; simulations to assess the state of implementation and effectiveness of public health measures; and information campaigns to increase the level of knowledge of public health staff and the population at large. However, given the problems mentioned in this report, the only outputs achieved were the following:

- a. Preparation and approval of a guide for training public health officials on avian flu and other severe influenza diseases.
- b. Training of 320 human health agents nation-wide on avian flu for improving surveillance and response.

Component 3: Communications: financed support for: (i) raising public awareness of AHI; (ii) securing political and civil society support; and (iii) preparing animal and human health institutions for increased demand for advice, products and services in case of an AHI outbreak. It sought behavioral change to control the spread of the virus, prevent infection, strengthen surveillance, adopt biosafety procedures and reporting mechanisms, and highlight the required investments in infrastructure and institutional reforms.

- a. Strategic Communication Plan on Avian Flu: Although with delays, a strategic communications plan was prepared and approved by the Government and donors.
- b. Communications Campaign: Following the approved plan, 5000 flyers were distributed among poultry producers and 1000 posters were distributed at GSB sites and local MARNDR offices for public information.
- c. Workshops and conference: Several workshops and conferences were financed in Haiti, as well as the presentation of the avian flu situation in Haiti in international conferences on avian flu.

Annex 3. Economic and Financial Analysis

The investments under the National Plan were worthwhile from an economic perspective. The total financing package was US\$ 2.877 million, but only US\$1.4 million materialized and was spent. The IDA grant disbursed US\$1.27 million of US\$1.56 million (81% of the Grant), while the US\$ 1 million AHIF TF never materialized. Most resources were disbursed within the final year and months before project closing and have led to the strengthening of public services and GSBs. The specific outcomes show partial achievement in improved performance in response to outbreaks (resulting in their effective containment) and in core public health capacity related to AHI. Today HPAI is spreading in a number of developing countries, including in the LAC region, but not in Haiti.

The benefits of these partial achievements, in particular in animal health, are clear. In the improvements in disease monitoring and control (i.e., early detection, correct diagnosis, and implementation of all necessary control measures), the poultry sector would have been less prepared in case of an outbreak, and controlling the disease would have become far more costly. Plausible assumptions about disease spread yield a benefit from preventing such a spread of between US\$50 and 60 million (80% of the value of poultry production are expected to be lost due to HPAI). The capacity for effective disease prevention and control that has been acquired for animal health will persist into the future; however, on human health will depend on receiving adequate operating budget.

As noted above, substantial additional investments are warranted in the systems for animal health, in particular, to enable control of zoonotic diseases at the source, where contagion can be stopped most cost-effectively. Public health systems also need further investments. If such investments are made in the coming decade then, using conservative assumptions, the expected annual costs of prevention would be 2.14% of the overall value of the annual poultry production value. These attractive rates of return reflect the very strong economic case for disease prevention. Here below are the details on the methodology and estimates of the economic analysis of the various potential avian flu control measures.

In general, the economic impacts of avian influenza include:

- Direct costs arising from the losses of poultry and production due either to the disease itself and/or to control measures such as culling birds (stamping out). These economic impacts affect primarily the poultry producers and rural areas. They also extend to upstream and downstream sectors such as poultry traders, feed mills, breeding farms etc.
- Indirect costs and impacts, especially in the case of H5N1 due to the fear of human transmission, arising from reduced demand from consumers, trading bans and/or a negative impact on activities such as tourism. These indirect impacts, in turn, also affect the production sector through changes in demand and prices. They are often magnified by uncoordinated efforts to avoid the disease and/or initial panic or confusion.
- The costs of prevention and control also need to be taken into account, including costs to the government of surveillance and diagnosis, hiring of transportation and workers for culling and disinfection, purchase of poultry vaccines or medications, etc. Governments also face the need to pay compensation to poultry owners, which is important in inducing owners not to conceal that a bird flu outbreak has occurred.

While such payment is in the nature of a transfer payment for the economy as a whole, it can impose a significant fiscal burden on the government.

The **impacts on Haiti of the LPAI H5N2 outbreaks** that occurred both in DR and Haiti are mostly indirect. The cases that were confirmed did not show any clinical sign and, even in the event that LPAI H5N2 might be widespread or endemic in the island, its direct impact on production is thought to be small. In this regard, the risk would come mainly from a possible mutation of the virus into a highly pathogenic strain.

