

**Document of  
The World Bank**

**Report No.: 78317**

**PROJECT PERFORMANCE ASSESSMENT REPORT**

**NEPAL**

**AVIAN INFLUENZA CONTROL PROJECT  
(IDA-H2680)**

**June 17, 2013**

**IEG Public Sector Evaluation**  
*Independent Evaluation Group*

## Currency Equivalents (annual averages)

*Currency Unit = Nepalese Rupee (NPR)*

2006	US\$1.00	NPR 72
2011	US\$1.00	NPR 71
2013	US\$1.00	NPR 86

## Abbreviations and Acronyms

BSL	Biosecurity Level
FAO	Food and Agriculture Organization of the United Nations
GPAI	Global Program on Avian Influenza
HPAI	Highly Pathogenic Avian Influenza
ICR	Implementation Completion and Results report
IEG	Independent Evaluation Group
IEGPS	IEG Public Sector Evaluation
OIE	World Organization for Animal Health
PPAR	Project Performance Assessment Report
WHO	World Health Organization

## Fiscal Year

Government: July 15 - July 14

Director-General, Independent Evaluation	:	Ms. Caroline Heider
Director, IEG Public Sector Evaluation	:	Mr. Emmanuel Jimenez
Manager, IEG Public Sector Evaluation	:	Ms. Marie Gaarder
Task Manager	:	Mr. Stephen Hutton

# Contents

1. Background and Context.....	1
Country Background.....	1
Disease and Project Context .....	2
2. Objectives, Design, and their Relevance .....	4
Objectives .....	4
Relevance of Objectives .....	4
Design .....	6
Relevance of Design .....	9
3. Implementation .....	10
Planned vs. Actual Expenditure by Component .....	11
Implementation Experience .....	11
4. Achievement of the Objectives .....	15
Minimize the threat in Nepal posed to humans by Highly Pathogenic Avian Influenza infection by controlling such infections among birds, especially domestic poultry.....	15
Prepare for, control and respond to possible human infections, especially an influenza epidemic and related emergencies .....	21
5. Efficiency .....	25
6. Ratings .....	26
Outcome.....	26
Risk to Development Outcome.....	27
Bank Performance.....	29
Borrower Performance.....	31
Monitoring and Evaluation .....	32
7. Lessons.....	32
References.....	35
Annex A. Basic Data Sheet.....	37
Annex B. Other data annexes.....	40
Annex B1: Avian influenza .....	40
Annex B2: International donors and the World Bank and Avian Influenza.....	41
Annex B3: Surveillance and diagnosis of avian influenza in animals in Nepal .....	42
Annex B4: Establishing Biosecurity Level 3 Laboratories in Nepal .....	43

This report was prepared by Stephen Hutton, who assessed the project in February 2013. The report was peer reviewed by Guy Freeland and panel reviewed by John Heath. Marie Charles provided administrative support.

Annex B5: Avian influenza outbreak sites in Nepal during the project .....	45
Annex B6: Photographic evidence.....	46
Annex C. List of Persons Met.....	51
Annex D. Borrower Comments .....	53

## **Boxes**

Box 1: Strengths and weaknesses of the compensation mechanism in Nepal .....	18
------------------------------------------------------------------------------	----

## **Tables**

Table 1: Major Recent World Bank Financed Projects in the Agriculture and Health Sectors in Nepal .....	2
Table 2: Project cost by component.....	11

## **Figures**

Figure 1: Avian Influenza Risk Districts as of 2008.....	8
Figure 2: Number of Birds Culled and Project Timeline.....	12

## Principal Ratings

	<i>ICR*</i>	<i>ICR Review*</i>	<i>PPAR</i>
Outcome	Moderately Satisfactory	Moderately Satisfactory	Moderately Satisfactory
Risk to Development Outcome	Moderate	Moderate	Significant
Bank Performance	Moderately Satisfactory	Moderately Satisfactory	Moderately Satisfactory
Borrower Performance	Moderately Satisfactory	Moderately Satisfactory	Moderately Satisfactory

\* The Implementation Completion and Results (ICR) report is a self-evaluation by the responsible Bank department. The ICR Review is an intermediate IEG product that seeks to independently verify the findings of the ICR.

## Key Staff Responsible

<i>Project</i>	<i>Task Manager/Leader</i>	<i>Division Chief/ Sector Director</i>	<i>Country Director</i>
Appraisal	Daniel Sellen, Sundararajan Gopalan	Constance Bernard, Julian Schweitzer	Kenichi Ohashi
Completion	Normal Bentley Piccioni	Simeon Kacou Ehui, Julie McLaughlin	Ellen A. Goldstein

**IEG Mission: Improving World Bank Group development results through excellence in independent evaluation.**

### **About this Report**

The Independent Evaluation Group assesses the programs and activities of the World Bank for two purposes: first, to ensure the integrity of the Bank's self-evaluation process and to verify that the Bank's work is producing the expected results, and second, to help develop improved directions, policies, and procedures through the dissemination of lessons drawn from experience. As part of this work, IEG annually assesses 20-25 percent of the Bank's lending operations through field work. In selecting operations for assessment, preference is given to those that are innovative, large, or complex; those that are relevant to upcoming studies or country evaluations; those for which Executive Directors or Bank management have requested assessments; and those that are likely to generate important lessons.

To prepare a Project Performance Assessment Report (PPAR), IEG staff examine project files and other documents, visit the borrowing country to discuss the operation with the government, and other in-country stakeholders, and interview Bank staff and other donor agency staff both at headquarters and in local offices as appropriate.

Each PPAR is subject to internal IEG peer review, Panel review, and management approval. Once cleared internally, the PPAR is commented on by the responsible Bank department. The PPAR is also sent to the borrower for review. IEG incorporates both Bank and borrower comments as appropriate, and the borrowers' comments are attached to the document that is sent to the Bank's Board of Executive Directors. After an assessment report has been sent to the Board, it is disclosed to the public.

### **About the IEG Rating System for Public Sector Evaluations**

IEG's use of multiple evaluation methods offers both rigor and a necessary level of flexibility to adapt to lending instrument, project design, or sectoral approach. IEG evaluators all apply the same basic method to arrive at their project ratings. Following is the definition and rating scale used for each evaluation criterion (additional information is available on the IEG website: <http://ieg.worldbankgroup.org>).

**Outcome:** The extent to which the operation's major relevant objectives were achieved, or are expected to be achieved, efficiently. The rating has three dimensions: relevance, efficacy, and efficiency. *Relevance* includes relevance of objectives and relevance of design. Relevance of objectives is the extent to which the project's objectives are consistent with the country's current development priorities and with current Bank country and sectoral assistance strategies and corporate goals (expressed in Poverty Reduction Strategy Papers, Country Assistance Strategies, Sector Strategy Papers, Operational Policies). Relevance of design is the extent to which the project's design is consistent with the stated objectives. *Efficacy* is the extent to which the project's objectives were achieved, or are expected to be achieved, taking into account their relative importance. *Efficiency* is the extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared to alternatives. The efficiency dimension generally is not applied to adjustment operations. *Possible ratings for Outcome:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

**Risk to Development Outcome:** The risk, at the time of evaluation, that development outcomes (or expected outcomes) will not be maintained (or realized). *Possible ratings for Risk to Development Outcome:* High, Significant, Moderate, Negligible to Low, Not Evaluable.

**Bank Performance:** The extent to which services provided by the Bank ensured quality at entry of the operation and supported effective implementation through appropriate supervision (including ensuring adequate transition arrangements for regular operation of supported activities after loan/credit closing, toward the achievement of development outcomes. The rating has two dimensions: quality at entry and quality of supervision. *Possible ratings for Bank Performance:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

**Borrower Performance:** The extent to which the borrower (including the government and implementing agency or agencies) ensured quality of preparation and implementation, and complied with covenants and agreements, toward the achievement of development outcomes. The rating has two dimensions: government performance and implementing agency(ies) performance. *Possible ratings for Borrower Performance:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

## Preface

This is the Project Performance Assessment Report (PPAR) for the Nepal Avian Influenza Control Project (IDA-H2680) under the Global Program for Avian Influenza.

The project was approved on January 19, 2007 and became effective on March 27, 2007. A total of US\$18.2 million was committed for the project. At project closure, \$15.64 million had been disbursed. The project was not extended and closed as scheduled on July 31, 2011.

The report presents findings based on a review of the project's Implementation Completion and Results Report, appraisal report, legal documents, and other relevant material. An IEG mission to Nepal in February 2013 held discussions with World Bank country office staff, government officials and agencies, project staff, partner agencies, poultry farmers and other project stakeholders (see Annex C). The mission visited the Central Veterinary Laboratory, the National Public Health Laboratory (including the National Influenza Center), the Shukraraj Infectious Disease Hospital, the National Avian Diseases Diagnostic Laboratory in Bharatpur, the Western Regional Hospital in Pokhara, and the Regional Veterinary Laboratory in Pokhara. IEG did not visit a number of other sites supported by the project, including four regional veterinary laboratories, the BP Koirala Health Institute in Dharan, Tribhuvan Teaching University Hospital in Kathmandu, and Nepalgunj Medical College.

The contributions of all stakeholders, including World Bank staff in Washington DC and Kathmandu, are gratefully acknowledged. Administrative and logistical support from Tara Shrestha in the Kathmandu Country Office was greatly appreciated.

Following standard IEG procedures, copies of the draft PPAR were shared with relevant Government officials and agencies for their review and comment. All comments received are included in Annex D of the report.





## Summary

Nepal is a low income country that is experiencing political and economic uncertainty following the end of a civil conflict. It faces a number of challenges including budgetary difficulties and severe power shortages.

Since outbreaks of highly pathogenic avian influenza in Vietnam in 2003, there has been global concern about the risk of avian influenza. The disease poses a threat to poultry, a risk of human infection, and a risk that the virus could mutate into a strain that could be transmitted between humans, triggering a potentially catastrophic pandemic. Following these global concerns and outbreaks of avian influenza in India in 2006, the World Bank responded to requests from the Government of Nepal to assist in increasing capacity to respond to avian influenza and a potential influenza pandemic. Technical and financial support was also provided by other donors, including the Food and Agriculture Organization of the United Nations, the World Health Organization, the United Nations Children's Fund, and the United States Agency for International Development.

The objectives of the US\$18.2 million Nepal Avian Influenza Control Project were to *minimize the threat in Nepal posed to humans by Highly Pathogenic Avian Influenza infection by controlling such infections among birds, especially domestic poultry, and to prepare for, control and respond to possible human infections, especially an influenza epidemic and related emergencies*. The goals were relevant to Nepal given the overall global threat of avian influenza, and became more relevant following the first outbreaks in Nepal in January 2009. The project design followed the general template of the Global Program on Avian Influenza. The main elements of the project included support for improving avian influenza surveillance through training and sample collection; increasing diagnostic capacity by providing equipment and training to veterinary laboratories; improving outbreak response capacity through training and equipment; creating a compensation mechanism for birds slaughtered in culling operations; improving surveillance of influenza in humans through expanded active and passive surveillance; improving human influenza diagnostic capacity through laboratory upgrades; improving influenza outbreak preparedness through planning, training, antiviral drugs, intensive care units, and isolation wards; and improving awareness and changing behavior through a communication campaign.

The project was slow to start, especially for an emergency project, taking 8 months before any procurement was completed and nearly a year to fully staff the project management unit and to finalize a working agreement between the government, the Bank and the United Nations agencies. But implementation eventually improved, particularly after the 2009 avian influenza outbreaks.

The project established an effective system for identifying and controlling outbreaks of avian influenza in birds. Ten outbreaks were identified and controlled during the project, and an additional 46 outbreaks have been identified and controlled since project closure as of May 2013. Containment efforts were successful because of a substantial increase in capacity in the Department of Livestock Services attributable to the project. No cases of avian influenza have been detected in humans. The project's human health component

had less impact, with only a modest impact on preparedness for human influenza epidemics and pandemics.

After midterm review the planned establishment of two biosecurity level 3 laboratories was dropped. These laboratories were arguably not justified on a cost benefit basis, were likely to impose significant maintenance costs, and would likely be difficult to complete prior to project closure. The project still supported construction of a BSL 2+ laboratory on the human health side (which is almost BSL 3), but this facility is not operational. Other changes included the decision not to support poultry vaccination, and to reorient support for quarantine services away from border control towards internal checkposts.

Though the economic benefits of the project are likely to have been high, there were a number of examples of inefficient use of resources. The project invested in laboratory equipment that did not directly contribute to project objectives (because it was not used for influenza diagnostics) or could not be used due to a lack of staff capacity. The full gains from investments in equipment for intensive care units and isolation wards have not been realized because some of the facilities and equipment are not operational.

The overall project outcome is rated *Moderately Satisfactory* reflecting substantial relevance of objectives and design, substantial achievement of the objective to minimize the threat in Nepal posed to humans and poultry by highly pathogenic avian influenza, but modest achievement of the objective to prepare for, control and respond to possible human infections especially an influenza epidemic and related emergencies, and modest efficiency.

While capacity gains have been made, it is unclear if these gains will be sustained because of a lack of funding, reflecting the difficult budgetary circumstances faced by the government. In the short term, most gains are being sustained despite a budgetary crisis though a follow up World Bank financed project, the Zoonoses Control Project (2012-14). But many operational activities are heavily reliant on donor funding, and surveillance systems are already declining since the project closed. The project would benefit from sustainable funding sources for surveillance programs, refresher training, laboratory consumables, and power supply. Project gains are also at risk because of high rates of staff transfer. Many staff trained under the project have departed, meaning that there is insufficient technical capacity to operate laboratory equipment. Compensation rates have been increased but not commensurately with inflation and poultry price increases, so the proportion of economic losses to farmers covered by compensation has declined over time, potentially inhibiting outbreak reporting by farmers. The risk to development outcome is rated *Significant*.

The project was rapidly prepared and included a number of good practice measures including establishment of a compensation fund and support for both urgent emergency response and longer term capacity building needs. However, there were moderate weaknesses in project design, including in monitoring and evaluation design, and so quality at entry is rated *moderately satisfactory*. Many of these weaknesses were corrected through supervision, and the Bank provided intensive support to the project management unit, so supervision is rated *satisfactory*. These lead to a Bank performance rating of *Moderately Satisfactory*. Government commitment was generally high,

particularly once avian influenza outbreaks had occurred, so government performance was rated *moderately satisfactory*. Project ownership and commitment was high from the Department of Livestock Services, but consistently weak financial management and procurement capacity (due in part to high staff turnover) and weaker performance by the Department of Health Services led to significant implementation delays, so implementing agency performance is rated *moderately unsatisfactory*. These lead to a Borrower performance rating of *Moderately Satisfactory*. Collection of monitoring and evaluation data was weak, and there is no evidence of utilization of this data, so monitoring and evaluation is rated *negligible*.

Building on the project experience, this assessment identifies several lessons, including:

- Investments in laboratory equipment and civil works may be inefficient if they outstrip the financial and technical capacity of staff to operate and maintain them.
- Failure to adjust compensation rates for inflation and other price increases can reduce the real value of compensation payments, reducing incentives for farmers to report disease outbreaks.
- Attempts to control spread of HPAI among poultry at the border may have limited effectiveness in countries with long, porous borders.
- Containing an influenza epidemic or pandemic among humans is likely to be extremely difficult in countries like Nepal with modest public health infrastructure.
- Collaboration with United Nations agencies can provide technical expertise that the World Bank lacks, but there can be delays in implementation if there is insufficient engagement of these agencies at a headquarters level.

Richard Scobey  
Acting Director-General  
Evaluation



# 1. Background and Context

## Country Background

1.1 Nepal is a landlocked country with roughly 24 million people, bordering India and China. Gross national income per capita was roughly US\$540 in 2011. Growth in recent years has averaged roughly 4.5 percent per year, lower than for other countries in South Asia. Agriculture is a major source of income, contributing on average 35 percent of GDP over 2001-12. Almost one quarter of GDP comes from remittances, mostly from Nepali workers in India (IMF 2012). The national poverty rate is 25 percent, rising to 37 percent in districts in rural hilly areas in the far west and midwest regions (Central Bureau of Statistics 2011).

1.2 Nepal is experiencing political and economic uncertainty following the end of a 10 year conflict in 2007. The monarchy was abolished and elections were held in 2008. But the constituent assembly was dissolved in June 2012 after failing to meet a May deadline for new elections. The absence of the assembly means that no budget has been passed for the 2012/13 fiscal year, which has limited the ability of many government agencies to operate. Shortages in electric power (with up to 14 hours of load shedding per day), the high cost of diesel fuel, delays in payment of civil service salaries, and other factors pose significant challenges to implementation for all projects in Nepal.

1.3 Though the Bank has had significant involvement in the agriculture and rural development and health sectors, these projects have had relatively little overlap with activities supported under the avian influenza control project. Agriculture and rural development projects have focused on irrigation, water supply, and nutrition while health projects have focused on expanding access to health services, particularly for underserved populations (Table 1). But prior to the project there had been no engagement by the Bank in the livestock sector, veterinary services, animal health, zoonotic diseases, or pandemic preparedness. The Zoonoses Control Project was approved in 2012 as a follow-up project to the Avian Influenza project, and continues support for similar activities while widening the scope to focus on priority zoonotic diseases beyond avian influenza, and to include climate change adaptation concerns under a One Health approach.<sup>1</sup> Other donors had been involved in the agriculture and health sectors, but with small exceptions this support was not related to avian influenza.