Initial news on the first outbreaks in RD spread quickly and provoked major concern among the population, both in RD and in Haiti, as there were at first some uncertainties and confusion with HPAI H5N1 and fear of a possible risk of human transmission. This reportedly led to a significant decrease in consumption of poultry and eggs, which affected rural as well as urban areas, but that did not last very long. Poultry farmers met by the mission confirmed that they stopped eating poultry products for a while, until the matter was cleared and appropriate information disseminated in Haiti about the nature of LPAI H5N2.

At the same time, Haiti declared a ban on imports of poultry products from RD. In RD, the combined effect of this ban together with the reduction in demand from domestic consumers was to create a short glut on the domestic market and downward pressure on prices. In Haiti, since imports from RD account for a large share of domestic consumption, prices of poultry and eggs went up. Immediate increases of egg prices by +25% are reported in the press following the announcement of the import ban by Haiti. As the informal trade in poultry products is thought to have now been re-established, it is likely that this price hike was short-lived. Nonetheless, the official import ban and partial substitution of imports from RD with other more expensive sources has certainly put some upwards pressure on domestic prices of poultry products in Haiti.

Methodology for economic assessment of options to deal with AI in Haiti

In order to assess which measures or interventions are economically justified going forward for the prevention and control of avian influenza in Haiti, a simplified cost-benefit analysis has been developed and is presented below. In this analysis, the costs of prevention and control measures are compared with the corresponding economic benefits, i.e. the reduction in economic losses from the disease that is achieved as a result of these measures.

A basic underlying assumption is that for any level or type of expenditure on disease prevention and control, that expenditure is undertaken in a way that maximizes economic benefits. To ensure this, however, is not always an easy task. For instance, the effectiveness and hence actual benefits of stamping out or a vaccination campaign depend on factors such as timeliness, acceptance or adoption by a sufficient number of farmers, etc.

This preliminary analysis or initial economic assessment considers only the direct impact of AI on poultry production, under different scenarios (e.g. HPAI, LPAI). As Haiti is an importing country for poultry products, it is considered that an avian influenza outbreak within the country, even if it would have a significant impact on domestic production (HPAI), would not have a significant impact on domestic prices of poultry products, since the country can continue importing from the rest of the world after the outbreak. Price differences between different import sources on the world market are considered as negligible. The impact on production and producers incomes would thus come only from a decrease in

volume (quantity) of production.¹⁸ The indirect impacts on upstream and downstream sectors (e.g. poultry traders) are not considered.

The impact of an avian influenza outbreak on domestic consumers is not considered in this analysis. Such impact would depend on the type of avian influenza, i.e. whether or not there is a risk of human transmission and casualties. The avian influenza subtypes identified so far in the Latin America and Caribbean region are not known to create any human health hazards. In other parts of the world, dissemination of the HPAI H5N1 virus has resulted in significant drops in consumers demand due to fear of human contamination. This in turn may have an impact on domestic producers, although in an importing country like Haiti a reduced demand for poultry products would be expected to translate mainly into a reduction of imports (with no impact on domestic producer prices). Decrease in consumers' welfare might nonetheless be substantial, especially as poultry products are a relatively cheap source of proteins which would have to be substituted by consumers with more expensive products. This applies to urban consumers as well as self-consumption in rural areas.

Costs of Avian influenza prevention and control measures

Costs estimates of various AI prevention and control measures are summarized in Table 3. These estimates have been developed with the help of DPSA's Service of Epidemiology and Veterinary Statistics. They have been worked out on an average indicative basis. These figures should be considered as a preliminary order of magnitude.

The costs of carrying out epidemiological surveillance and having an early warning system for avian influenza are estimated at a maximum average annual cost of about USD 500,000 per year (HTG 20 million). This estimate has been derived by confronting several sources including: (i) the budget allocation made by government to implement the program of epidemiological surveillance for AI; and (ii) actual expenditures on epidemiological surveillance in 2008 from various sources of funds.