---

<sup>1</sup> The One Health concept is to approach animal health, human health, and environmental health issues together in a coordinated manner, emphasizing interdisciplinary collaboration.

**Table 1: Major Recent World Bank Financed Projects in the Agriculture and Health Sectors in Nepal**

<i>Project Name</i>	<i>Years active:</i>	<i>Bank commitments amount (US\$m)</i>	<i>Activities supported</i>
Nepal Health Sector Program Project, and Additional Financing	2004-2010	100	Expanding access to health services for underserved populations.
Second Rural Water Supply & Sanitation Project, and Additional Financing	2004-2012	52.3	Improving rural water supply and sanitation through local user groups.
Irrigation & Water Resources Management Project, and Supplemental	2007-13	64.3	Improve productivity of irrigated agriculture through irrigation construction and improved/integrated crop and water management.
Poverty Alleviation Fund II, and Additional Financing	2007-14	126	Improving living conditions of rural poor through village and community infrastructure and income-generating subprojects.
Social Safety Nets Project, and Additional Financing	2008-13	69.5	Improve access to food through safety nets and create opportunities for agricultural production improvements through seed and fertilizer.
Project for Agriculture Commercialization and Trade (PACT)	2009-2012	20	Increase value added in commodity chains by supporting farmer commercialization, industry linkages, and food quality management.
Second HNP and HIV/AIDS Project	2010-2015	129.15	Expanding access to health services for underserved populations, increasing nutrition of pregnant women and children, expanding coverage for response to HIV/AIDS.
Modernization of Rani Jamara Kulariya Irrigation Scheme - Phase I	2011-16	43	Improve irrigated water delivery through irrigation works, water user groups and agricultural production support.
Zoonoses Control Project	2012-2014	10	Improve capacity to prevent and control zoonoses through enhanced preparedness, surveillance, diagnostic capacity, and response capacity.

## **Disease and Project Context**

1.4 The influenza A virus can cause influenza in birds and some mammals. A form of the virus adapted to birds known as Highly Pathogenic Avian Influenza A (H5N1), referred to as HPAI or simply avian influenza, has led to high mortality in poultry and some deaths in humans (Annex B1). Since 2003, there has been significant global concern about the risks posed by avian influenza, and cases have been detected in 61 countries. Avian influenza is primarily a disease of birds, but can potentially infect

humans if they come into contact with infected birds. The virus has killed tens of millions of birds, and at least 400 million birds have been slaughtered to limit the spread of the virus (FAO 2012). As of March 2013, 622 cases had been confirmed among humans by the World Health Organization (WHO), including 371 fatalities.<sup>2</sup> There is also the possibility that a mutated form of the virus could be transmissible between humans, which could trigger a global pandemic.

1.5 The World Bank responded to this global emergency through two mechanisms, the Global Program for Avian Influenza Control and Human Pandemic Preparedness and Response (GPAI) and the multi-donor Avian and Human Influenza Facility (Annex B2). The GPAI set up a template for avian influenza control projects, which focused on supporting capacity improvements for controlling and containing outbreaks, disease surveillance among animals and humans, diagnostic capacity, treatment capacity, awareness raising and behavioral change.

1.6 Nepal faces four broad threats from avian influenza:

- Avian influenza outbreaks among poultry lead to deaths among birds, and associated economic costs for poultry producers, traders, and consumers. This risk can be managed by improving biosecurity among birds, and by identifying and controlling outbreaks among birds.
- The disease could be transmitted to humans from infected birds in Nepal, leading to human morbidity and mortality. This risk can be managed through the same steps that mitigate the risk among birds, and further through improving biosecurity and animal handling among humans, and by improving treatment capacity for humans.
- Outbreaks of avian influenza among birds and/or other animals in Nepal could lead to the gradual evolution of a strain of influenza that is directly transmissible between humans, which could trigger a pandemic, with human mortality and morbidity throughout the world. The chance of this occurring is very low, but preventing it would offer enormous benefits for both Nepal and the rest of the world. This risk can be reduced through the measures above that manage the risk among birds, as well as through improved biosecurity among humans; improved surveillance, diagnosis, isolation and treatment capacity among humans; and epidemic and pandemic preparedness.
- A strain of avian influenza transmissible between humans could emerge in another country, causing a pandemic that then spreads to Nepal through movement of infected people. This could cause significant mortality and morbidity in Nepal. This risk can be managed through improved surveillance, diagnosis, isolation and treatment capacity among humans; and by pandemic preparedness.

1.7 Avian influenza can be controlled most effectively at the source (FAO 2010, WHO 2009). Once outbreaks among poultry or humans have begun to spread, containment becomes more difficult and the costs of the disease are much higher. Thus,

---

<sup>2</sup> These figures should not be used to imply that the virus has a 60 percent fatality rate among humans, since there are likely many more non-fatal human cases that have not been diagnosed.

identifying and controlling outbreaks among birds contributes to addressing the most likely threat (losses to the poultry sector) and to other more severe threats (infections among humans).

1.8 Following growing global concerns about avian influenza and the first outbreaks in India in February 2006, the World Bank responded to Nepali requests to assist in building capacity to respond to risks from avian influenza, preparing the Avian Influenza Control Project. The project concept note was produced in March 2006, with project approval in January 2007 and project effectiveness in March 2007.

1.9 The Government of Nepal formed an inter-sector task force and prepared and endorsed a National Avian Influenza and Influenza Pandemic Preparedness and Response Plan in early 2006, with assistance from the Food and Agriculture Organization (FAO) and the World Health Organization (WHO). The plan provided a strategic framework for response, with pillars on planning and coordination, surveillance and laboratory strengthening, prevention and containment, health systems response, and risk communication. An operational version of the plan for 2007-11 was published and endorsed in December 2006, outlining major actions that needed to be taken and assigning responsibilities, primarily to the Ministry of Health and Population and the Ministry of Agriculture and Cooperatives. The activities of the operational plan were to be carried out under the World Bank-financed Avian Influenza Control Project.

## 2. Objectives, Design, and their Relevance

### Objectives

2.1 The project development objectives stated on page 12 of the Technical Annex to the Financing Proposal (the equivalent of the Project Appraisal Document) were to “*minimize the threat in Nepal posed to humans by Highly Pathogenic Avian Influenza (HPAI) infection by controlling such infections among birds, especially domestic poultry, and to prepare for, control and respond to possible human infections, especially an influenza epidemic and related emergencies*”. The objectives in the Financing Agreement were identical. The objectives were not revised during implementation.

### Relevance of Objectives

2.2 Poultry is an important subsector in Nepal, and domestic production and consumption has expanded significantly over recent decades, particularly in Chitwan district and in the Kathmandu and Pokhara valleys. In 2006, there were an estimated 22 million chickens and 408,000 ducks in Nepal. The poultry sector employed approximately 400,000 people, and provided livelihoods to millions of rural households (World Bank 2011). Poultry production provides roughly 4-5 percent of GDP. Roughly 45 percent of poultry were in large commercial farms, while 55 percent were on small backyard units. Roughly half of rural households kept some poultry. In 2012, the Nepal government announced a Poultry Policy aimed at improving food security and nutrition by tripling per capita consumption of poultry and production of chicken and eggs over a



15 year period. Chicken is the main source of protein, and the most economically significant part of the livestock sector.

2.3 Nepal faced particular risks from avian influenza because:

- It shares a long, porous border with India, where outbreaks were first reported in 2006.
- It is on major migratory pathways for wild birds, which travel across the Himalayas. Outbreaks of avian influenza had been reported in wild birds in China.
- Biosecurity was weak, especially for small commercial and backyard farms (annex B6 a).

2.4 There were significant weaknesses in the capacity of the animal health and human health sectors. The Department of Livestock Services had a veterinary service infrastructure, but one that was insufficiently prepared for avian influenza. Animal health monitoring and surveillance capacity was low – and nonexistent for backyard farms – and little capacity existed to respond to contain disease outbreaks among animals. No domestic diagnostic capacity for avian influenza existed.

2.5 The human health sector was functional, but quality of care and access was weak in many areas. The system lacked sufficient equipment and training to respond to a major crisis. Surveillance and diagnostic capacity were weak; there was no active surveillance for influenza, and passive surveillance was minimal.

2.6 While no avian influenza outbreaks had occurred in Nepal at the time of appraisal, they had occurred in neighboring India and China and there was a legitimate fear of outbreaks in Nepal. These fears turned out to be justified following outbreaks in Nepal in 2009 and subsequent outbreaks that continue. A human influenza pandemic (of a non-avian influenza strain) occurred in 2009-10, before many of the human health improvements financed by the project were operational.

2.7 The project objectives were consistent with the Bank practice of responding to emergencies and with the goals of the Global Program on Avian Influenza. The project was not specifically relevant to the Country Assistance Strategy for 2004-7, but avian influenza had not yet become a global concern at the time the strategy was conceived. No full Country Strategy has been devised since this 2004-7 strategy, though there have been interim strategy notes. The goals of the project were broadly relevant to the Nepal Interim Strategy Note for FY08-11 (World Bank 2007), supporting “promoting access to better quality services” by improving public health service delivery. The project closed before the commencement of the FY12-13 Interim Strategy note, but remains broadly relevant to the pillars on promoting access to better quality services and on reducing vulnerabilities.

2.8 The project objective focused solely on avian influenza, and did not mention other diseases. While some avian influenza projects in other countries broadened their objective (particularly in countries where no avian influenza outbreaks had occurred), the

Nepal project objectives retained a focus on avian influenza.<sup>3</sup> This was understandable given the ongoing avian influenza outbreaks, but a wider focus might have made the project more relevant given the threats posed by other diseases, though these other diseases were not emergencies. There is a high incidence of zoonotic diseases in Nepal, including foot and mouth disease, pestes des petits ruminants, bluetongue, brucellosis, tuberculosis, rabies, Newcastle disease, and porcine reproductive and respiratory syndrome, which combined with avian influenza contribute to estimated annual losses of US\$230 million (World Bank 2012b). There would be a number of synergies in tackling other zoonoses in concert with avian influenza. A follow up project, the Zoonoses Control Project, was approved in 2012 and continues to support many of the goals of the avian influenza control project while also expanding the scope to cover other zoonotic diseases.

2.9 The objectives refer to influenza epidemics, but pandemics originating in other countries and spreading to Nepal were likely a more serious risk than an epidemic originating in Nepal.

2.10 The relevance of objectives is rated *Substantial*.

## Design

### COMPONENTS

2.11 The project had four components.

2.12 **Animal Health** (US\$6.12 million at appraisal, \$5.78 million at closing). This was to support national prevention and control strategies for avian influenza through:

- Strengthening surveillance of HPAI among animals by training veterinary professionals, villagers and surveyors in disease surveillance, collecting samples from commercial and backyard poultry farms, and establishing a nationwide GIS-based surveillance system.
- Strengthening prevention and containment capacity by training veterinary professionals in prevention, control, and biosecurity, and strengthening quarantine services through vehicles and equipment.
- Increasing diagnostic capacity by upgrading veterinary laboratories (one to Biosecurity Level (BSL) 3 and seven to BSL 2), including equipment purchase and training.
- Improving field veterinary services, including setup of rapid response teams, provision of equipment, and creation of a vaccine bank.
- Creating a compensation fund for birds culled during control operations.

---

<sup>3</sup> Though the project objectives were never formally changed, the Project Paper for the 2011 (World Bank 2011) restructuring and the project's completion report describe the project development objective as to "minimize the threat in Nepal posed to humans by highly pathogenic avian influenza (HPAI) infection and other zoonotic diseases by controlling such infections among domestic poultry and to prepare for, control, and respond to an influenza epidemic and other related infectious disease emergencies in humans".

2.13 **Human Health** (US\$6.34 million at appraisal, \$5.93 million at closing). This was to support:

- Improving surveillance of influenza and other influenza-like-illnesses by expanding the network of sentinel sites, improving data collection and handling, providing diagnostic supplies and training for rapid response teams, and supplying equipment, training and upgrades to existing human health laboratories and establishment of a BSL 3 laboratory.
- Improving influenza prevention and containment capacity by providing training, protective supplies and vaccines to high risk workers, by acquiring antiviral and vaccine for use in an outbreak, by improving capacity to quarantine patients, by reviewing and updating quarantine regulations, and by devising pandemic response plans.

2.14 **Public awareness and Information** (US\$1.65 million at appraisal, \$2.26 million at closing). This was to support:

- Improving public awareness and information on avian influenza issues, including raising attention among government, the private sector and civil society.
- Raising general public attention understanding of pandemic risks.
- Improving poultry farmer ability to recognize influenza symptoms and to undertake safe disposal and protection.

2.15 **Implementation Support and Monitoring and Evaluation** (US\$1.72 million at appraisal, \$1.95 million at closing). This was to support the strengthening of public agencies for the coordination and management of the Project.

2.16 The BSL 3 laboratories were canceled during project restructuring in March 2010, and funds were reallocated to support field veterinary services and additional enhancement of laboratory capacity in BSL 2 labs. Public awareness expenses were higher than planned because of additional awareness activities carried out during the 2009 influenza pandemic.

#### **IMPLEMENTATION ARRANGEMENTS**

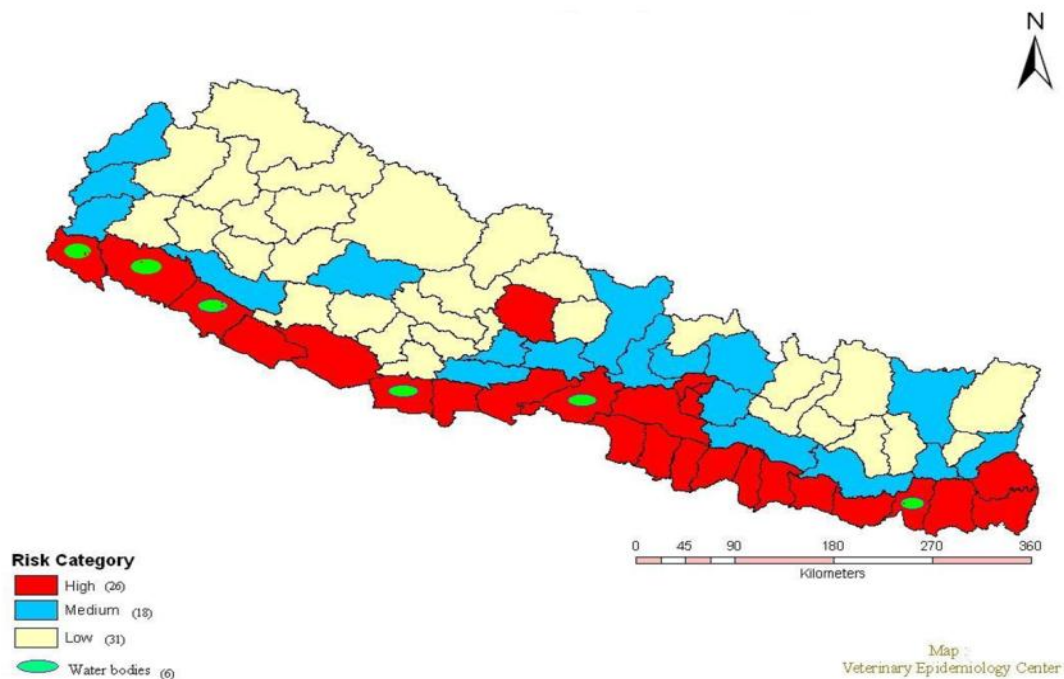
2.17 The strategic and operational plans were to be carried out by the Ministry of Agriculture and Cooperatives (later renamed the Ministry of Agriculture Development) and the Ministry of Health and Population. A coordination function was shifted to a Technical Subcommittee on Avian Influenza, operating under the Central National Disaster Relief Committee and jointly chaired by the Secretaries of the two ministries. Further technical committees were established at the regional and district levels, also operating under the regional and district level disaster relief committees. These committees included a wide range of stakeholders, including the directors of animal and human health, private sector representatives, media, and other stakeholders.

2.18 The project was to be implemented by the Department of Livestock Services (and particularly the Directorate of Animal Health) under the Ministry of Agriculture and Cooperatives and the Department of Health Services under the Ministry of Health and

Population. A project management unit was set up, with an overall coordinator and separate component coordinators for animal health and human health. The staff for each component were located in separate sites some distance apart, which may have inhibited cooperation. Avian influenza technical committees were established at the national, regional and district level. District technical committees would meet once or twice per quarter and whenever an outbreak occurred. Regional committees would meet once every four months.

2.19 Several activities were to be implemented by or heavily supported by United Nations agencies (FAO, WHO, UNICEF) using project funds. FAO was to provide technical assistance for hiring international experts, design of a BSL 3 laboratory, technical backstopping, procurement of some equipment, training of laboratory staff, establishing the compensation fund, establishing the vaccine bank, and providing other advice. WHO was to undertake a range of tasks for the human health component, including design of the BSL 3 laboratory, procurement of equipment and antiviral, development of surveillance programs, training of laboratory staff, and providing a range of advice and technical assistance. UNICEF was to support the communication component, including designing communication materials, overseeing surveys to assess impact, and carrying out the school education program. The Japan International Cooperation Agency provided funds for the first communication survey.