The costs of stamping out or culling infected birds has been estimated on the basis of the actual costs of these emergency operations carried out by MARNDR, with an average cost of HTG 502 (about USD 12.5) per bird stamped out. In reality, these costs vary depending on the actual number of birds to be slaughtered at a given site as there are some economies of scale. To this direct and immediate cost, the costs of monitoring agents after stamping out must also be added, as well as the costs of additional epidemiological surveillance after the outbreak (including sentinel birds), which brings the total to about HTG 894 (USD 22.3) per bird stamped out.

The total costs of a national vaccination campaign for poultry is estimated at 1,25 million USD equivalent (HTG 50.2 million). Details are given in Table 3.

Cost-benefit analysis of control measures for an HPAI outbreak

HPAI such as the H5N1 subtype that spread over several countries since 2003 is highly contagious and leads to a mortality rate over 80% in affected poultry flocks. Haiti is not

¹⁸ Poultry production is widespread in rural areas where it plays an important economic role in income generation, savings and nutrition. Economic losses and impacts on the rural population of a major outbreak of HPAI and/or massive culling would therefore have a potentially devastating effect on rural areas, which might go much farther and deeper than the sole production losses.

known so far to have experienced any HPAI outbreak of any subtype. Such an outbreak could result from direct introduction through movements of birds or people, or from mutation of an existing LPAI virus (e.g. LPAI H5N2 into HPAI H5N2).

In national animal disease control campaigns, the speed of detection and response is critical in stopping a highly contagious and severe disease such as HPAI from spreading. Current FAO/OIE procedures for control of a HPAI outbreak call for immediate 'stamping out' operations as the most appropriate response, which necessitates destruction of all infected and 'at high risk' poultry in a defined radius around infected areas. To be effective, stamping out must be accompanied by control of poultry movement, proper disposal of carcasses and infective material, and post-cull cleaning of affected farm structures. The compensation offered to the producer/ farmers for culled poultry is a crucial aspect of the scheme in order to encourage early reporting of outbreaks, while also encouraging individual preventative measures at farm level.

Vaccination as a support strategy may be considered when the disease has spread to such an extent that it has overwhelmed the resources of disease control authorities or the economic cost of a widespread slaughter campaign cannot be borne. It can also be considered at an earlier stage when veterinary service infrastructures and capacities prove to be very weak and insufficient to curb the spread of the disease. Depending on the incidence and distribution of outbreaks, vaccination may be undertaken around outbreaks (ring vaccination) or throughout the poultry population (mass vaccination).

Vaccination, when it is applied, must be done in combination with other disease control measures, including the slaughter of affected flocks, and should be accompanied with an exit strategy. The high cost of vaccination compared to its perceived benefits, particularly for village producers, makes it difficult to sustain over a prolonged period.

According to current OIE recommendations, HPAI-vaccinated poultry are not excluded from international trade, although specific technical guidelines must be followed to ensure that the vaccine is being applied properly and monitored effectively. However, a vaccination campaign which is not managed appropriately is likely to result in the virus becoming endemic. Improperly vaccinated poultry flocks may perpetuate undetected virus circulation through partially protected birds and remain a source of infection for other birds. The cost and logistic challenges of widespread vaccination, especially in backyard poultry, are major constraints on effective use of vaccines.

Total value of primary poultry production in Haiti is estimated at HTG 2,351 million (Table 4). The total costs of a national vaccination campaign (HTG 47.5 million) represent less than 2% of this amount. If it is assumed that an outbreak of HPAI, left uncontrolled, could potentially result in a production loss of up to 80% of the national flock, vaccination as a preventive measure might be an economically valid proposal if the probability of such HPAI outbreak is estimated to be at least once every 40 years. In comparison, the Newcastle disease is estimated to kill some 20-30% of domestic poultry in Haiti every year.

However, implementation of an effective vaccination campaign for backyard poultry at the national level would be very difficult. In case of an outbreak, stamping out would be a valid alternative to vaccination (break-even) if it can be limited to a maximum of about 55,000 head nationwide (i.e. 1% of the total national poultry flock at risk). In other words, stamping out is economically justified in comparison with vaccination if the destruction of one bird enables to

avoid the contamination of maximum 100 birds. The total cost of stamping out per bird (HTG 891) is over twice higher than the average value of production per bird (HTG 428).

Cost-benefit analysis of control measures for LPAI

In contrast with HPAI H5N1, LPAI such as the H5N2 subtype detected in RD and Haiti does not cause significant mortality in poultry. In most cases, clinical symptoms are not perceptible, therefore diagnosis can be confirmed only by laboratory analysis. The main problem with LPAI is the potential risk of mutation of the virus into HPAI. However, unlike HPAI H5N1, HPAI H5N2 has not resulted so far in any human casualties elsewhere in the world.

The factors that bring about mutation from LPAI to HPAI are not known. The probability is generally thought to be low, especially in traditional backyard poultry production systems which seem to be less conducive to virus mutation than intensive commercial production systems.

Decisions on appropriate control measures for LPAI H5N2 would require an improved knowledge of the present status of this disease in Haiti. In case the disease would already be endemic in Haiti, stamping out measures are ineffective to eradicate the disease, unless they would be carried out on a large scale with costs largely exceeding the very uncertain benefit of 'avoiding a virus mutation'. In case the disease would be circumscribed to certain areas or production systems, a combination of stamping out and/or targeted vaccination might be envisaged.

Improving epidemiologic knowledge of LPAI H5N2 in Haiti has itself a cost which should be taken into account before deciding how to proceed, especially in comparison with the possibility to allocate corresponding funds to other animal diseases that are of more concrete and immediate concern to farm producers in Haiti.

This exercise is based on the assumption of taking actions at a binational level, breaking therefore the prisoner's dilemma and moving towards a higher equilibrium where both parties benefit from a single approach to avian flu prevention and control.

TABLE 1**SEROLOGICAL RESULTS FOR DETECTION OF AVIAN INFLUENZA**

Programme de Vigilance épidémiologique de la Grippe Aviaire
Résultats des analyses de laboratoire

Période Septembre 2006 - 2 Octobre 2007

Département	1er test/ ELISA			2ème test H5N1		3ème test AGD	
	Qté	Pos	Nég	Pos	Nég	Pos	Nég
Nord Est	168	2	166	0	2	0	2
Ouest	236	10	226	0	10	0	10
Sud	240	16	224	0	16	0	16
Grand Anse	403	68	335	0	68	0	68
Centre	436	18	418	0	18	0	18
Artibonite	192	22	170	0	22	0	22
Nippes	88	4	84	0	4	0	4
Nord Ouest	117	2	115	0	2	0	2
Nord	482	11	471	0	11	0	11
Sud Est	173	2	171	0	2	0	2
TOTAL	2535	155	2380	0	155	0	155

6,1%

Période Octobre 2007 - 7 Mars 2008

Département	1er test			2ème test		3ème test	
	Qté	Pos	Nég	Pos	Nég	Pos	Nég
Nord Est	100	8	92	2	98	0	0
Centre	318	29	289	0	318	0	0
Nippes	18	1	17	0	18	0	0
Nord	149	10	139	3	146	0	0
Nord Ouest	70	5	65	0	70	0	0
Sud	21	2	19	0	21	0	0
Ouest	676	55	621	5	671	0	0
Grand Anse	0	0	0	0	0	0	0
Haut Artibonite	194	2	192	2	192	0	0
Sud Est (Thiotte)	254	0	254	0	254	0	0
TOTAL	1800	112	1688	12	1788	0	0

6,2%

Période Janvier 2008 - Février 2009

Département	Echantillons		Elisa		AGD	
	Collectés	Éliminés	Pos	Nég	Pos	Nég
Nord Est	669	31	4	634	0	4
Ouest	1123	9	65	1049	1	64
Nord Ouest	229	24	6	199	0	6
Nord	447	10	2	435	0	2
Bas Artibonite	121	0	3	118	0	3
Sud Est	637	0	1	636	0	1
Nippes	226	0	3	223	0	3
Grand Anse	100	0	4	96	0	4
Haut Artibonite	194	0	2	192	0	2
Sud	210	0	3	207	0	3
Centre	1092	55	59	978	5	54
TOTAL	5048	129	152	4767	6	146

2,56%

3,1%

Source:

MARNDR, Direction Santé Animale (DSA) - Service Epidémiologie et Statistiques Vétérinaires