**Figure 1: Avian Influenza Risk Districts as of 2008**



Source: Directorate of Animal Health

2.20 The project covered all of Nepal, and was implemented at the national, regional and district level, though it concentrated on districts where avian influenza risk was higher. Districts were classified by risk, based on proximity to the main source of likely

infection along the border with India and the number of poultry present, originally with 26 high risk districts, 18 medium risk districts, 31 low risk districts, and 6 wild bird zones (Figure 1), and then redefined in 2011 to 20, 21, 34 and 8, respectively. Project resources were allocated in part based on district risk profiles, particularly for surveillance.

## **MONITORING AND EVALUATION DESIGN**

2.21 The M&E system was based heavily on the Global Program on Avian Influenza blueprint. The nature of the project posed a number of inherent challenges for designing and implementing an effective M&E system. The desired project outcomes (reduction in risk from avian influenza outbreaks among poultry and level of preparedness for pandemics) were largely unobservable, and the goal was an absence of harmful events occurring. The project was complicated, with many different activities and outputs and a complex results chain.

2.22 The framework in the original design suffered from a number of weaknesses. The indicators focused primarily on achievement of outputs, rather than on intermediate or final outcomes. The only outcome indicators were the absence of HPAI in poultry and containment of outbreaks, and an indicator on behavioral change which was not specified clearly.<sup>4</sup> Consequently, there were no clear outcome targets. Output indicators recorded completion of activities, but did little to capture the impact of those activities. Baselines were provided, but were zero in nearly all cases. In many cases annual targets were unrealistic, with 100% of the final target to be achieved in the first year of the project, including the quality of laboratory results for BSL 3 laboratories that were unlikely to be able to be completed until near the end of the project.

2.23 The framework assigned duties for collection to the Health and Livestock Departments. While the project tracked the percent of surveillance sites that submitted reports to the Epidemiology and Disease Control Division, the Epidemiology and Disease Control Division of the Department of Health Services was not otherwise involved in the M&E system. The epidemiological results of the surveillance system were not fed back to the project management unit or used to influence project decision-making.

## **Relevance of Design**

2.24 The project followed the broad design of the Global Program on Avian Influenza template, combining animal health, human health and awareness raising components, and addressing capacity weaknesses in Nepal. The design addressed several important aspects of reducing the threat to humans from avian influenza, including surveillance, diagnosis, quarantine, outbreak control, compensation, and pandemic preparedness. The design recognized that the most effective means of reducing the risk of avian influenza to humans is by controlling outbreaks in birds.

2.25 The project activities generally supported a logical causal chain for desired outcomes. Animal health surveillance systems would identify any potential cases of

---

<sup>4</sup> The outcome indicator was “Positive behavior change among poultry farmers, health workers, and general population in terms of key aspects of knowledge, attitudes, and practices” (World Bank 2006).

avian influenza among birds, veterinary diagnostic laboratories would confirm the result, and rapid response teams would conduct culling operations, which would prevent the spread of disease and minimize the risk of human infection. Communication activities would make people aware of the disease and would encourage people to change their behavior, assisting in reporting of outbreaks and in reducing the risk of infection between birds and from birds to humans. Human health surveillance and diagnostic activities would improve the ability to detect cases of influenza among humans, either from direct infection from poultry or for an influenza epidemic or pandemic. Training, supplies, vaccine, antiviral, isolation wards, intensive care units, and pandemic planning would help to respond to any outbreaks among humans and to mitigate the effects of the outbreak.

2.26 However, there were some minor weaknesses in the project design. The design of the animal health component was focused largely on identifying and containing outbreaks, rather than on improving biosecurity measures which might reduce the probability of an outbreak occurring.<sup>5</sup> Filling this gap in the design would have been an important factor in achieving the objective to "minimize the threat posed to humans" by avian influenza, but may have been difficult to achieve within the timeline of an emergency project.

2.27 The project design included laboratory upgrades at regional veterinary laboratories and a BSL 3 laboratory at the central veterinary laboratory that may not have been needed to achieve the specific objective of avian influenza risk minimization. The design of the quarantine support activities for border control were unlikely to contribute to achieving the objective, given Nepal's long and porous border.

2.28 The Relevance of Design is rated *Substantial*.

### 3. Implementation

3.1 Responding to the perceived global emergency of avian influenza, the project was prepared under the Bank's emergency guidelines (OP/BP 8.50). However, project preparation was not particularly rapid, with the concept review in March 2006 and project approval in January 2007. The project was quick to reach official effectiveness in March 2007, but progress was slow until after the midterm review in July 2009. Though the project was restructured twice (in March 2010 and in January 2011) to cancel the BSL 3 laboratories and to shift resources from the human health component to the animal health component following avian influenza outbreaks in 2010, the project closed on time in July 2011. The project was financed entirely by an IDA grant of Special Drawing Rights

---

<sup>5</sup> Biosecurity could have been improved by encouraging the poultry sector to improve farm structures to make it difficult for birds to enter or exit and by changing on-farm behavior, such as by increasing use of disinfectant and by limiting access to poultry operations. Industry groups reported that poor biosecurity in Nepal also contributes to chronic poultry production fatality rates in that are high relative to other countries. Improving biosecurity through farmer training and education and successful piloting and demonstration of better poultry structures and practices might pay for itself in improved poultry yields alone, even without wider epidemiological benefits. Registering farms might also help as part of improving biosecurity.

SDR 12.10 million (US\$18.2 million), of which SDR 10.14 million (US\$ 15.92 million) was disbursed by project closure and the remainder was cancelled. The government provided some additional resources to fund compensation payments to farmers, but this was not formally included as a borrower contribution. No other borrower contribution was planned or received.

### **Planned vs. Actual Expenditure by Component**

3.2 At project closure, total expenditure stood at US\$15.6 million, about 14 percent less than the appraisal estimate of \$18.2 million. The main reason for this is from the partial cancellation of the BSL 3 laboratories.

**Table 2: Project cost by component**

<i>Component</i>	<i>Appraisal Estimate (US\$ million)</i>	<i>Actual Expenditure (US\$ million)</i>	<i>Percentage of Appraisal (%)</i>
Animal Health	6.12	5.78	94.4
Human Health	6.34	5.93	93.5
Public Awareness and Information	1.65	2.26	136.9
Implementation Support and M&E	1.72	1.95	113.3
Physical Contingencies	0.79	0	-
Price Contingencies	1.58	0	-
Total Project Cost	18.2	15.92	87.4

Source: World Bank operations portal accessed June 2011

### **Implementation Experience**

3.3 Project implementation was very slow early on. The full set of core project staff positions were not filled and little progress was made on acquiring basic outbreak response supplies until early 2008, roughly a year after project effectiveness. No procurement was completed until more than 8 months after project effectiveness. Only 34 percent of the grant had been disbursed by midterm review in July 2009, and only 50 percent had been disbursed by May 2010, 14 months prior to closure.

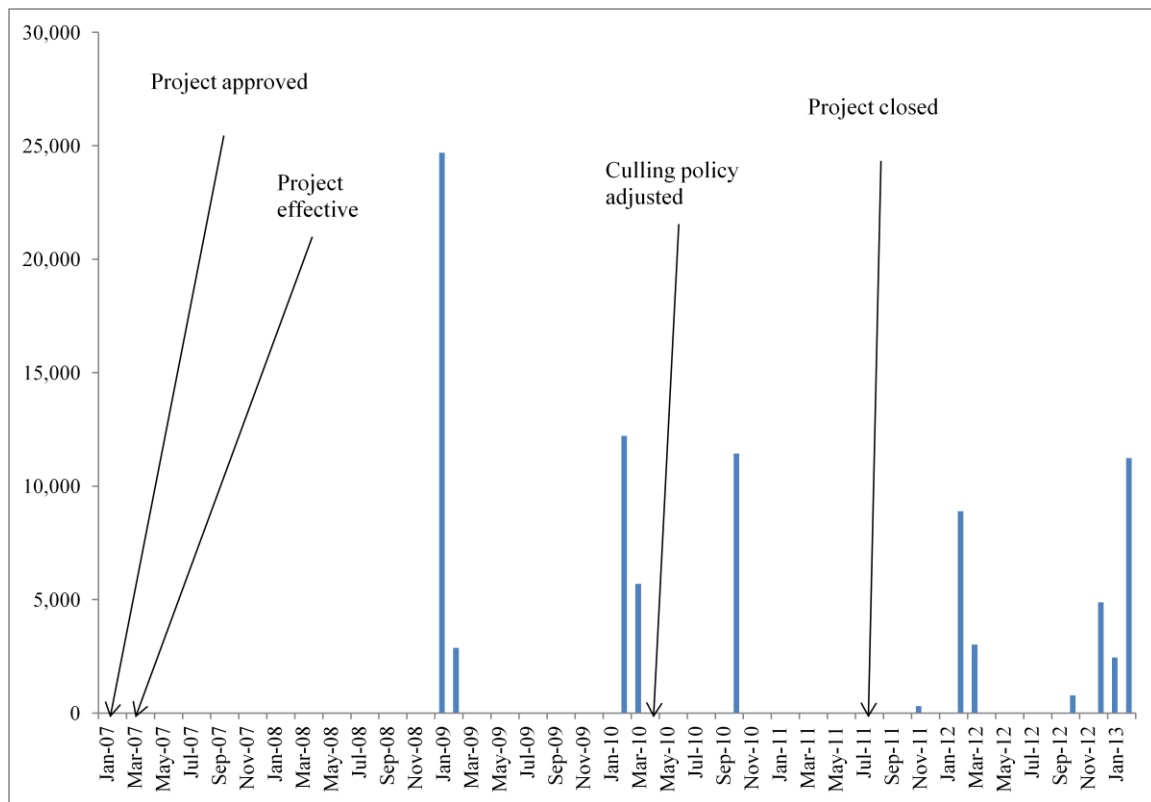
3.4 Another reason for delay was the difficulty in reaching a working implementation agreement with the United Nations agencies (WHO, FAO, UNICEF). An agreement between the parties was not signed until November 2007, and operational support was not fully mobilized until mid 2008.

3.5 Outbreaks of avian influenza were detected in Nepal in January 2009 in Jhapa district. Additional outbreaks of avian influenza occurred in 2010-2013, for a total of 56

recorded outbreaks across 81 sites as of May 2013 (Figure 2). Outbreaks show a highly seasonal pattern, with nearly all outbreaks occurring in January and February.<sup>6</sup>

3.6 At the midterm review in July 2009 and in consultation with the Government and with FAO and WHO, the BSL 3 laboratories were dropped due to concerns about cost (the two labs had been budgeted at US\$1.85 million, but after a design was created the cost estimates had been revised to \$3.4 million), cost effectiveness, capacity utilization, maintenance costs, power supply, and ability to complete works before project closure (Annex B4). Following this, the project was restructured, and funds originally intended for the BSL 3 laboratories were reallocated to additional upgrades at BSL 2 laboratories. In total, 87.4 percent of the loan was disbursed.

**Figure 2: Number of Birds Culled and Project Timeline**



Source: Directorate of Animal Health, February 2013

3.7 Another change in the project was the decision to not undertake vaccination of poultry as had been originally planned. The change was based on evidence from Indonesia - where vaccination had not been effective - and because of a shifting consensus in international expert opinion. This decision had widespread support from veterinarians and animal health experts including from FAO. Experts worried that once vaccination was started it would be difficult to stop, that vaccination could hide reservoirs

<sup>6</sup> Government officials and private sector groups reported that poultry farmers have responded to this pattern, with chicken prices rising during these months due to a reduction in supply as farmers reduce their stock during winter so as to reduce their vulnerability.



of the virus and make it more difficult to eradicate (World Organization for Animal Health 2007), and that Nepal did not have the veterinary health infrastructure to be able to distribute vaccine effectively even if they had wanted to do so. Vaccination can have limited effectiveness in reducing the risk of disease outbreaks because there are a number of strains of HPAI present that are changing, so investments in strain specific vaccines may become obsolete. The cost of vaccination would also be very high, and only large commercial farmers would have been able to afford to vaccinate. The project also adjusted the support for the animal quarantine service, to focus on internal offices rather than border checkpoints.

## **IMPLEMENTATION OF MONITORING AND EVALUATION**

3.8 The implementing agencies faced significant capacity constraints in implementing M&E, particularly on the animal health side, where the agencies were unfamiliar with World Bank requirements and had little experience in implementing M&E systems. There was no M&E specialist in the project management unit. Data collection and reporting was weak - neither the animal health nor human health agencies reported on outcome or intermediate output indicators until after the mid-term review. At restructuring, 15 of the 18 intermediate output indicators were revised, clarified or dropped. After this, reporting improved, but there was no systematic tracking of outcome indicators or outputs until the end of the project.

3.9 The impact of the Communications campaign was assessed through two knowledge, attitude and practice surveys of district managers, farmers and children conducted by UNICEF in 2007 and 2010/11. The surveys assessed awareness and behavioral knowledge in target districts where the communication campaign was carried out and in control districts. The survey reports were somewhat difficult to interpret as they did not report differential results across different target groups, limiting the ability to use the responses to inform targeting strategies. The surveys also focused on the avian influenza communication messages, and not on the influenza pandemic messages disseminated in 2010.

## **SAFEGUARDS COMPLIANCE**

3.10 The project was assigned environmental category B under OP 4.01 Environmental Assessment, mainly due to the need for safe disposal of carcasses from culling operations and for management of medical and veterinary laboratory wastes. No other safeguards were triggered. The Department of Livestock Services prepared an Environmental Management Plan and standard operating procedures, covering waste management and safe handling of chemicals. The plan called for bird carcasses from culling operations to be wrapped in plastic bags and then buried in disposal pits, along with eggs, meat and feed from the affected farms. Lime and antiseptic would be used to treat the pits, the killing zone and the surrounding area. The operating procedures included guidelines for keeping disposal pits away from surface water used for drinking, and for a 3 month delay in use for affected areas (for example poultry houses where potentially infected birds had lived were to be kept unused for 3 months). The Department of Health Services used a waste management plan developed for a separate Bank health sector project.

3.11 While there are no reports of breaches of the plans, little evidence is available on the extent to which the plan was followed. The Animal Health Directorate in the Department of Livestock Services reported that the environmental plans were realistic and that good practice was followed. Groundwater quality tests were discussed, but have not been undertaken. During the outbreak in Pokhara in 2010, the district avian influenza technical committee promised a community near the disposal pit that their main access road would be rehabilitated, but this has not occurred.

3.12 The IEG mission visited five farm sites in Kathmandu valley and near Pokhara where culling had taken place. At each site, pits had been dug and carcasses, eggs, and feed had been buried with lime. Where possible, pit sites were kept away from water sources but the pits were usually placed on the farmer's land or land nearby, which meant there was little ability to select appropriate sites. In some cases it appeared there could be some risk of water contamination, and there was some risk that farmers would grow crops on land where carcasses has been buried. However, avoiding these risks would have been difficult without transporting carcasses elsewhere, which would have posed an additional biosafety hazard. The Central Veterinary Laboratory is equipped with an incinerator, but does not have sufficient funds for fuel to run the incinerator, and so often uses a biological disposal pit instead.

3.13 Although there was no formal trigger of social safeguards, many farmers were adversely affected by culling. Security services accompanied animal health staff on culling operations, and there were some reports of protests and opposition by farmers to having their birds culled.

#### **FINANCIAL MANAGEMENT AND PROCUREMENT**

3.14 Both financial management and procurement were weak, leading to significant delays in project implementation. Bank supervision reports regularly noted weaknesses in these areas and assigned unsatisfactory or moderately unsatisfactory ratings. A mismatch developed between expenditure and disbursements because of delays in reconciliation at the central level. Financial statements were regularly delayed (only 40 percent of annual and trimester reports were prepared and submitted on time), and audits were qualified and noted accountability issues. In 2009, disbursement had to be temporarily suspended due to delayed submissions of audited accounts.

3.15 Weaknesses in financial management and procurement were driven largely by limited staff capacity in the project management unit and high staff turnover. Some additional complications came from working with United Nations agencies, as UN agencies in Nepal had not previously worked on Bank projects and so were unfamiliar with Bank procedures. The project management unit also had difficulties with incorporating UN agency activities into their reporting.

3.16 The Bank made repeated efforts to train financial management staff, but high staff turnover limited the impact of these efforts. A paperless accounting system was introduced, but this was difficult to manage in a country where power supply and internet access are very unreliable. Many staff in implementing agencies were used to paper accounting systems and lacked the skills to use electronic systems.

3.17 Procurement capacity was weak, particularly on the human health side, leading to significant disbursement lags. The emergency response nature of the project design meant that the procurement plan was front-loaded, which exacerbated weak procurement capacities. Procurement experts reported that engaging a procurement specialist early in the project may have assisted in getting procurement underway earlier in the project.

3.18 Procurement for laboratory equipment had overly specific requirements for particular models, which shut out potential bidders and led to only a single supplier qualifying. Complaints from bidders led to investigations by the Bank's Department of Institutional Integrity as well as Nepal's Commission for the Investigation of Abuse of Authority. The case was cleared, but a new tender was issued with less detailed specifications, and this led to delays in commissioning veterinary laboratories.