TABLE 2

EMERGENCY MEASURES IMPLEMENTED BY MARNDR TO CONTROL LPAI H5N2 OUTBREAKS

Intervention d'Urgence contre l'Influenza aviaire MARNDR

Volailles abattues par jour dans les différents Départements

Département	TOTAL	Poule indigène	Dinde	Pintade	Pigeon	Canard
Nippes - 1 foyer	213	179	13	0	6	15
Mercredi 5 août	190	156	13	0	6	15
Jeudi 6 août	23	23	0	0	0	0
Centre - 1 foyer		Intervention retardée - en cours prochainement				
Nord - 2 foyers	519	426	13	0	5	75
Mercredi 5 août	519	426	13	0	5	75
Nord-Est - 2 foyers	172	0	0	0	0	0
Mercredi 5 août	172	0	0	0	0	0
GRAND TOTAL	904	605	26	0	11	90

(5 foyers traités)

Coût des opérations par Département

Département	Montant HTG	per animal	Equiv. USD	per animal
Nippes - 1 foyer	67 325	316	1 683	7,9
Compensation des éleveurs	30 750	144	769	3,6
Primes et divers	36 575	172	914	4,3
Centre - 1 foyer				
Nord - 2 foyers	256 365	494	6 409	12,3
Compensation des éleveurs	182 475	352	4 562	8,8
Primes et divers	73 890	142	1 847	3,6
Nord-Est - 2 foyers	129 780	755	3 245	18,9
Compensation des éleveurs	60 525	352	1 513	8,8
Primes et divers	69 255	403	1 731	10,1
GRAND TOTAL	453 470	502	11 337	12,5
Compensation des éleveurs	273 750	303	6 844	7,6
Primes et divers	179 720	199	4 493	5,0

(5 foyers traités)

Inclut seulement le coût immédiat des opérations -
n'inclut pas le coût des agents de suivi (1 agent par foyer, 2500 HTG/mois par agent, 9 mois)

Source:

MARNDR, Filière de Protection Sanitaire/ Direction Santé Animale (DSA), Service de Prophylaxie - Rapport des Activités d'Opérations de Compensation et d'Elimination de volailles Infectées avec le virus d'Influenza aviaire faiblement pathogène

TABLE 3

COSTS OF PREVENTION AND CONTROL MEASURES FOR AVIAN INFLUENZA

Mesures de prévention et de lutte contre l'influenza aviaire
Estimations de coûts

A. Epidemiological surveillance

average annual cost	USD	500 000
	HTG	20 000 000

B. Stamping out of infected and susceptible birds

direct cost per bird	HTG	502	equivalent to	USD	12,5 (details in Annex 2)
monitoring costs *	HTG	124			
sentinellisation costs **	HTG	268			
total cost per bird	HTG	894	equivalent to	USD	22,3

* based on 1 monitoring agents per outbreak site at a cost of HTG 2 500 per month
for a duration of 9 months
i.e. a cost of HTG 22 500 per outbreak site
for an average of 181 birds stamped-out per outbreak site

** based on following parameters:

2 cages per outbreak site
7 000 HTG per cage
24 sentinel birds per cage
350 HTG per sentinel bird
8 feed bags per cage
1 100 HTG per feed bag
total 48 400 HTG per outbreak site

C. Vaccination campaign

number of units (poultry) to be vaccinated		5 500 000		
cost of one dose of vaccine		5 HTG		
number of vaccination teams		6 000		
daily cost of a vaccination team *		500 HTG		
number of days **		4,58		
subtotal	HTG	41 250 000	equivalent to	USD 1 031 250
ice	HTG	300 000		
syringes **	HTG	8 250 000		
fuel for cars	HTG	400 000		
grand total	HTG	50 200 000	equivalent to	USD 1 255 000

* indemnities for the two members of a vaccination team

** based on estimate of 200 units (heads of poultry) vaccinated per day per team
1,50 HTG per syringe

Source:

MARNDR, Direction Santé Animale (DSA) - Service Epidémiologie et Statistiques Vétérinaires

TABLE 4

COST-BENEFIT ANALYSIS OF AI PREVENTION AND CONTROL MEASURES

Control measures for an HPAI outbreak

	Annual production (no. units)	Farmers price (HTG)	annual value (HTG million)
chicken	8 900 000	250	2 225,0
eggs	21 000 000	6	126,0
total			2 351,0

average per head in national flock (HTG) 427,5

costs of national vaccination campaign 50,2

% of annual production value 2,14%

stamping out	no. birds	% total flock	total costs (HTG million)
	1 000	0,02%	0,9
	5 000	0,09%	4,5
	10 000	0,18%	8,9
	20 000	0,36%	17,9
	55 000	1,00%	49,2
	100 000	1,82%	89,4
	5 500 000	100,00%	4 915,7

cost per head (HTG) 894

percentage of average production per head 209%

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
Solange A. Alliali	Senior Counsel	LEGAM	
Jean-Claude Balcet	Consultant	LCSTR	
Mario E. Bravo	Sr Communications Officer	EXTOC	
Peter Cohen	Consultant	AFTFW	
Indira Janaki Ekanayake	Sr Agriculturist	AFTA3	
Beatriz Elena Franco	Program Assistant	LCC1A	
Ross Alexander Gartley	Consultant	LCSUW	
Joana Godinho	Sector Manager	LCSHH	
Marie Khoury	Consultant	CTRLA	
Harideep Singh	Senior Rural Development Speci	EASER	
Fily Sissoko	Lead Financial Management Spec	AFTMW	
Yao Wottor	Senior Procurement Specialist	LCSPT	
Supervision/ICR			
Christelle Bernardin	Temporary	LCCHT	
Ross Alexander Gartley	Consultant	LCSUW	
Joana Godinho	Sector Manager	LCSHH	
Natalia Gomez	Senior Rural Development Speci	LCSAR	
Fernando Montenegro Torres	Sr Economist (Health)	LCSHH	
Glenn S. Morgan	Regional Safeguards Adviser	LCSDE	
Joseph Kizito Mubiru	Sr Financial Management Specia	LCSFM	
Rachel Hannah Nadelman	Consultant	LCSAR	
Alois Ndorere	E T Consultant	LCSPT	
Erika Eliana Salamanca Duenas	Program Assistant	LCSAR	
Maryanne Sharp	Country Operations Adviser	LCSOS	
Fily Sissoko	Lead Financial Management Spec	AFTMW	
Nko Etesin Umoren	Resource Management Analyst	AFTRM	
Christina Ariani Wartenberg	Junior Professional Associate	LCSAR	
Yao Wottor	Senior Procurement Specialist	LCSPT	

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY09	4.76	13.23
Total:		13.23

Supervision/ICR		
FY 10, 11, 12, 13	50.53	253.78
Total:		253.78

Annex 5. Beneficiary Survey Results

N/A

Annex 6. Stakeholder Workshop Report and Results

N/A

Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR

At the end of the 1990s, the world faced a serious threat from Avian Influenza. The H5N1 virus subtype was causing the death of several hundred million domestic poultry in Asia, then in Africa. From 2003, human mortality cases were observed, which created the fear that a pandemic could surge at any moment if the virus was transmissible between humans. The spectrum of the 1918 avian influenza pandemic reappeared and the different scenarios presented by international and competent institutions contributed to enhance the concern based on the estimation of loss of human life. In the meanwhile, the Republic of Haiti was struggling with the with precarious veterinary and sanitary infrastructures. But like other countries it took dispositions to protect the territory and prepare itself for an eventual contamination by highly pathogenic avian influenza. In this context working groups on influenza were established in the Ministries of Agriculture and Public Health with the collaboration of international and regional institutions, especially WHO and PAHO, and with the participation of concerned public institutions and NGOs.

Training sessions and diagnostic activities had started for three sub-types, including H5N1. Field investigations initiated in 2006 did not reveal the presence of any high pathogenic or low pathogenic sub-type in Haiti until 2008. Veterinary services of the Dominican Republic discovered the H5N2 low pathogenic subtype by chance, during the carrying out of routine tests on mothers of fight cocks that were going to be exported to Colombia. In Haiti, this sub-type was identified by MARNDR's veterinary laboratory, from tests carried out by the DPSA on chicken living next to the Haitian-Dominican border or to public markets in the North department. The Ames laboratory in Iowa, United States, which is the laboratory of reference for avian influenza, confirmed the diagnostic.