## **4. Achievement of the Objectives**

### **Minimize the threat in Nepal posed to humans by Highly Pathogenic Avian Influenza infection by controlling such infections among birds, especially domestic poultry**

4.1 A number of avian influenza planning steps were carried out by the government prior to project approval. Avian influenza preparedness plans were developed and endorsed, in consultation with the Bank and other stakeholders. Some programs were also carried out with support from other donors: a USAID program improving logistics and supply including of some medical equipment, and WHO and FAO provided some laboratory equipment and technical assistance outside of the project which was peripherally related to project objectives. But in most cases, the level of capacity prior to the project was very low, and improvements that occurred were largely attributable to the project.

#### **OUTPUTS**

4.2 **Surveillance.** The project established surveillance systems for avian influenza (Annex B3), conducting both active surveillance (samples collected proactively by veterinary service staff from commercial and backyard poultry farms and live bird markets) and passive surveillance (samples collected based on reports from farmers, communities, CSOs and others). A training program for identifying and reporting avian influenza outbreaks covered both professional surveyors employed by the district livestock offices for the active surveillance (332 surveyors were trained across high risk and medium risk districts) and poultry, associations, community organizations, wildlife officials, NGO participatory groups, and volunteer village animal health workers for passive surveillance (18,805 were trained). Six regional mobile surveillance supervision teams were trained, as were 30 people across six emergency surveillance and disease diagnostic teams, attached to the regional veterinary laboratories. During the course of the project, 50,000 samples were collected and tested.

4.3 The project also supported establishment of an animal disease information system sharing data between the Directorate of Animal Health, the Livestock Service Training and Extension Directorate, the Veterinary Epidemiology Center, and five regional directorates. An electronic Transboundary Animal Disease system was established to support epidemiological capacity, but the system is not yet well integrated into regular operations due to some difficulties in adopting the software.

4.4 **Diagnosis.** The project supported significant upgrades to the diagnostic system by providing training, equipment and civil works to the Central Veterinary Laboratory, the National Avian Disease Investigation Laboratory, and the 6 Regional Veterinary Laboratories (Annex B3).

4.5 New laboratory structures were constructed at several laboratories, and civil works were done to expand laboratory space and to improve biosecurity by adding laboratory partitions and constructing improved autopsy facilities. All laboratories were operational as of project closure, but some of the civil works had not been completed or were not being used (Annex B6 c, e, g). 15 veterinary laboratory scientists and 17 technicians were trained in use of equipment and diagnostic techniques, but many had been transferred by the time of the IEG mission in February 2013 and were no longer conducting laboratory work. Under the procedures of the diagnostic policies, only the Central Veterinary Laboratory was conducting laboratory tests for avian influenza (using conventional polymerase chain reaction technology) - other laboratories were only using simple rapid test kits, which did not require the equipment or facilities supplied by the project. In some cases these equipment or facilities were being used to assist in diagnosis for animal diseases other than avian influenza.

4.6 The laboratories also face erratic power supply, and are affected by load shedding policies which can cut off power for 12-14 hours a day. Laboratories all have on-site diesel generators, but these generators are very expensive for the laboratories to run (and budgets for fuel are often not sufficient), and in some cases generators do not have sufficient capacity to allow full operation of the laboratory. There are ongoing issues with maintenance, and the laboratories lack the expertise or funds to maintain equipment.

4.7 **Outbreak containment and compensation.** The project supported development of standard operating procedures on containment of diagnosed outbreaks through culling of infected and potentially exposed poultry. A Bird Flu Control Order (under powers established by the National Disaster Management Act) was established and the order was endorsed by the cabinet in 2007. The order requires international confirmation of highly pathogenic avian influenza and cabinet level approval before culling occurs for the first outbreak. Once an outbreak is identified (Annex B3), rapid response teams would immediately proceed to the infected farm and secure the poultry premises. The following day all birds on the farm (and sometimes other farms nearby) would be culled and eggs, feed and any meat on the premises would be destroyed and buried in disposal pits.

4.8 The project supported training to build capacity to implement containment policies: a total of 5,137 veterinarians, para-vets, poultry owners and technicians in all 26

high risk districts were trained in avian influenza control and biosecurity measures.<sup>7</sup> Seventy five rapid response teams (one per district) were established by the end of 2008, and an additional 150 rapid response teams in high risk districts were trained by project closure. The number of people trained significantly exceeded project targets. The project also supplied personal protective equipment, and the training programs covered use of this equipment. Response teams conducted both tabletop and field simulation exercises. Animal health staff interviewed by IEG reported that these exercises were a useful means familiarizing staff with protective equipment and operating procedures. They also reported that exercises conducted by people who had participated in culling operations were a useful way of transferring knowledge to those who had not.

4.9 Farmers received compensation for birds culled by government officials (Box 1). The established compensation rules appear to have been implemented as designed, and nearly all farmers received compensation within the target period (one week for backyard farms and 35 days for commercial farmers). However, aggregate documentation is not available on the amount of compensation paid to each farmer. The main problem with the compensation system is that the compensation rate has not increased commensurately with the rising market price of poultry, so the effective rate of compensation is very low - farmers interviewed by IEG reported receiving compensation equal to roughly 20 percent of their input costs. Government officials and veterinary experts interviewed by IEG reported that the low rate of compensation inhibits disease reporting, which could potentially increase the risk of disease spread.

4.10 The IEG mission received mixed reports across districts on the level of cooperation between animal health and human health officials during outbreaks. Human health officials usually accompanied rapid response teams during culling operations. In the week after an outbreak, human health officials would visit people who could have come into contact with infected birds. Samples were taken from people at sites who reported influenza symptoms and were tested at the national public health laboratory. Only 20 samples were collected since 2009, and none were positive for avian influenza.

4.11 **Communications and awareness.** The communication program was launched in March 2008, and aimed to increase awareness of avian influenza and to change behavior so as to reduce the risk of disease transmission from animals to humans or between humans. This was the first communications program in Nepal conducted jointly between Agriculture and Health ministries. The program produced 400,000 posters and pamphlets, 1,600 toolkits, radio messages in all 26 high-risk districts and television messages. It also worked indirectly by conducting training programs for 3,300 poultry farmers, and members of CSOs and NGOs in 8 districts, who then conducted community-based communication programs with messages on poultry (such as on not touching dead birds, and not importing birds during outbreaks). The project also conducted media training with 750 spokespeople. Government officials interviewed by IEG reported that they believed that conducting media contact through trained spokespeople as much as possible helped to ensure that accurate messages were disseminated and reduced the risk

---

<sup>7</sup> The training included nearly all of the roughly 200 government employed veterinarians, and many private veterinarians. There are roughly 700 veterinarians registered in Nepal, but many of those work in other countries and no longer practice in Nepal.

of panic. The training programs surpassed their targets for the number of people trained across nearly all categories.

### **Box 1: Strengths and weaknesses of the compensation mechanism in Nepal**

The project established a mechanism for compensating farmers whose birds were culled by government officials during culling operations to encourage reporting of avian influenza outbreaks. The project provided US\$100,000 for compensation payments. After this was used, the Government provided an additional 5.1 million Rupees in FY 2011/12 and 5 million Rupees in FY 2012/13, or roughly \$60,000 per year.

Despite the project's appraisal document calling for "principles of transparency, community involvement, and ex ante / ex post checks" in the design of the compensation system (World Bank 2006), the mechanism as implemented did not incorporate these features. The rules for compensation were published, but the individual compensation payments were not.

The main problem with the mechanism is the low rate of compensation. The initial rate paid was 100 Nepali Rupees per bird, which covered roughly half the average market value of a chicken in 2007.<sup>a</sup> However, the mechanism did not establish a system for regularly revising the rate (changes in the compensation rate had to be approved by the Cabinet), and Nepal has experienced both high inflation and rising real poultry prices. The rate was adjusted twice in an ad hoc fashion to a total of 130 Rupees by 2012, but this still led to payments of less than half of market value. The effective rate could be even lower, as no compensation was paid for birds that died after a report was made but before culling was conducted.

The IEG mission found widespread agreement from government officials, partner agencies, poultry farmers and other stakeholders that the rate was insufficient to encourage disease reporting. Farmers had incentives to delay or avoid reporting bird deaths - and to try to sell their birds immediately, risking disease spread- rather than to report and risk having their entire stock culled. Consequently, most reporting comes from government officials or from community level surveillance, with relatively little self-reporting by farmers (and then usually when the number of bird deaths is severe and so the outbreak is advanced). At affected farms visited by IEG, 5-7 days elapsed between outbreak reporting and culling. Farmers interviewed by IEG reported that compensation payments represented roughly 20 percent of their total cost of inputs. Many farmers reported that they would be unable to restock.

Another potential weakness is that the system does not distinguish between birds by age or species. The market price of ducks is at least five times the value of chickens, and so reportedly this led to farmers selling ducks quickly rather than reporting outbreaks.<sup>b</sup>

Given the budget crisis, there is unlikely to be a significant rate increase in the short term. The sums involved at present are not large (roughly \$60,000 per year), but government expressed concerns about increasing the rate and establishing an expectation of higher payouts which might not be met if outbreaks turned out to be worse than feared. If government were unable to pay promised payments, this could undermine confidence in the system. The IEG mission heard some suggestions for making it possible to increase the rate.<sup>c</sup>

a. Some compensation was also paid out for eggs and feed destroyed during culling operations, and a higher rate was available for imported parent stock if the import documentation could be provided.

b. However, a system where compensation rates varied by age of bird might require more complicated auditing and might be slower to pay out compensation.

c. One suggestion was to create an industry levy, where poultry farmers would contribute to a compensation fund based on the number of birds they owned. Small farmers interviewed thought this could help, but worried that influential large commercial farmers would avoid the fee. A second possibility was to capitalize a fund from donor support. A third possibility was to establish an in-kind compensation mechanism, where farmers whose birds were culled would receive a free chick for each bird killed, provided three months later once the biohazard risk had declined.

Source: IEG, World Bank (2006), World Bank (2012), Department of Livestock Services

4.12 UNICEF assisted (using project funds) in designing the communications plan and in producing prototype materials, working closely with the National Health Education Information Communication Center under the Ministry of Health. The baseline survey for assessing avian influenza awareness was funded by the Japan International Cooperation Agency in 2007, which was important in allowing the survey to be carried

out early on.<sup>8</sup> Later Knowledge, Attitude and Practice surveys were conducted in 2010-11 using project funds.

4.13 As the communications program was being implemented, designers realized that their campaign was lacking the ability to reach backyard farmers and rural communities. There were not sufficient resources for an intensive community-based program, and so instead the project supported a community based school education program from 2008-11. The program was implemented by UNICEF, and focused on improving hand washing in eight high risk districts. It trained 180,000 students at 3,000 schools in these districts. It also trained 800 people across 64 civil society organizations in hand washing, avian influenza prevention, and risk communication. No avian influenza outbreaks have been reported in these districts to date.

4.14 **Quarantine services.** Following World Organization for Animal Health guidance, the Animal Quarantine Office bans importation of poultry and poultry products from countries following outbreaks, including from India. It also conducts inspection of imported poultry at border and internal checkpoints. The project aimed to reduce the risk of importing diseased poultry by increasing the capacity of the office. Prior to the project, quarantine checkpoints had no vehicles and so were very limited in their ability to operate and had no ability to take, store or transport samples. The project provided 22 motorbikes, fuel, rapid diagnostic test kits, training, some civil works, and refrigeration units for storing samples. The Quarantine Office also conducted an awareness raising program with villages along the border, raising awareness of avian influenza, communicating risks, and encouraging community surveillance and reporting of animal deaths or breaches of the importation ban. But this was done out of their own budgets, with little project support. However, the project did support training of 278 traders and farmers by quarantine officers.

## OUTCOMES

4.15 The project established a system for identifying and containing outbreaks, and so likely reducing the spread of the disease. Baseline levels of capacity were extremely low. Given government budget constraints, it is plausible that many project activities would not have been carried out without the project, or would not have commenced until after avian influenza outbreaks had begun.

4.16 During the project, 10 avian influenza outbreaks were detected, diagnosed and controlled through culling operations. Since project closure, an additional 46 outbreaks have similarly been identified and contained as of May 2013.<sup>9</sup> Outbreaks have occurred on all types of farms, including small backyard operations and large commercial farms.

---

<sup>8</sup> The project would have had difficulty in conducting the baseline survey with UNICEF support in 2007 due to the difficulties in reaching a coordinating agreement between the Government, the World Bank and the United Nations agencies.

<sup>9</sup> Note that the definition of an outbreak changed after the project. Initially, multiple infected farms in a district were identified as separate outbreaks, but the definition was changed in 2012 to follow international best practice and identify multiple infected farms near each other as a single outbreak. The 56 outbreaks identified and controlled as of May 2013 represent 81 separate sites.

Controlling the disease among poultry also serves to reduce the risk of human infection. No human cases of avian influenza have been observed. The fact that outbreaks have recurred (and that the pace of outbreaks has increased) does not necessarily indicate that control efforts were ineffective. It may well have been impossible to prevent some new outbreaks from occurring, given disease reservoirs present in wild birds and in neighboring countries.

4.17 An FAO assessment of the project noted that the inputs of the project have clearly enhanced capacity to minimize threats posed by highly pathogenic avian influenza and to detect, diagnose and respond effectively and in a timely fashion to outbreaks when they occur (Williams 2011). Following successful control of the Jhapa outbreaks, the crisis management center of the FAO assessed the performance at the request of the department of livestock services, and found that international standards had been followed.

4.18 The surveillance system is functioning, though reporting rates from commercial farmers are low – much of the reporting is from the community surveillance network.

4.19 Diagnostic tests from the Central Veterinary Laboratory for samples retested in World Organization for Animal Health laboratories have been 99 percent accurate. Regional veterinary laboratories have not been evaluated, but the rapid test kit technology used in the laboratories is known to sometimes give false readings. Regional veterinary laboratories are not conducting diagnostic testing beyond the use of simple test kits. They do not have a formal mandate to conduct such tests – the established doctrine has the Central Veterinary Laboratory do all laboratory tests for highly pathogenic avian influenza. Even were it not for this policy, in many cases the regional laboratories have the equipment but lack the staff capacity to conduct diagnostic tests because staff who were trained have been transferred.

4.20 Culling operations were generally carried out promptly, but there were some delays because of the time taken for international confirmation and because of the need for cabinet level approval for new outbreaks. In some cases it could take up to two weeks between reporting and culling operations, by which time the virus could easily have spread. Some experts reported that this delay could be reduced if the authority to cull was delegated to a sub-cabinet level, possibly to the Secretary of the Ministry of Agriculture.

4.21 The communications campaign was assessed through a baseline survey conducted in early 2008, and final surveys conducted between late 2010 and early 2011. Increases in awareness and in reported behavior were considerably higher in districts where communications programs were carried out than where they were not and considerably higher than baseline levels.<sup>10</sup>

---

<sup>10</sup> For example, in the areas with the communication intervention, 93.5 percent of schoolchildren reported washing their hands after sneezing compared to 16.2 percent at baseline. Equivalent figures of 94.2 percent relative to 55.4 percent were reported for washing hands after touching birds. Household members reported washing their hands after touching birds 90 percent of the time in intervention districts, as compared to 44 percent in control districts.



4.22 Neupane and others (2012) report the results of a questionnaire and interviews conducted with 96 poultry workers in April 2009, after the project's communication activities had started and after the first outbreaks had occurred in Nepal. They report that 97 percent of poultry workers were aware that avian influenza outbreaks had occurred in Nepal, 100 percent reported that they washed their hands with soap and water, but only a modest proportion reported they took other precautions such as using face masks, gloves, or washing and disinfecting surfaces and utensils (27 percent to 41 percent).

4.23 Poultry farmers interviewed by IEG reported that they had heard about avian influenza, but did not know how to identify it, or of safety measures they could take to reduce risks. But they were aware of the risk and supported culling operations to control the spread of disease.<sup>11</sup>

4.24 Though there was a dramatic drop in poultry prices in Nepal after the first avian influenza outbreak in India, there were no major price drops after outbreaks in Nepal. There is no evidence on whether the communication campaign contributed to this.

4.25 There is also no evidence that support for quarantine services had any impact on disease spread. The long and porous borders of Nepal make interdiction of infected poultry imports very difficult.<sup>12</sup> The Animal Quarantine Office has few resources, and the contribution of the project was too small to make much difference. An FAO evaluation (Williams 2011) noted that the support for border control was based on unproven assumptions, and that no impact has been demonstrated. No samples collected by quarantine officers tested positive for avian influenza. In IEG interviews it was reported that importation bans may have the effect of encouraging poultry importers to avoid quarantine checkpoints during periods when a ban is in place, and thus miss the possibility of visual inspection. The awareness program might have had some impact on improving surveillance from villages along the border, but the program was not assessed.

4.26 Overall, the efficacy of the project in contributing to achievement of this objective is rated *Substantial*.

### **Prepare for, control and respond to possible human infections, especially an influenza epidemic and related emergencies**

4.27 Prior to the project, there was very little in the way of pandemic planning or preparedness. There was no active surveillance program for influenza, and passive surveillance was minimal and intermittent. There was no capacity to identify strains of influenza, and samples were sent to Hong Kong for testing. There were other sources of investment in the Nepali health sector, including for laboratory equipment and protective equipment, but the project was the main contributor specifically for influenza in recent years.

---

<sup>11</sup> The IEG mission picked up some anecdotal evidence of awareness: in areas where there had been an outbreak, locals on the street were able to provide directions to “the farm that had the bird flu”.

<sup>12</sup> Technical experts interviewed by IEG reported that a more efficient approach would be to focus on providing visual inspection of birds at a handful of highway bottlenecks.

## OUTPUTS

4.28 **Preparedness and response capacity.** The project produced operational guidance on laboratory practice, clinical case management, surveillance, risk communication, infection control and community/home-based case management. Health experts reported that sample collection and outbreak response policies are followed, but infection prevention and risk communication policies are not widely followed.

4.29 Pandemic preparedness plans were established at the national, regional and district level. The plans identified the responsibilities of the various parties (including which hospitals would receive patients in an emergency), and outlined plans for how to handle massive numbers of cases (such as identifying schools and other public buildings as emergency wards). However, these plans have not yet been formally updated after the experience of the 2009-10 pandemic. 2,500 sets of personal protective equipment were purchased and distributed (and an additional 2,250 per provided by a separate USAID project). 377 health workers were trained on influenza case management and infection control.

4.30 A total of 4,300 doses of antiviral pharmaceuticals (Tamiflu) were provided by July 2010, and an additional 2,000 doses were procured in 2011 to replace doses consumed. These doses were administered as a preventative measure to some public health care workers during the 2009-10 influenza pandemic and to rapid response teams during culling operations, as well as for treatment of people exhibiting symptoms of influenza-like-illnesses near avian influenza outbreak sites and for some patients at regional hospitals who developed pneumonia during the pandemic. Antivirals were not available to district health offices during the pandemic.

4.31 Simple isolation wards were established at nine medical facilities. Equipment and some civil works for four more sophisticated facilities with ventilators and other equipment were established at the Shukraraj Tropical Infectious Disease Hospital in Kathmandu and three other referral hospitals in Dharan, Bharatpur and Nepalganj. Nine sets of ventilators were supplied by the project, which was not enough to fully outfit any of these facilities.<sup>13</sup> The isolation ward at the Shukraraj hospital is not operational (Annex B6 h). Not only does it not have enough equipment or staff, but there is insufficient power supply to operate the facility and there is no ramp or elevator to allow patient access to the ward, located upstairs.<sup>14</sup> The Bharatpur and Nepalganj facilities are reportedly operational, but lack reliable power supply and have staff shortages (World Bank 2012).

4.32 Five intensive care units were established at designated response hospitals. Though these units were not in place in time for the 2009-10 pandemic, at least some of

---

<sup>13</sup> For example, a 6 bed facility in Nepalganj received two sets of equipment, and the 20 bed facility in Kathmandu received 3 sets of equipment.

<sup>14</sup> An additional 5 sets of equipment are to be provided under the Zoonoses Control Project, but even after this effort the facility will not be operational because of the power supply and access issues.

the units are in use for patients with a variety of medical problems. However, some of the equipment provided remains non-functional.<sup>15</sup>

4.33 During the 2009-10 pandemic, incoming passengers at the international airport in Kathmandu were screened, and 30-35 cases were identified. These patients were treated at a very basic pre-existing isolation ward at the Shukraraj Tropical Infectious Disease Hospital.

4.34 **Influenza Surveillance.** 423 medical professionals were trained in influenza surveillance techniques and formed into rapid response teams.

4.35 The pre-existing Early Warning and Response System for surveillance of a range of infectious diseases was expanded from 28 sites to 35 sites, of which 32 submit surveillance reports. An operating procedure was established: if 5 or more people report influenza-like-illness symptoms in a cluster, then results are reported to the Epidemiology and Disease Control Division of the Department of Health Services and an investigation is triggered. But according to the National Public Health Laboratory, reporting from this system is still very intermittent, and most clinicians do not report data.

4.36 An active surveillance system of 10 sentinel sites for influenza was established. These sites take samples from individuals presenting symptoms of influenza-like illnesses and transport them to laboratories for testing. Six sites sent samples to the National Public Health Laboratory, while four sent samples to the (non-project-supported) Walter Reed Research Unit Nepal. However, a lack of staff capacity means that only a modest amount of epidemiological analysis can be conducted using data generated by the surveillance program.

4.37 **Diagnostic capacity.** The BSL 2 National Influenza Center at the National Public Health Laboratory in Kathmandu was established under support from the WHO and the government of Nepal, and was strengthened through support from the project. The project provided some equipment and consumable supplies to enhance diagnostic capacity. The laboratory can conduct influenza diagnostic tests using real time polymerase chain reaction technology due to this equipment and support from other donors including WHO (Annex B6 f).<sup>16</sup> The project planned to support training of technicians, but this was not carried out during the project. The system takes 3-7 days for samples to reach Kathmandu depending on the origin, for a total of 7-10 days for a diagnosis to be received national public health laboratory. International retesting of samples takes up to 15 days, including sample transport.

4.38 Though the full upgrade to BSL 3 was cancelled, the project also funded construction of a BSL 2+ laboratory at an adjacent building at the National Public Health Laboratory (Annex B4, Annex B6 g). This facility is of a much higher standard than

---

<sup>15</sup>A WHO audit of equipment supplied to the Western Regional Hospital in Pokhara in 2011 indicated that most equipment supplied was not operational. IEG could not confirm the status of equipment for other facilities, but the project staff reported they were operational.

<sup>16</sup> The project support also assisted in increasing diagnostic capacity for other diseases including rubella, cholera, and salmonella.

other laboratories in Nepal, and the structure itself could be upgraded to BSL 3, reportedly at a cost of roughly US\$100,000.<sup>17</sup> However, equipping the laboratory and upgrading the power supply would require significant investment, and there would be expensive maintenance and staffing costs.

## OUTCOMES

4.39 No human infections of highly pathogenic avian influenza have been identified in Nepal to date. It is not possible to assess whether there would have been human cases in the absence of the project.

4.40 The quality of the diagnostic tests at the National Public Health Laboratory was assessed by the WHO in Hong Kong. WHO sends 10 samples to the lab twice a year for testing; the most recent assessment had 100 percent accuracy.

4.41 The 2009-10 H1N1 influenza pandemic (of a non-avian influenza strain) spread to Nepal, and preventing its entry into the country through border controls and travel restrictions would have been difficult.<sup>18</sup> The passive surveillance system did not detect early cases but it did detect the upswing in influenza as the pandemic strain became established in Nepal. The BSL 2 laboratory at the National Influenza Center at the National Public Health Laboratory is operational and was used extensively during the pandemic for diagnostic testing, though much of this is due to WHO support. However, the project-supported isolation wards, intensive care units, and active surveillance system were not in place by the time of the pandemic.

4.42 The Ministry of Health estimated that airport screening of international arrivals and isolation of people who tested positive for pandemic influenza delayed the course of pandemic in Nepal by one month. But the public health benefits from this delay were modest. They allowed time for additional preparations to be taken, particularly an adjustment of the communications program to do social mobilization and public education about pandemic influenza. But there was no vaccination campaign<sup>19</sup>, and so delaying the outbreak likely had little impact on the overall number of people infected. Even if vaccine had been available in time, the health system infrastructure would have struggled to vaccinate the population quickly.

4.43 During the pandemic, three deaths were attributed to the H1N1 influenza strain, of 200 people who were diagnosed and hospitalized. Given that more than 10 percent of the

---

<sup>17</sup> A 2012 WHO evaluation of the physical structure of the newly constructed facility (Mourya 2012) reported that the facility met and in general exceeded BSL-2 standards, and are close to the requirements for a BSL 3 facility. It also outlined the necessary steps needed to make the facility BSL 3.

<sup>18</sup> The epidemiological literature on pandemics demonstrates that it is extremely difficult to prevent a pandemic from spreading to a country through travel restrictions or other border controls (see for example Epstein and others 2007).

<sup>19</sup> Vaccine was not made available to Nepal until it was arguably too late to make much difference, and public health officials reported that the vaccine donation was declined in part because the vaccine offered was an early version that European countries had decided not to use.

population was infected in most countries, the identified cases represent only a very small proportion of the likely number of people infected.

4.44 Overall, the project's contribution to this objective is rated *Modest*.

## 5. Efficiency

5.1 It is extremely difficult to calculate a meaningful economic rate of return for a project such as this. Prospectively, it is hard to estimate the actual chance of outbreaks occurring or their severity. Retrospectively, it is hard to put forward a credible counterfactual. And little is known about the quantitative efficacy of avian influenza response measures.

5.2 At closure, the project conducted an ex-post economic analysis that estimates economic losses to the poultry industry if outbreaks had not been contained. The analysis notes that 0.3 percent of the poultry population died from disease or culling during the project period. It assumes that 17 percent of the poultry population would have been lost had outbreaks not been contained (based on experience from Vietnam), and that outbreaks would not have been contained had the project not been implemented. This leads to an economic rate of return of 311 percent in the base scenario. The analysis also notes unquantified benefits from prevented human cases of avian influenza. While it is plausible that the project did indeed provide significant economic benefits, the assumptions required to generate quantitative outcomes are highly speculative and are impossible to verify.

5.3 In terms of efficient use of resources in project implementation, the project made a number of decisions that improved efficiency over the course of the project. The project improved efficiency of surveillance by dropping active surveillance of chickens, as it is extremely unlikely that apparently healthy chickens be infected with HPAI (Annex B3). The project improved the efficiency of culling policies in February 2010 by moving from a rigid policy that required all poultry within 3.5 km of an outbreak site to be culled to a more flexible policy, which required culling only at the site of the outbreak and at other sites nearby based on the discretion of veterinary experts. This policy revision had support from animal health experts, including FAO. The costs of culling would have been severe had the original policy been left in place once outbreaks started occurring in urban areas (Annex B6 b). The project dropped the original support for vaccination of poultry, reckoning that vaccination would be too expensive, infeasible to implement, and might increase the long term risk of disease by hampering surveillance. The decision to shift support for the quarantine office away from the border improved efficiency, since the border is highly porous and there is greater potential for an impact at major transport hubs.

5.4 However, there were also a number of examples of inefficient use of project resources. Arguably the project overinvested in equipment and civil works for laboratories, outstripping the staffing capacity to use them and the demand for testing. At several laboratories, there are newly constructed buildings or rooms that have no equipment and are not in use. At others, there is equipment that is not used because of a

lack of staff capacity. Often this occurs because staff who were trained under the project have since been transferred to non-laboratory positions. In some cases, facilities are of little use due to relatively minor issues: expensive rooms and equipment are not used because a poorly functioning air conditioner makes facilities too hot for laboratory work in summer; equipment supplied can't be used because of a lack of budget for generator fuel, or because generators are in need of repair. A lack of reliable power supply limits the kind of analysis that can be conducted because it means samples can't be stored appropriately at very low temperatures.

5.5 The decision to supply sophisticated equipment and civil works to Regional Veterinary Laboratories was an inefficient way of contributing to the project objective of avian influenza control because under the diagnostic policies in place, these labs use only rapid diagnostic test kits for avian influenza – laboratory diagnostic tests are conducted only at the Central Veterinary Laboratory (Annex B3, Annex B6 d).<sup>20</sup>

5.6 On the human health side, considerable expenditures were made but many facilities supported by the project were not fully operational. Isolation wards were under-equipped, under-staffed, or were never completed. Some equipment for intensive care units remains non operational or took years to become operational. An expensive BSL2+ laboratory (almost BSL 3) remains unused, and lacks staff, equipment, and sufficient power supply.

5.7 The low compensation rate paid to farmers whose birds are culled potentially inhibits or delays disease reporting and so could contribute to the risk of the spread of disease. The expenditure on compensation is not large – roughly US\$60,000 per year – and so could be increased if this were a priority (Box 1).

5.8 Despite the emergency nature of the project, there were significant implementation delays particularly in the first two years of the project. This was driven by delays in staffing the project management unit, by difficulties in establishing an agreement with technical partner agencies, and by weaknesses in financial management and procurement. It is fortunate that avian influenza outbreaks did not occur until 2009, as capacity improvements may not have been in place in time to identify or assist had outbreaks occurred earlier.

5.9 The efficiency of the project is rated *Modest*.

## 6. Ratings

### Outcome

6.1 The Relevance of Objectives was *Substantial*, as avian influenza posed a significant risk to Nepal at the time of appraisal, and outbreaks have occurred regularly since 2009. The Relevance of Design was *Substantial* because it covered the main

---

<sup>20</sup> However, in some cases the equipment supplied to Regional Veterinary Laboratories is used for diagnosing other animal diseases.

principles needed for avian influenza control, as outlined by the Global Program on Avian Influenza. However, the project design did little to address weak biosecurity on poultry farms to prevent outbreaks.

6.2 The project made substantial improvements to the surveillance, diagnostic, and outbreak response capacity for avian influenza, starting from a very low base. Outbreaks are being successfully identified and contained. Achievement of minimizing the threat in Nepal posed to humans and poultry by Highly Pathogenic Avian Influenza infection is rated *Substantial*. While the project made some improvements to surveillance and diagnostic systems for influenza in humans and improved pandemic planning, many facilities remain incomplete and compliance is variable. Achievement of preparing for, controlling and responding to possible human infections, especially an influenza epidemic and related emergencies, is rated *Modest*.

6.3 While the project is likely to have had significant economic benefits, economic rate of return estimates are highly speculative because of the inherent difficulty in identifying a counterfactual. Much of the project expenditure did not contribute to achievement of objectives because of unused or incomplete equipment or facilities, and there were significant project delays. Consequently, project efficiency is rated *Modest*.

6.4 Together, these lead to an overall outcome rating of *Moderately Satisfactory*.

### **Risk to Development Outcome**

6.5 Outbreaks of avian influenza among poultry have continued after project closure, and the Department of Livestock Services has continued to identify, diagnose, and control these outbreaks. There is high commitment to this system in the Department of Livestock Services and its Directorate of Animal Health and it is likely that this system will continue to operate as long as sufficient resources are made available.

6.6 However, sustainability of many project achievements is in question primarily due to a lack of budget and trained staff. In the near term, Nepal faces a budgetary crisis because of the dissolution of the constituent assembly in June 2012. No budget was passed for the current fiscal year, so expenditure in many departments has been limited to one third of their normal budgets, which can cover basic salaries but with almost no funding for operations. Political instability and uncertainty in Nepal threatens sustainability. But these are systematic challenges to development in Nepal, and are not specific to this project. Interviews with Bank staff indicate that the project has received better government and budget support than most others in Nepal.

6.7 The government has continued to fund salaries for the project management unit to support the follow-up Zoonoses Control Project. But many staff were transferred after the project closed, making lines of responsibility for completing and maintaining project-supported programs unclear. There is good ownership of the project by the Department of Livestock Services and the Animal Health Directorate at the National, Regional and District levels, but they face significant budget constraints. Relatively limited involvement of the private sector in the project means that there is little ownership of the project by commercial poultry farmers.

6.8 Maintenance of project achievements is heavily reliant on support from donor projects. Many activities are being sustained in the short term by the Bank financed Zoonoses Control Project, but this short project is due to close in March 2014, and sustainability beyond that is at risk. In the period between closure of the Avian Influenza Control Project and commencement of the Zoonoses Control Project, funding for training, surveillance, consumable goods and other expenses declined. For example, the number of surveillance sites visited by the Department of Livestock Services was halved after the project closed (and was restored under the Zoonoses Control Project). There are no budgets for reagents for diagnostic tests on the animal health side, so the system is very reliant on donations from the World Organization for Animal Health and the FAO. Rapid diagnostic test kits supplied under the project are about to expire and there is no budget for replacement.

6.9 The sustainability of many capacity improvements made under the project is undermined by a system of rapid staff transfer, with many people changing jobs within 1-2 years. Experts on Nepal report that this is common practice throughout the Nepali civil service. Rapid staff transfer is particularly problematic with technical laboratory staff, where transfers mean that those staff who trained under the project are moved (often to non-laboratory positions), leaving no one who knows how to use, calibrate or maintain the equipment.<sup>21</sup> A lack of budget for regular staff training further contributes to staffing problems. However, there has been some informal knowledge transfer from continued operations conducted jointly between experienced staff and new staff, so institutional knowledge is retained.

6.10 On the human health side, the 10 active surveillance sentinel sites for influenza provided samples at some point after being established, but surveillance declined after the project closed, with only four of the ten sites still submitting samples by the time of the IEG mission in February 2013. The passive surveillance system is not submitting any samples because clinicians do not collect them. Health experts reported that this is driven in part by a lack of budget for continued training, by on a lack of incentives (as no payment is made for sample collection), and by clinicians being overwhelmed by the volume of patients in influenza season. WHO reports that human health reporting for a range of infectious diseases improved during the project, but has since declined.

6.11 Without increases in the rate of compensation for culled birds (Box 1), self-reporting may remain weak (particularly for commercial farmers).

6.12 Communications activities stopped at the end of the project, as there were no additional funds to continue the program. Based on the perceived success of the project communications program, a broader initiative focused on encouraging hand-washing among children commenced in late 2011, as a public-private partnership funded by the Ministry of Health, UNICEF, and private companies. But other communications activities such as public service announcements have not been continued since project

---

<sup>21</sup> This is a particular problem on the animal health side, because there are no separate career tracks for laboratory and field veterinary staff. Field positions are more prestigious, offer better opportunities for additional income from private practice, and better access to scholarships and training, so capable laboratory staff face strong incentives to transfer out of laboratory positions and retaining staff is difficult.



closure. The community network of CSOs/NGOs is reportedly still functioning, but has not been expanded beyond the 8 districts.