Despite some investment efforts in avian influenza prevention in Haiti, several structural weaknesses existed in veterinary matters. The institutional capacity and know-how revealed to be inadequate to face a H5N1 epizootic associated with human cases. Given the cosmopolitan character of the disease and its implications for trade, it became necessary to look at the avian influenza character with a regional or at least bi-national perspective. The World Bank and the Government of Haiti agreed to start in October 2009 an Avian Influenza Prevention and Control Project (PRECONIA), in which key participating actors would be MARNDR and MSPP, in terms of interventions in the field. A similar project was agreed with the Dominican Republic to allow the two countries of the Hispaniola Island to harmonize their actions in the fight against avian influenza and to better prepare themselves to face a pandemic threat.

The project was conceived to receive two grants with respective amounts of US\$1 million and US\$1.5 million. Due to administrative delays imputable to the World Bank, the first grant was cancelled before the project started.

The project had four components, which were: Animal Health, Public Health, Communication, and Management. The objectives of component 1 were to have, at any moment, updated data on the avian influenza situation in the country, to equip the country

with an organizational structure able to provide early alerts in case of suspicion of high pathogenic avian influenza cases and to apply sanitary measures, to reinforce animal quarantine structures across the country, to have an operational and efficient notification system for morbidity cases, to eliminate the presence of any clinical case and the circulation of high pathogenic avian influenza sub-types or of sub-types subject to compulsory declaration to WHO. The objectives of component 2 were to strengthen diagnostic and surveillance capacity in the human health sector, to establish an organizational system able to rapidly apply urgent sanitary and medical measures in the case of human diseases, as well as response mechanisms; to train human health professionals on avian influenza and acute respiratory diseases, to carry out systematic avian influenza detection studies in sentinel sites on any person having a respiratory disease. The objectives of component 3 were to develop the national capacity before and during urgent situations on avian influenza to inform the public, to increase public awareness on differences between seasonal flu, avian flu, and a pandemic flu, to prepare the public on ways to prevent and reduce the incidence of pandemic flu, to strengthen capacity at the national level on epidemiological vigilance and alert triggering, to increase active epidemiological surveillance of acute respiratory infections, to carry out monitoring and evaluation of the implementation of the national plan on anti-pandemic preparation, and to develop the collaboration with the Dominican Republic. Component four was to ensure project administration and implementation through the Project Coordination Unit.

DPSA, under MARNDR, was chosen to carry out animal health activities and to ensure project coordination. MSPP was responsible for implementing prevention and surveillance activities in coordination with MARNDR. IICA was chosen through an agreement with the World Bank, approved by MARNDR, for procurement and fiduciary management of the project.

The main project beneficiaries were the « *Gwoupman Sante Bèt* » (GSB), professionals of DPSA, NGOs and partner institution involved in poultry farming and health, the Direction of quarantine, under MARNDR, and public health service providers.

The main difficulties and obstacles encountered by the project were the lack of experience of institutions with the implementation and management of projects financed by the World Bank; the absence of a procurement specialist in the staff of DPSA, MSAPP, and IICA; the delays to prepare the bidding documents, the weakness of logistics (only one vehicle for MARNDR and MSPP), the fact that the veterinary laboratory was dysfunctional in 2012, the disbursement by tranches adopted by IICA and the need to justify all expenses requests before any new disbursement.

Several lessons can be extracted from the project's implementation.

- The management of projects varies considerably between sources of financing
- The knowledge of the administrative and fiduciary management procedures of the financing institution are an important determinant of project success
- The institutional arrangements play an important role in the fluidity and frequency of actions that the Project must undertake in the field

- PRECONIA's institutional arrangements revealed to be cumbersome and unpractical
- The communication between the different participants in the project is fundamental for the smooth implementation of activities.
- Considerable delays were an important source of frustration for technicians responsible for management of this project, especially for those who think they provided their best efforts
- The success of projects financed by the World Bank and the Inter-American Development Bank and implemented by MARNDR cannot be guaranteed with the remuneration policy of these agencies, which offers different salaries for technicians of equal competency
- Minimum procurement knowledge is required for each person participating in project management to increase chances of project success
- Project coordination has gained a better knowledge of procurement and Bank procedures.

Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders
N/A

Annex 9. List of Supporting Documents

- Borrower Completion Report (BCR), October 2012
- Project ISRs, Aide Memoires, and Management Letters
- Animal Health Programmatic Investment Plan 2012-2017, MARNDR 2012.
- Project Progress Reports