6.13 Coordination efforts have been difficult to sustain, and the level of priority appears to be linked to the existence of a donor project. Regional and district technical committees are still meeting in some areas, especially those that have had outbreaks, but not in others. Coordination reportedly weakened after project closure, but improved after commencement of the Zoonoses Control Project. The IEG mission received mixed reports on whether interministerial cooperation at the national level had been sustained, and whether the national technical committee continued to meet.

6.14 The Risk to Development Outcome is rated *Significant*.

## **Bank Performance**

### **QUALITY AT ENTRY**

6.15 The project followed the design of the Global Program on Avian Influenza. The project activities would reduce the threat from avian influenza by improving the ability to identify, contain and respond to outbreaks. It combined short-term emergency response measures with investments in long term institutional capacity building. It included good practice measures such as establishment of a compensation fund. But the project design did little to address weaknesses in biosecurity, and so the probability of outbreaks occurring. The project may have been more effective in supporting wider health sector goals if the project had been designed to also support disease control beyond avian influenza.

6.16 There was a tension between the use of the emergency response instrument and the complicated procurement and civil works activities included in the project design that might be difficult to complete within the short duration of an emergency project. These complications led to implementation delays and difficulty in completing activities prior to project closure.

6.17 There were a number of weaknesses in project design, but some of these would not have been reasonably foreseeable given available information at the time. Expert opinion on vaccination policy, design of active surveillance programs, and quarantine systems has evolved, so the original design of these elements does not represent poor quality at entry. But arguably it was foreseeable that the BSL 3 laboratories were not a good choice for the project, and that BSL 2 labs would be a sufficient start for a country with little baseline capacity. The Bank teams raised concerns during preparation about the feasibility, costs, and staffing constraints for establishing these laboratories, but acquiesced to stakeholders who argued that the laboratories were justified to strengthen capacity beyond avian influenza and to provide in-country diagnostic confirmation capacity.

6.18 The project appraisal considered a number of significant risks, and most of these risks were reasonably mitigated by the overall design of project activities. A lack of capacity was identified as a factor across several risks, but mitigation efforts focused on

building capacity rather than retaining capacity by limiting staff transfer. More preparatory coordination could have been done with technical partner agencies to ensure a smooth rollout once the project became effective.

6.19 Arguably the project design could have supported more collaboration with the private sector, and worked more to get commercial farms into the surveillance system. Large commercial farms in particular interact with private sector veterinarians rather than the government system, and so can be left out of the loop by a public-sector oriented intervention. But as this was an emergency operation, it would have been hard to do the stakeholder consultation needed in the brief period of project preparation. There was some private sector representation on technical committees.

6.20 There were a number of weaknesses in the design of the monitoring and evaluation system. Overall, the system did a weak job of providing sufficient evidence to assess the impact of the project on its objectives, or of providing indicators that could assist in improving project implementation.

6.21 Quality at entry is rated *Moderately Satisfactory*.

#### **QUALITY OF SUPERVISION**

6.22 The Bank conducted frequent supervision missions, which were well staffed with relevant technical experts.

6.23 When it became obvious that the BSL 3 laboratories could not be justified within the project, the Bank successfully restructured the project to proceed with BSL 2 laboratories instead. Most of the funds originally intended for the BSL 3 were successfully rechanneled to other activities. But negotiating this partial cancellation took a great deal of Bank time, and this may have led to neglect of other responsibilities, such as supporting adequate policy dialogue in development of long-term disease prevention and control mechanisms (World Bank 2012a, page 15-16).

6.24 The Bank worked intensively to try to improve financial management and procurement capacity. It conducted specific missions focusing on financial management and procurement, and organized training sessions and financial management clinics. But the impact of these sessions was undermined by high staff turnover in the project management unit and implementing agencies.

6.25 Not much was done to mitigate the implementation problems caused by staff transfer. This is a civil-service wide problem in Nepal, but it may have been possible to encourage the government to limit or delay transfers for staff trained under the project, particularly once it became clear that high turnover was a significant problem.

6.26 Technical partner agencies reported that Bank had consulted them as appropriate once UN agreement had been reached. A joint approach to supervision with these agencies also helped to facilitate project restructuring. Project staff and senior government officials reported that Bank support was satisfactory and enthusiastic.

6.27 The quality of Bank Supervision is rated *Satisfactory*. Together, these lead to an overall rating of Bank performance of *Moderately Satisfactory*.

## **Borrower Performance**

### **GOVERNMENT PERFORMANCE**

6.28 Government support for developing and endorsing pandemic plans was good, but little action was taken in 2007 and the project management units were not fully staffed until early 2008. However, once outbreaks in Nepal began in 2009, the government displayed substantial commitment to project objectives and ownership of the project, as demonstrated by specific budget allocations for avian influenza prevention and control. The Ministry of Agricultural Development remains highly committed to project objectives.

6.29 The government insisted on including BSL 3 laboratories in the project design, and initially resisted efforts to cancel these facilities, but later concurred that the labs would be infeasible to construct within this project. But enthusiasm for building BSL 3 laboratories under a later project remains high.

6.30 The government did little to ensure that the necessary staff were in place and were consistent through the project. Though there were some cases where government declined to approve transfers, overall staff turnover remained high, which weakened project implementation. Financial resources for compensation have not been sufficient to support compensation rates at a level high enough to allow for farmers to restock and to encourage self-reporting.

6.31 Government performance is rated *Moderately Satisfactory*.

### **IMPLEMENTING AGENCY PERFORMANCE**

6.32 The animal health and human health components were implemented by the Department of Livestock Services and the Department of Health Services, respectively, at the national and local level. The Department of Livestock Services offered consistent leadership and demonstrated high commitment and ownership of the project throughout implementation. There was effective and consistent overall leadership of the project.

6.33 Project implementation suffered from significant delays throughout implementation due to high staff turnover in human health component personnel and weaknesses in procurement and financial management. There were four different coordinators for the human health component through the project (as compared to two coordinators for the animal health side) and handover periods were not handled well. Initial levels of staff capacity in project management, financial management and procurement were low, particularly in the Department of Livestock Services, which had not previously worked with the World Bank. Investments in capacity in these areas were undermined when staff who had been trained then transferred to a new job, without training their successor or providing adequate handover documentation or information. Exiting staff would sometimes take the necessary documentation with them, making it

extremely difficult for their successor to maintain adequate records. However, despite these delays the project still closed on time and disbursed 87.4 percent of the IDA grant.

6.34 The IEG mission heard mixed reports on the level of cooperation and coordination between agencies and with the private sector. One factor which may have contributed to coordination difficulties between implementing agencies was the decision to locate the animal health and human health components at separate sites, with the animal health office (and project coordinator) a considerable distance away from the central city offices of other government agencies. Communication messages were well coordinated, with discussions on the message to be promoted and a clear division of responsibilities as to who would speak on which topics. Coordination at the local level varied across districts. Private sector representatives felt that the project had a strong government orientation, and that communication with private veterinarians and the poultry sector was not always sufficient. But there was some effort to include private sector stakeholders through membership on district and regional technical committees. There was adequate coordination with United Nations agencies, which were included on national level technical committees.

6.35 Implementation of monitoring and evaluation was weak, with little data collected, and no effective utilization.

6.36 Implementing agency performance is rated *Moderately Unsatisfactory*. These lead to an overall borrower performance rating of *Moderately Satisfactory*.

## Monitoring and Evaluation

6.37 **Design.** As noted in the Monitoring and Evaluation Design section above, the M&E design was based on the Global Program on Avian Influenza blueprint. The design had several weaknesses including a focus on achievement of outputs rather than outcomes and on monitoring awareness rather than behaviors. Most of the selected indicators were also unable to track progress over time.

6.38 **Implementation.** As noted in the section above on Implementation of Monitoring and Evaluation, implementing agencies had little capacity to conduct M&E, and reporting was weak, particularly prior to midterm review.

6.39 **Utilization.** While some M&E data were collected, this was done purely for project reporting purposes and data were not used to improve project management.

6.40 Overall, project M&E is rated *Negligible*.

## 7. Lessons

7.1 The project offers a broad range of lessons, both for animal health/human health projects and for broader operations in countries like Nepal. The main lessons include:

- **Investments in laboratory equipment and civil works may be inefficient if they outstrip the financial and technical capacity of staff to operate and maintain them.** Including training programs for technical staff is not sufficient without an ability to retain these staff (Para 5.4, 6.9). In particular, Biosecurity Level 3 laboratories are expensive and have significant maintenance costs and capacity requirements. Experience with and solid capacity for operation and maintenance of Biosecurity Level 2 laboratories would seem to be an important prerequisite before advancing to level 3. (Annex B4)
- **Failure to adjust compensation rates for inflation and other price increases can reduce the real value of compensation payments.** If compensation rates fall relative to the market value of birds, then farmers may be unable to restock even if compensated, and may have weak incentives to report disease outbreaks early. Flat rate compensation mechanisms may be simple, but can cause problems when they do a poor job of tracking the value of what is compensated (for example, ducks may be worth much more than chickens). (Box 1)
- **Attempts to control spread of HPAI in poultry at the border may have limited effectiveness countries with long, porous borders.** Quarantine resources might be more effectively used to build capacity to conduct visual inspection and rapid diagnostic tests at internal transport bottlenecks such as major highway junctions and international airports. (Para 4.25)
- **Containing an influenza epidemic or pandemic among humans is likely to be extremely difficult in countries with modest public health infrastructure.** Influenza containment in humans may require an ability to rapidly implement pharmaceutical interventions (ring vaccination and use of antiviral) and non-pharmaceutical interventions (physical distancing policies such as quarantine and school or workplace closures). Resources might be used more efficiently on pandemic mitigation, such as through improving vaccine distribution systems, rather than by attempting a containment strategy. In Nepal, screening incoming passengers at the sole international airport may have delayed the 2009-10 pandemic by one month, but it was not possible to prevent the spread of the pandemic to Nepal through ground transport. (Para 4.41-42)
- **Collaboration with United Nations agencies can provide technical expertise that the World Bank lacks, but there can be delays in implementation if there is insufficient engagement of these agencies at a headquarters level.** The World Bank has only moderate capacity on animal health or pandemic preparedness, and so projects can benefit from advice and assistance from FAO and WHO. But in Nepal a working agreement with UN agency partners was not negotiated until after project approval, which took roughly a year and delayed project implementation. (Para 2.18, 3.4)
- **Emergency projects require significant procurement capacity early on.** The lack of dedicated procurement expert can contribute to delays in implementation and an inability to meet emergency goals. Procurement capacity needs to be

frontloaded to get good procurement plans finished early on, to hasten rollout of emergency projects. (Para 3.17)

7.2 The experience in Nepal also confirms a number of technical findings specific to avian influenza:

- Serological testing of apparently healthy chickens may be of limited use in detecting highly pathogenic avian influenza. The virus sickens and kills chickens so quickly that the likelihood that apparently healthy birds are infected is extremely low. In ducks and some wild birds, the disease has a longer incubation period and there are often asymptomatic carriers, so active surveillance may still be useful. In Nepal, active surveillance of healthy chickens failed to detect many cases and was discontinued. (Annex B3)
- Outbreak containment need not require mass culling. Culling birds at the source of an outbreak and nearby farms can be sufficient if done quickly enough. Culling in a full 3.5 kilometer radius can be much more expensive, can anger farmers, and may strain compensation budgets. In Nepal, no adverse consequences were observed from adjusting the culling policy to reduce the area where culling was required. (Para 5.3)
- Vaccination of poultry may be the wrong strategy to use for reducing disease risk in low capacity countries. In Nepal, planned use vaccination was abandoned. (Para 3.7)
- Conventional polymerase chain reaction technology – rather than real-time PCR technology – is easier to maintain and operate (though is slightly less accurate and is slower), and may be a better technological choice for countries with weak staff capacity. In Nepal, some laboratories were equipped with real time PCR technology but were unable to operate and maintain it, but still conducted diagnoses using the conventional technology. (Annex B3)

## References

- Burns Andrew, Dominique van der Mensbrugge, Hans Timmer. 2006. *Evaluating the Economic Consequences of Avian Influenza Global Development Finance*, Washington DC: World Bank.
- Central Bureau of Statistics, 2011. "Nepal Living Standards Survey 2010-2011", Government of Nepal
- Ellis, T.M., Sims, L.D., Wong, H.K.H., Bissett, L.A., Dyrting, K.C., Chow, K.W., and C.W. Wong. 2005. "Evaluation of vaccination to support control of H5N1 avian influenza in Hong Kong", in *Avian Influenza*, eds. R.S. Schrijver and G. Koch, Netherlands, pp. 75-84.
- Epstein, Joshua M., Goedecke, D. Michael, Yu, Feng, Morris, Robert J., Wagener, Diane K. and Georgiy V. Bobashev. 2007. "Controlling Pandemic Flu: The Value of International Air Travel Restrictions." *PLoS ONE* 2(5): e401
- FAO 2006. *Strengthening Veterinary and Public Health Surveillance Systems Mission Report*.
- FAO, 2012. *H5N1 HPAI Global Overview: April-June 2012*, Rome: FAO
- FAO-OIE-WHO. 2010. *Sharing responsibilities and coordinating global activities to address health risks at the animal-human-ecosystems interfaces: A Tripartite Concept Note*.
- IFPRI 2008. *Highly Pathogenic Avian Influenza. Multi-Disciplinary and Collaborative Research to Minimize the Impacts on the Poor*. DFID, IFPRI, FAO, ILRI, University of California Berkeley, Royal Veterinary College University of London.
- IMF, 2012. "Nepal: Staff Report for the 2012 Article IV Consultation", Country Report No. 12/326, Washington DC
- Killian, Mary Lea. 2008. "Avian Influenza Virus Sample Types, Collection and Handling", *Methods in Molecular Biology*, Vol. 436: Avian Influenza virus, pp. 7-12.
- Lazzari, Stefano, and Klaus Stohr. 2004. "Avian influenza and influenza pandemics editorials," *Bulletin of the World Health Organization* 82 (4).
- Mourya, D. T. 2012. "Assignment report [2-6 April, 2012]", WHO Country Office, Kathmandu, Nepal
- Neupane, D., Khanal, V., Ghimire, K., Aro, A.R., and A. Leppin, 2012. "Knowledge, attitudes and practices related to avian influenza among poultry workers in Nepal: a cross sectional study", *BMC Infectious Disease*, 12: 76
- Williams, H.A., 2011. "Provision of technical assistance to the avian influenza control project: Final report", FAO
- World Bank, 2003. "Nepal: Country Assistance Strategy 2004-2007", World Bank, Washington DC
- . 2006. "Technical Annex on a Proposed Grant in the Initial Amount of SDR 12.1 million (US\$ 18.2 million equivalent) a Restructured Amount of SDR 10.6 million (US\$ 17.0 million equivalent) to Nepal for an Avian Influenza Control Project Under the Global Program For Avian Influenza and Human Pandemic Preparedness and Response", Washington DC.
- . 2007. "Interim Strategy Note for Nepal: July 2009 to June 2011", World Bank, Washington DC.
- . 2011, "Nepal - Avian Influenza Control Project : restructuring (Vol. 2 of 2) : Data sheet", World Bank, Washington DC
- . 2012a. "Implementation Completion and Results Report (IDA-H2680) on a Grant in the Initial Amount of SDR 12.1 million (US\$ 18.2 million equivalent) a Restructured Amount of SDR 10.6 million (US\$ 17.0 million equivalent) to Nepal for an Avian Influenza Control Project Under the Global Program For Avian Influenza and Human Pandemic Preparedness and Response", Washington DC.
- . 2012b. "Project Appraisal Document on a Proposed Grant From the European Commission Avian and Human Influenza Trust Fund (EC-AHI) for East and South in the Amount of US\$10 million for a Zoonoses Control Project", Washington DC.

- World Health Organization, 2006. *The control of neglected zoonotic diseases: a route to poverty alleviation*. Report of a joint WHO/DFID-AHP meeting with the participation of FAO and OIE, Geneva, 20 and 21 September 2005. Geneva: WHO
- World Health Organization, 2009. *Pandemic Influenza Preparedness and Response: A WHO Guidance Document*. Geneva: World Health Organization.
- World Organization for Animal Health, 2007. "Avian influenza vaccination: OIE information document – Verona Recommendations



## Annex A. Basic Data Sheet

### AVIAN INFLUENZA CONTROL PROJECT (IDA-H2680)

#### Key Project Data (amounts in US\$ million)

	<i>Appraisal estimate</i>	<i>Actual or current estimate</i>	<i>Actual as % of appraisal estimate</i>
Total project costs	18.20	15.92	87.4
Loan amount	18.20	15.92	87.4
Cofinancing	0	0	0
Cancellation	0	2.28	

#### Cumulative Estimated and Actual Disbursements

	<i>FY07</i>	<i>FY08</i>	<i>FY09</i>	<i>FY10</i>	<i>FY11</i>	<i>FY12</i>
Appraisal estimate (US\$M)	1.00	3.00	8.50	16.20	18.20	18.20
Actual (US\$M)	2.0	2.09	6.32	10.43	13.92	15.92
Actual as % of appraisal	200	69.6	74.3	64.4	76.5	87.4
Date of final disbursement:						January 2012

#### Project Dates

	<i>Original</i>	<i>Actual</i>
Initiating memorandum	March 27, 2006	March 28, 2006
Negotiations	July 12, 2006	December 19, 2006
Board approval	August 1, 2006	January 19, 2007
Effectiveness	October 1, 2006	March 27, 2007
Closing date	July 31, 2011	July 31, 2011

**Staff Time and Cost**

Stage of Project Cycle	Staff Time and Cost (Bank budget only)	
	Staff Weeks (number)	US\$ 000s (including travel and consultant costs)
<b>Lending</b>		
<b>FY06</b>	11.77	59.02
<b>FY07</b>	17.43	115.21
<b>Total:</b>	29.20	174.23
<b>Supervision/ICR</b>		
<b>FY07</b>	4.4	29.03
<b>FY08</b>	21.62	96.42
<b>FY09</b>	16.98	41.49
<b>FY10</b>	20.01	59.53
<b>FY11</b>	21.18	88.27
<b>FY12</b>	5.92	46.74
<b>Total:</b>	<b>90.11</b>	<b>631.48</b>

Source: World Bank 2012a

**Other Project Data**

**Borrower/Executing Agency: Department of Livestock Services, Department of Health Services, Nepal Agricultural Research Council**

**Follow-on Operations**

<i>Operation</i>	<i>Credit no.</i>	<i>Amount (US\$ million)</i>	<i>Board date</i>
<b>Zoonoses Control Project</b>	<b>TF-12273</b>	<b>10.0</b>	<b>July 5, 2012</b>

**Task Team members**

<b>Name</b>	<b>Title (at time of appraisal and closure, respectively)</b>	<b>Unit</b>	<b>Responsibility /Specialty</b>
<b>Lending</b>			
Sundararajan Gopalan	Senior PHN Specialist	SASHD	Co-TTL
Daniel Sellen	Senior Agriculture Specialist	SASSD	Co-TTL
Bigyan Pradhan	Senior Financial Mgmt/Operations Specialist	SARFM	Team member
Kiran Ranjan Baral	Senior Procurement Officer	SARPS	Team member
Tirtha Rana	Senior Health Specialist	SASHD	Team member
Philip Beaugard	Senior Counsel	LEGMS	Team member
Bill Rahil	Lead Environmental Specialist	SASSD	Team member
Hiroko Imamura	Senior Counsel	LEGMS	Team member
Sushila Rai	Program Assistant	SASHD	Team member
Mario Bravo	Senior Communications Officer	EXTC	Peer reviewer
<b>Supervision/ICR</b>			
Norman Bentley Piccioni	Lead Rural Development Specialist	SASDA	TTL
Purna Bahadur Chhetri	Senior Rural Development Specialist	SASDA	Safeguards
Kiran R. Baral	Senior Procurement Officer	SARPS	Procurement
Philip Beaugard	Senior Counsel	LEGAF	Legal
Drona Raj Ghimire	Environmental Specialist	SASDI	Safeguards
Sundararajan Srinivasa Gopalan	Senior PHN Specialist	SASHN	Health
Albertus Voetberg	Lead Health Specialist	SASHN	Health
Manav Bhattarai	Extended Term Consultant	SASHN	Public health
Bigyan B. Pradhan	Senior Financial management specialist	SARFM	Financial management
Sushila Rai	Program assistant	SASHD	
Tirtha Rana	Consultant	SASHD	Public Health
Shyam Sundar Ranjitkar	Consultant	SASDA	Animal Health
Nastu Prasad Sharma	Public Health Specialist	SASHN	Co-TTL
Tara Shrestha	Program Assistant	SASDO	
Miki Terasawa	Social Development Specialist	SASDS	
Lilac Thomas	Program Assistant	SASDO	
Nadia Islam	Program Assistant	SASDO	
Mohinder Mudahar	Economist (consultant)	SASDA	ICR

Source: World Bank 2006 (appraisal), World Bank 2012a (closure)

## **Annex B. Other data annexes**

### **Annex B1: Avian influenza**

Avian Influenza (AI) is generally a disease of birds, but can also occur in humans (and other animals) if they come in contact with infected birds. Usually this will not lead to widespread human infections as the known existing AI virus types do not readily replicate and transmit between humans. However, the AI viruses are not stable and have the potential to change to produce a new strain that is able to replicate in humans and spread easily among them. If this happens a pandemic could occur. On average, three influenza pandemics per century have been documented since the 16<sup>th</sup> century, occurring at intervals of 10-50 years. In the 20<sup>th</sup> century pandemics occurred in 1918, 1957 and 1968. The 1918 pandemic was particularly severe and caused millions of deaths. In the 21<sup>st</sup> century another influenza virus (H1N1 type) emerged in April 2009 and caused a pandemic that rapidly spread to over 120 countries within 6 weeks. Fortunately, this time the disease was not severe in most cases.

Anticipating the actual timing of an AI pandemic and its severity is difficult because it depends on whether and when a virus circulating among birds would mutate or re-assort and become capable of spreading easily from human to human. The recent concern with the disease has arisen because of the virulent nature of the H5N1 virus circulating in poultry and the high death rate among infected humans. One of the biggest worries is that conditions for mutation and re-assortment of the genetic make-up of the virus abound with birds living in close contact with humans particularly in “backyard” poultry production systems that are common in developing countries, including in East and South Asia and also Europe and Central Asia. In these poultry production systems farmers rear several animals such as chickens, ducks, pigs, and cows in their backyards, and in close proximity with human populations. Intensive agricultural practices, easy communication and trade across the globe and natural reservoirs for the virus in migratory birds have also made it easier for the virus to spread from wild birds to poultry and from infected poultry to humans. Resistance in current virus strains to one of the two classes of available antiviral drugs as demonstrated *in vitro* has added to anxiety about controlling a pandemic if it does occur.

Since 2003, 63 countries reported the highly pathogenic H5N1 form of AI in their domestic poultry (FAO 2012). The first outbreak was recorded in Korea in December 2003 (World Bank 2008). By 2004 the virus had spread to several East Asian countries and by 2006 had reached several Asian, European and Middle Eastern and African countries. Unchecked trade and movement of infected poultry was one of the main triggers behind the spread of the lethal virus (FAO 2006). In the first three months of 2011, Bangladesh, Cambodia, Hong Kong, India, Japan, Korea, Myanmar, and Vietnam reported outbreaks. The WHO reports a confirmed total of 622 cases and 371 fatalities as of March 2013, but the reported human instances of the disease from contact with infected birds understate the true number of infected people. Although disease awareness has increased, cases of H5N1 are still likely to be underreported.

Forecasting models envisage a major disease burden if a pandemic occurs, with 25-30 percent of the population falling ill and potentially enormous economic costs worldwide,

especially in the poorest countries, where resources for surveillance and health care are limited and population health and nutritional status are poor (Lazzari and Stohr 2004). The potential impact on GDP across countries and the human deaths arising from various forms (mild, moderate and severe) of the disease would be severe (Burns and others 2006). WHO estimates have suggested that, looking at the number of deaths from influenza pandemics in the last century, a relatively conservative estimate of deaths from a H5N1 pandemic would be between 2.0 and 7.4 million.

## **Annex B2: International donors and the World Bank and Avian Influenza**

The threat of a severe global human pandemic arising from mutation of the H5N1 virus has been an issue of great concern to the international community. Billions of dollars have been pledged and often diverted from other uses for efforts to control AI. Several international institutions such as the International Food Policy Research Institute, the International Livestock Research Institute, and the FAO and universities such as University of California, Berkley and Royal Veterinary College, University of London have been undertaking research associated with avian influenza. There has been considerable concern with control and prevention strategies that have significant costs associated with them-including the direct costs of disease control measures such as vaccination, eradication, bio-security and the indirect costs of building institutions and mechanisms to support those measures (IFPRI 2008). The FAO, WHO and World Organization for Animal Health (OIE) have committed to work together in this area (FAO-OIE-WHO 2010). There is a realization in the international community of the importance of building partnerships among international donors and governments.

The World Bank has provided assistance to more than 50 countries for dealing with AI. The Bank has two main mechanisms to support client countries in this area: the Global Program for Avian Influenza Control and Human Pandemic Preparedness and Response (GPAI) and the multi-donor Avian and Human Influenza Facility (AHIF). The Bank's Board of Executive Directors endorsed the GPAI in January 2006, and extended it in June 2009. The GPAI is a global horizontal Adaptable Program Loan that allows for the use of up to US\$ 1 billion (extended from the original amount of US\$500 million) under which individual countries can obtain separate loans/credits/grants (depending on country case) to finance their own national projects.

The GPAI adaptable loan program draws on an integrated approach developed in conjunction with FAO, OIE, and WHO. Countries can access funding to strengthen their veterinary and health services to deal with outbreaks among animals, minimize the threat to people, and prepare for and respond to any potential human flu pandemic. GPAI operations are processed using emergency procedures, which allow quick preparation and approval. A country qualifies for support for an emergency project under the Program when it demonstrates its commitment and readiness to implement early detection and rapid response measures appropriate to the specific country conditions. The AHIF was created to assist developing countries in meeting financing gaps in their integrated country programs to minimize the risk and socioeconomic impact of avian and possible human pandemic influenza. In many cases, the facility co-finances projects under GPAI.

### **Annex B3: Surveillance and diagnosis of avian influenza in animals in Nepal**

The project supported establishment of surveillance and diagnostic systems for avian influenza in Nepal. Prior to the project, no significant capacity existed.

There are both active and passive surveillance systems. The active surveillance system is run by veterinary officers, who conduct surveys primarily at established sites – 8 sites per district in high risk zones, 4 sites per district in medium risk zones - and issue weekly reports. Officers collect samples from birds that appear sick, but also from apparently healthy birds. Initially the active surveillance system also tested apparently healthy chickens, but this was discontinued as it was seen as inefficient and of modest value, since chickens become sick and die very quickly after being infected by avian influenza and so the chance of finding an infected but healthy chicken is very low.<sup>22</sup> Some active surveillance was continued for ducks and wild birds, which are not as vulnerable and may have an incubation period of 1-2 weeks before symptoms emerge. There is no animal active surveillance system in Nepal other than this system for poultry.

The passive surveillance system relies on samples taken from sick or dead birds that are reported to the district livestock offices by farmers, by community surveillance programs, or in some cases by animal quarantine offices. An investigation can be triggered if there are reports of high poultry mortality, reductions in feed consumption or reductions in egg production. The majority of samples tested come from dead birds. Farmers can also bring dead birds directly to regional veterinary laboratories.

Samples are taken to the regional veterinary laboratories (and the National Avian Disease Investigation Laboratory in Chitwan), where laboratory staff conduct an initial diagnostic test for highly pathogenic avian influenza using simple rapid test kits. If the test kit is negative, then the laboratory staff can then proceed to autopsy a dead bird as part of searching for other, less serious diseases such as Newcastle disease.<sup>23</sup> If the test is positive, then the bird is not opened for autopsy, and samples are taken and are transported to the Central Veterinary Laboratory in Kathmandu by livestock service officers. At the BSL2 Central Veterinary Laboratory, samples are then tested using conventional polymerase chain reaction (PCR) techniques.<sup>24</sup> The Central Veterinary Laboratory was provided with real time PCR

---

<sup>22</sup> This was observed in outbreaks of highly pathogenic avian influenza in Hong Kong, with clinical signs of AI H5N1 developing within 1-2 days of infection and death ensuing within 2.3 days of infection (Ellis and others 2005). Best practice for avian influenza surveillance now recommends targeting sick and dying birds (Killian 2008).

<sup>23</sup> 10 percent of negative samples are also transported to the Central laboratory for testing.

<sup>24</sup> The duration of this process varies depending in part on the location of the district and regional laboratory, and on the urgency of the tests. The National Avian Disease Investigation Laboratory in Chitwan, for example, reported that it would take 1-3 days for them to conduct a rapid test and send samples to the Central Veterinary Laboratory in Kathmandu, 3-10 days for the Central Lab to report results (results would be received faster if there had been significant poultry deaths or if there were other known avian influenza outbreaks) and a further 7-10 days for international re-testing. Because sample transport is conducted by regular livestock officers, a lack of vehicles and staff can delay transport. Further delays can occur because Veterinary Services are not

equipment, but there is not sufficient staff capacity to use and maintain the equipment.

If the diagnostic test is positive and the sample is not from a district known to be experiencing avian influenza outbreaks, then the sample is then sent to international BSL3 OIE laboratories (typically in the UK or Australia) for re-testing and confirmation.<sup>25</sup> If the confirmation test is positive, then culling operations are instituted after being approved by the Cabinet of the Government of Nepal. If the sample is from a district where outbreaks are known to be occurring, then a positive test result from the Central Veterinary Laboratory is sufficient to mandate a culling operation, though sometimes samples are also sent internationally for additional confirmation.

While diagnostic results are reported to animal health authorities, one weakness in the system is that test results are not necessarily provided to the farmers who submitted samples. A failure to provide results may risk discouraging farmer cooperation (Williams 2011).

Source: IEG mission interviews with government officials and technical experts.

#### **Annex B4: Establishing Biosecurity Level 3 Laboratories in Nepal**

The original project design included \$1.85 million for construction of two BSL 3 laboratories, one for animal health at the Central Veterinary Laboratory and one for human health at the National Public Health Laboratory.<sup>26</sup> The advantage of BSL 3 laboratories is that they would allow for cell cultures to be carried out, and could reduce or eliminate the need for samples to be sent to international laboratories for confirmation tests. Experts reported that separate laboratories would be needed for animal and human health, because of the risk of cross contamination of samples.

The design of the animal health laboratory, conducted through FAO, took 6 months longer than expected, in part because the necessary expert consultants were in short supply due to global concerns about avian influenza and laboratory upgrade projects going on in other countries.

The two laboratories were dropped at the project midterm review in consultation with the government. This decision appears to be well justified. The expected cost of the laboratories had almost doubled. There were concerns that there would not be enough work to keep the laboratories busy, and so the expense would not be justified. The laboratories would have extremely high maintenance costs (hundreds of thousands of dollars per year), particularly

---

deemed to be an essential service in Nepal, so laboratories can be closed on holidays, potentially causing work to backup.

<sup>25</sup> The Central Veterinary Laboratory reports that the turnaround time for international confirmation (including sample transport, testing and transmittal of results) was roughly 4 days in 2008, but had increased to 1-2 weeks by 2013.

<sup>26</sup> The Bank team raised concerns during pre-appraisal about the feasibility, costs and staffing constraints for establishing BSL 3 laboratories, but acquiesced to stakeholders who argued that the laboratories were justified to strengthen capacity beyond avian influenza and to provide domestic diagnostic capacity.

for power supply. There may not have been sufficient staff capacity to fully utilize the laboratory, particularly given the difficulties in retaining staff and conducting training in the current laboratories. And it was unlikely given the lack of progress on procurement that procurement and construction could be completed before project closure two years later.

However, construction continued on a BSL 2+ facility for human health which was close to BSL 3.<sup>27</sup> This facility was completed, but is not operational.

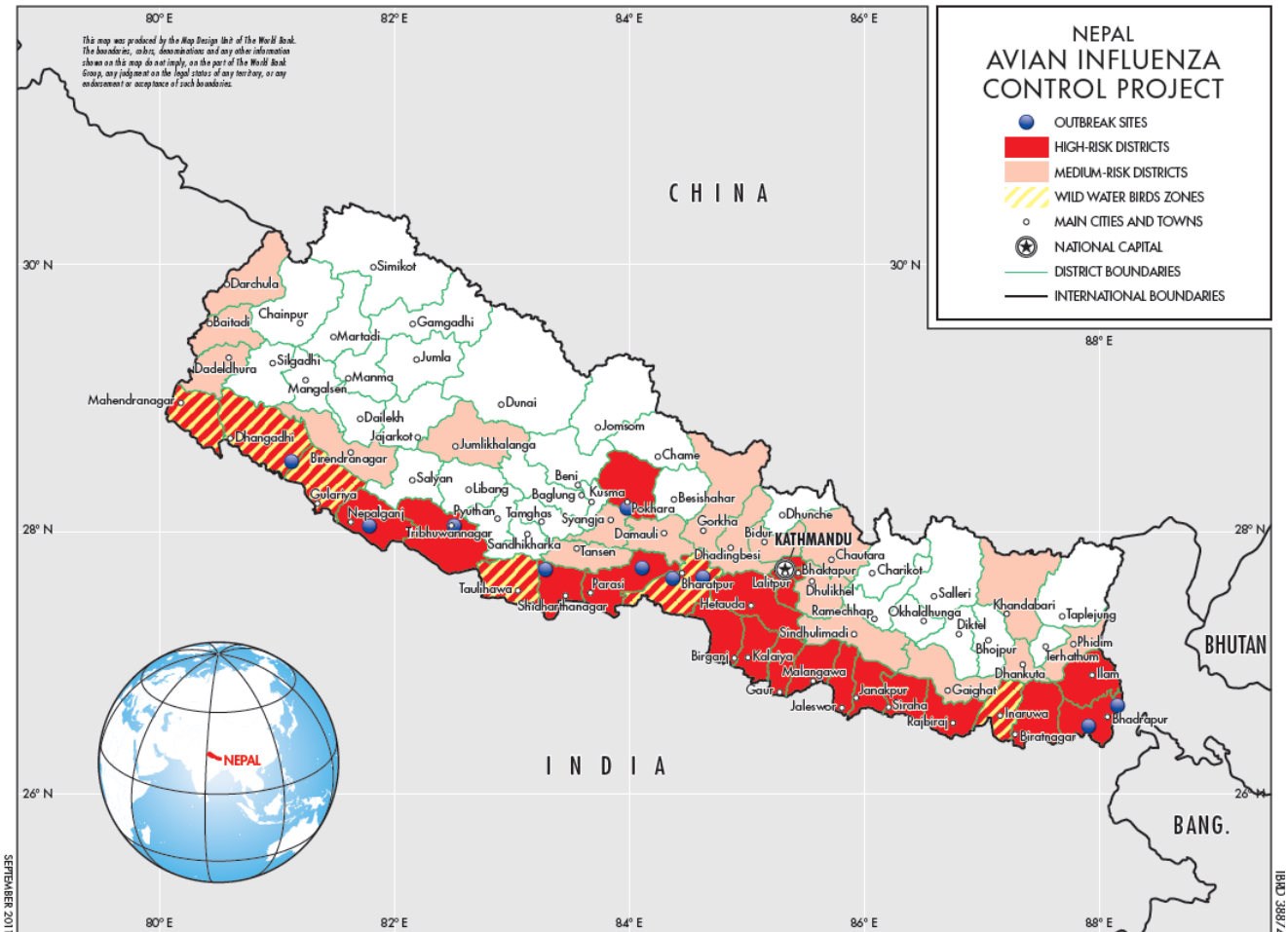
It is beyond the scope of this evaluation to assess whether BSL 3 laboratories would be feasible or desirable for Nepal. The IEG mission was informed that BSL 3 laboratories could be feasible if there were top level support and guarantees of significant budget for maintenance costs. The IEG mission found strong support for a BSL 3 animal health laboratory from top levels of the Ministry of Agricultural Development, and the human health laboratory constructed at the National Public Health Laboratory is already close to BSL 3. But reducing the time taken to receive diagnostic confirmation might be addressed more efficiently by tackling bottlenecks in international sample transport, and staffing, capacity, maintenance and sustainability issues in existing BSL 2 laboratories could be addressed before advancing to BSL 3.

---

<sup>27</sup> The human health laboratory includes controlled ventilation with filters for air supply and exhaust, air-tight rooms and sample transfer chambers, directional air flow, climate control, and other features (Mourayo 2012).



### Annex B5: Avian influenza outbreak sites in Nepal during the project



Source: World Bank 2012a

Note that an additional 46 outbreaks have occurred after project closure.

## Annex B6: Photographic evidence

### a) Biosecurity is weak on small commercial poultry farms:



Source: Sitapaila, Kathmandu valley, IEG mission, February 2013

### b) Some sites of avian influenza outbreaks are within urban areas



Poultry sheds affected by avian influenza outbreaks in center. Disposal pit covered in lime in foreground.  
Source: Sitapaila, Kathmandu valley, IEG mission, February 2013

c) Some civil works for laboratory upgrades were not completed.



Source: National Avian Disease Investigation Laboratory, Chitwan District, IEG mission February 2013

d) Regional veterinary laboratories tested for highly pathogenic avian influenza only using simple rapid test kits.



Source: National Avian Disease Investigation Laboratory, Chitwan District, IEG mission February 2013

e) Newly constructed BSL 2 facilities at Regional Veterinary Laboratories were not in use in some cases



Source: Regional Veterinary Laboratory, Pokhara. IEG mission February 2013

f) Equipment supplied to the National Influenza Center at the National Public Health Laboratory was functional and in use, increasing diagnostic capacity



Source: IEG mission, February 2013

g) The almost complete but non-operational BSL 2+ laboratory at the National Public Health Laboratory has sophisticated features including ventilation and pressure control



Source: IEG mission, February 2013

**h) The new isolation ward at the Shukraraj Tropical Infectious Disease Hospital is not operational**



Source: IEG field mission, February 2013

## **Annex C. List of Persons Met**

### **Animal health component:**

Mr. Nathu P. Chaudhary, Secretary, Public Service Commission  
Mr. Jaya M. Khanal, Secretary, Ministry of Agricultural Development  
Mr. Ram Prasad Pulami, Joint Secretary (Planning Division), Ministry of Agricultural Development  
Dr. Nar Bahadur Rajwar, Director General, Department of Livestock Services  
Mr. Uday Chandra Thakur, Deputy Director General, Department of Livestock Services  
Dr. Ram Krishna Khatiwada, Deputy Director General, Department of Livestock Services  
Dr. Vijay Kant Jha, Programme Director, Directorate of Animal Health  
Dr. Narayan Ghimire, Directorate of Animal Health  
Dr. Indra Kant Jha, Project Coordinator, Avian Influenza Control Project, Department of Livestock Services  
Dr. Prurnima Manandar, Director, Central Veterinary Laboratory  
Dr. Prakash Devkota, Veterinary Officer, Central Veterinary Laboratory  
Dr. Bodh Prasad Parajuli, Chief Veterinary Officer, Central Animal Quarantine Office  
Dr. Modnath Kautam, Central Animal Quarantine Office  
Dr. Banshi Sharma, Regional Director, Regional Directorate of Livestock Services, Western Development Region, Pokhara  
Dr. Man Bahadur Pun, Senior Veterinary Officer, Regional Directorate of Livestock Services, Pokhara  
Dr. Kedar Raj Pande, Senior Veterinary Officer, Regional Veterinary Laboratory, Pokhara  
Dr. Shiva Prasad Devkota, Regional Veterinary Laboratory, Pokhara  
Dr. Prakash Raj Shrestha, Senior Veterinary Officer, District Livestock Services Office, Kaski District  
Dr. Bodha Nath Adikari, National Avian Diseases Diagnostic Lab, Bharatpur Chitwan

### **Human health component:**

Dr. Mingmar Sherpa, Director General, Department of Health Services  
Dr. G.D. Thakur, Director, Epidemiology and Disease Control Division, Department of Health Services  
Dr. Jeetendra M. Srestha, Deputy Component Coordinator: Human Health, Avian Influenza Control Project  
Dr. Geeta Shakya, Acting Director, National Public Health Laboratory  
Dr. Arjun K. Pant, Senior Paediatrician, Sukraraj Infectious Disease Hospital  
Dr. Buddhi Bahadur Thapa, Medical Superintendent, Western Regional Hospital  
Ramesh Parsad Adhinasi, Senior Public Health Administrator, District Public Health office, Kaski

### **Partner agencies:**

Mr. Binoy Lama, Project Officer, UNICEF  
Dr. Tony Williams, Country Team Leader, Emergency Centre for Transboundary Animal Diseases, Food and Agriculture Organization

Dr. Khadak Singh Bisht, Assistant Coordinator, Regional Support Unit and Emergency Center for Transboundary Animal Diseases for SAARC Countries, Food and Agriculture Organization

Dr. Nihal Singh, Epidemiologist and Medical Officer, Communicable Disease Surveillance and Response, World Health Organization

Dr. Ravi Kiran Kafle, National Professional Officer, Communicable Disease Surveillance and Response, World Health Organization

Ms. Linda Kentro, Environmental Health Team Leader, USAID

**NGOs, private sector and other stakeholders:**

Dr. Shubh N. Mahato, Country Director, Heifer International

Mr. Anand Bagaria, Managing Director, NIMBUS

Dr. Dinesh Gautam, Deputy Chief Executive Officer, NIMBUS

Dr. Sital Kaji Shrestha, Senior Manager (Training & Customer Service), NIMBUS

Mr. Prem Marantha, Poultry farmer, Sitapaila, Kathmandu

Mr. Dil Bahadur Tamsug, Poultry farmer, Pokhara

Ms. Manju Shrestha, Poultry farmer, Pokhara

**Bank staff:**

Mr. Norman Bentley Piccioni, Lead Rural Development Specialist, Washington DC

Ms. Miki Terasawa, Rural Development Specialist, Washington DC

Mr. Purna Bahadur Chhetri, Senior Rural Development Specialist, Kathmandu

Mr. Shambhu Prasad Uprety, Procurement Specialist, Kathmandu

Mr. Yogesh Malla, Financial Management Specialist, Kathmandu

Mr. Drona Raj Ghimire, Environmental Specialist, Kathmandu



## Annex D. Borrower Comments

Subject: **Response to Performance Assessment Report AICP Project Team**

The Project start-up was delayed due to the late approval of program from the Planning Commission and the Ministry of Finance, Government of Nepal (GON). With the approval from the NPC and MoF the project picked up its speed, as also noted by the author in the report. Although AICP was an emergency project it complied with the lengthy procedure of the government of Nepal and WB procedures. The project suffered only one month delay not eight months as noted in the report.

**Reference is drawn to paragraph 4 under Summary** it says that “*the project was less successful on the human health side, with only a modest impact on preparedness for human influenza outbreaks*”. We do not share this opinion. With the help of the project, the facilities at BP Koirala Health Institute, Dharan, Tribhuvan University Teaching Hospital, Nepalgunj Medical College have been equipped to deal with Avian Influenza. The evaluation team was unable to visit these facilities due to practical difficulties (task division, travel and time) associated with a one-member team. In all the outbreaks, both health and livestock team worked together to contain the spread and outbreaks. We are very happy to inform you that there have been no cases of fatality associated with Avian Flu in Nepal. This has also been noted by the report.

**Paragraph 2, under Summary:** The project spent all the money it was allocated with 98.8 per cent disbursement as indicated in Table 2 by the report. This, to us, is a very good disbursement. If not for the cancellation of the BSL 3 laboratory (per recommendation of the MTR) AICP would have achieved almost a hundred per cent disbursement. And, technically, the comparison of BSL 2 to that of BSL 3 is unfair. We agree that BSL 2+ at the time of the visit by IEG team was not functional. This is because the contractor had yet to hand it over to the Government. The laboratory also received a sum of USD 420,000 from the Government side for the construction.

**Paragraph 8 under Summary:** The statement “*While capacity gains have been made, it is unclear if these gains will be sustained because of a lack of funding*”. We are happy to inform you that the GoN has set aside close to USD 600,000 in order to sustain the operation of surveillance system. Though small, this amount may be considered significant as this allocation has been made when the country is undergoing budget crisis.

**Paragraph 8 under Summary:** We agree that the rate was low for compensation of culled birds. The rate was not decided by the project, but by the Cabinet. Hence, government decision. However, the rate has been revised upward from Rs 100 to Rs 130 (30 per cent increase) per bird now. This amount may be lower than the recommendation of OIE but, from sustainability point of view, this rate is within the capacity of the GoN to compensate. Thus, there has been no DECLINE on compensation as noted in the report.

On staff transfer, raised in many areas in the report, allow us to explain. It is important to differentiate staff transfer within and outside of the project. Staff transfer within the system

but outside of the project is a decision of the Government of Nepal and therefore is outside the control of the project. Such transfers are made generally when there is a promotion or retirement. Within the project, since AICP began in 2007, there have been only two transfers (Project Directors). The first Project Director, now Director General of the Department of Livestock Services, was transferred after 2 years and the second Director has stayed on with the project until its very end and today directing Nepal Zoonosis Control Project. Indeed, almost of the staff from AICP are still working with Nepal Zoonosis Control Project.

We also believe that our monitoring system is working and functional manifested by reporting of outbreaks and suspicions on regular basis. Thanks to the system, the NZCP has been able to quickly respond to and contain the spread of bird flu.

**Paragraph 2.2.1.** “*Most baseline data were zero*”. Note that this was an emergency project and the epidemic new to Nepal. In such a scenario collection of baseline data can be difficult to obtain. However, KAP survey captures changes in attitude, knowledge and the results have been very encouraging.

**Paragraph 3.3.1:** “*culling sites not monitored*”. This is not true. Monitoring of these sites are pursued by District Livestock Service Offices.

Finally, it may be noted that is one of the few projects that has been completed successfully within the time frame allocated to it with over 95 per cent disbursement (despite the cancellation of BSL 3 labs. Project outcome has been rated as excellent "KAP Survey" report.

The project has developed the capacity required to respond to Avian Flu crisis in addition to instituting coordinated and multi-sectoral approach to respond serious outbreaks such as Avian Flu. Following this model, there are at least two multi-sectoral projects supported by the WB in Nepal. We feel that we have been able to contribute substantially in this process and would like to request the IEG to reconsider its rating of AICP.

Last not but least, many projects are operating in Nepal under a very difficult circumstances which include – illegitimate and/or interim government, impasse in release of budget (partial and not on time), 14 hours of load shedding in a day, high cost of diesel to fuel generators and substantial delays in payment of salaries to staff due to budget constraints.

Thank you

Sincerely  
Dr Indra Kant Jha  
Nepal Zoonosis Control Project  
Budankanta, Kathmandu, Nepal

**Subject: Our reaction on independent assessment report of AICP**

Madam:

In respect to the above subject the Ministry is deeply concerned over the Project Performance Assessment Report prepared and submitted by IEG on Avian Influenza Control Project/Nepal, where the project is rated as "Moderately Unsatisfactory". In this respect, The Ministry fully endorses and agrees with the response submitted by the Zoonosis Control Project. In addition to what is being submitted by ZCP, the Ministry would like to make few points clear so as to reconsider the rating of the project.

1. The project was taken as the most priority project of the Government of Nepal, Ministry of Agricultural Development and provided all kinds of logistic, resources, guidelines, and M&E services from beginning to the end of the project. This type of backstopping is still continuing until today.
2. The project is rated as successful project by Ministry of Agricultural Development, as it was successful to establish many implementation mechanism, standard operating procedures, capacity building and increased response capacity to the animal health emergencies in a broader prospective. The districts and regional implementation mechanism established is still continuing and has proved to be an effective "means of coordination" and created a sense of collective responsibilities amongst various stakeholders.
3. The project is able to build up the concept of one health approach working together and jointly with Department of Health Services. Joint surveillance, joint response to the outbreaks and joint communication with different communication packages during various stages of disease incidence like pre outbreak, during the outbreak and post outbreak of Bird flu. This partnership is still continuing in Zoonosis Control Project. This has helped to track down the damage of the loss of property and human threat of the disease to the minimum level.

With best regards

Prabhakar

Dr Prabhakar Pathak  
Joint Secretary  
Gender Equity and Environment Division  
Ministry of Agriculture Development  
Sigha Darbar, Kathmandu, Nepal  
Phone: Direct [+ 977 1 4211940](tel:+97714211940)  
Phone: [+ 977 1 4211639](tel:+97714211639) Ext: 317  
Fax: [+977 1 4211935](tel:+97714211935)  
email personal: [drppathak@yahoo.com](mailto:drppathak@yahoo.com)  
Web site: [www.moac.gov.np](http://www.moac.gov.np)

**Avian Influenza Control Project (IDA Grant N. H2680-NEP):**  
**Independent Evaluation Group Report**  
**(Human Component)**

**Comments:**

1. Training of laboratory staff, procurement and supply of laboratory diagnostic equipments, laboratory diagnostic capacity upgrading activities were insufficient and unsatisfactory. But the campaign, awareness and communication activities were satisfactory.
2. Conversion of establishment of BSL-III Lab into BSL-II Plus laboratory in Nepal is the strong evidence of un-productive outcome of the project and very poor mechanism of evaluation and monitoring system was observed.
3. **There were numbers of weakness in laboratory facility building (BSL-II plus Lab) including plan, design, equipment supply, supervision and monitoring; as a result BSL-II Plus lab is not ready to operate till date. This was because expert opinion of laboratory personnel was neglected. It is a very concerned and painful issue for NPHL as a huge space of NPHL is occupied without utility of the facility. The Secretary of the health is also very positive to refurbish the facility and make it functional as BSL3 lab which is the great need of the country in view of combating emerging and re-emerging infectious diseases in the country. NPHL will put up maximum efforts to make this facility functional. MOHP and WHO have been repeatedly requested for the financial support to refurbish this facility.**
4. Procurement of laboratory equipment including rapid diagnostics kits in addition to VTM was supported through the project. Some consumable items along with microscope, CO2 incubator, freezer and nucleic acid sequencer were utilized for National Influenza Center (NIC) use. However; NIC lab establishment, component was totally supported by WHO-HQ and Government of Nepal rather than the AICP (page-24, 1st paragraph, IEGR report). Functioning of NIC is the great success of NPHL.
5. **Photo attached (Report page number-48, Annex B, Serial no. f) in the report document, is the property of NIC (RNA extraction room), national public health laboratory, Teku and NOT a picture of Central Veterinary Laboratory.**
6. **Overall, the project was moderately successful on Human Health component and if laboratory component, BSL-2plus could be made functional it could be rated highly successful.**

**Recommendation:**

7. In coming future, budget should be made available at NPHL for such kind of activity because NPHL is the national level authority for all aspects of laboratory diagnostic capacity building at national level.

8. National public health laboratory is the end user in terms of facility expansion and laboratory diagnostic capacity building. Hence; facility design, plan, supervision and monitoring, budget mobilization should be under NPHL authority.

Dr. Geeta Shakya  
Director  
National Public Health Laboratory  
Teku, Kathmandu