



Government of Nepal

MINISTRY OF AGRICULTURE AND COOPERATIVES

NEPAL ZOONOSES CONTROL PROJECT

ENVIRONMENT MANAGEMENT PLAN
(2012/13 – 2013/14)

Kathmandu
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ABBREVIATIONS AND ACRONYMS

AHIF	Avian Human Influenza Facility
AICP	Avian Influenza Control Project
AI	Avian Influenza
APL	Adaptable Program Loan
AWPB	Annual Work Plan and Budget
CIF	Climate Investment Fund
DLS	Department of Livestock Services
DOHS	Department of Health Services
EMP	Environmental Management Plan
EU	European Union
EWARS	Early Warning and Reporting System
FAO	Food and Agriculture Organization of the United Nations
FMD	Foot and Mouth Disease
GAFSP	Global Agriculture and Food Security Program
GDP	Gross Domestic Product
GON	Government of Nepal
GPAI	Global Program for Avian Influenza Control and Human Pandemic Preparedness and Response
HNP	Health Nutrition and Population
HPAI	Highly Pathogenic Avian Influenza
HPED	Highly Pathogenic and Emerging Disease
KAP	Knowledge, Attitude and Practice
M&E	Monitoring and Evaluation
MOAC	Ministry of Agriculture and Cooperatives
MOHP	Ministry of Health and Population
NARC	Nepal Agriculture Research Council
OH	One Health
OIE	Office International des Epizooties (World Organization for Animal Health)
PMU	Project Management Unit
PPCR	Pilot Program for Climate Resilience
PPE	Personal Protective Equipment
SIL	Sector Investment Lending
SOP	Standard Operation Procedure
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VEC	Veterinary Epidemiology Center
WHO	World Health Organization of the United Nations
ZCP	Zoonoses Control Project

Table of Contents

Executive Summary	4
Background 16	
Project Description	17
Geographic Scope	20
Lessons Learned and Reflected in the Project Design.....	21
Implementation.....	22
Safeguards Risks, Policies and Management	25
Policy and Legal Framework.....	25
Institutional Capacity for Environmental Management.....	26
Potential Environmental Impact	26
Mitigation 27	
Direct Impacts.....	28
Indirect Impacts.....	30
Budget 36	
EMP Implementation	36
Monitoring and Supervision	37
Timeline 37	
Consultation 38	

Executive Summary

Outbreaks of highly pathogenic emerging diseases (HPED) have been spreading across the globe since 2003. For example, Nepal has recorded eleven outbreaks of HPAI from 2009 to till 2012. Therefore, the country is at high risk, with the disease outbreaks recorded in China to the north and in India to the south. In addition, Nepal is on two routes for migratory birds that are known to be carriers of the disease.

Under the GPAI, the Government of Nepal implemented the Avian Influenza Control Project (AICP) between 2007 and 2011. The AICP supported the Department of Livestock Services (DLS) under the Ministry of Agriculture and Cooperatives (MOAC) and the Department of Health Services (DOHS) under the Ministry of Health and Populations (MOHP) in developing prevention and control mechanisms by strengthening their capacities in surveillance, diagnostics, bio-security and quarantine, response (containment among animals and human case management), and communication. Eleven avian influenza outbreaks in poultry and ducks have been successfully contained by DLS, with no human infection.

In Nepal, more than 80 percent of the population is engaged in agriculture. There is a high incidence of infectious diseases, such as avian influenza, foot and mouth disease, pestes des petits ruminants and bluetongue, which causes annual losses of about US\$ 230 million¹. Many of these diseases could also transmit to humans, which could reduce production and income or even cause loss of lives. Evidence shows that climate change, including extreme weather and ENSO,² has posed significant losses and new challenges in sustaining Nepal's livestock subsector. In addition to projected rising temperatures, natural disasters, such as flood and drought, have also been associated with increased disease risk³.

The avian influenza prevention and control mechanisms developed by the AICP could be further enhanced by expanding the scope to priority zoonotic diseases that have an impact on animal production and productivity and on human health, while incorporating risk mitigation related to climate change impact on disease trends. Such mechanisms would complement the proposed Agriculture and Food Security Project to be financed by the Global Agriculture and Food Security Program (GAFSP) and the on-going Pilot Program for Climate Resilience (PPCR). GAFSP would support DLS in increasing livestock production and productivity in the mid- and far-west areas, and see a scope to increase cow milk yield from 450 litres/lactation to 1,600 litres, buffalo milk yield from 800 to 1,200 litres/lactation, and daily weight gain of goats from 45 to 90 grams/day. PPCR is financed by the Climate Investment Fund (CIF) and building capacities at the Nepal Agriculture Research Council (NARC) under MOAC.

The Nepal Zoonoses Control Project aims to minimize the threat posed by HPED to humans in Nepal. Building on the avian influenza prevention and control mechanisms developed by the IDA-financed AICP, the proposed project would expand the scope to key zoonotic diseases under a “One Health” approach. The project would enhance the country overall planning; coordination, preparedness, and prevention, while specifically strengthen capacities of the Department of Livestock Services (DLS) under the Ministry of Agriculture and Cooperative (MOAC) and the Department of Health Services (DOHS) under the Ministry of Health and Population (MOHP). Moreover, in innovatively addressing animal and human interface with the eco-system, the project would also support the National Agriculture Research Council (NARC) under MOAC in developing early warning mechanisms to

¹¹ Other infectious or zoonotic diseases include brucellosis, tuberculosis, rabies H1N1, Newcastle disease, Porcine reproductive and respiratory syndrome (PRRS) and a host of parasitic diseases, to name a few.

² El Niño/La Niña – Southern Oscillation

³ Intergovernmental Panel on Climate Change, 2007

mitigate livestock disease risks induced by climate change. The project has four components: (a) animal health, (b) climate sensitive disease risk mitigation, (c) human health, and (d) communication. Each component includes a sub-component to support project management.

Project Components:

Component A. Animal Health. This component would enhance DLS to build on and further enhance capacity to control and prevent AI and move towards a wider set of diseases. This component will encompass planning, surveillance, diagnosis, control, response, and prevention. Planning would support development of veterinary legislation for prevention and control of animal diseases; provide support for reform for the management of animal health within the DLS. Furthermore, an OH strategy and action plan would be developed and guided by risk-based disease identification and informed by economic assessment of diseases using tools developed by the Central Asia Regional OH project. Capacity for strategic planning supports not only the ability to respond to changing disease dynamics but increased clarity of priority diseases afforded by improved surveillance and diagnosis capacity. The economic assessment will engage DLS, DOHS and economists working together to agree on the common data needs. Key studies would include identification of key infectious diseases in all five regions in Nepal as well as high-risk districts in relation to the Component B and their impact on animal and human health – jointly studied with DOHS. These studies not only support identification of a common set of priorities, guide implementation of control and prevention but are also important to support advocacy.

The surveillance and diagnosis subcomponent would strengthen the Animal Health Information System (AHIS) developed by the AICP and would provide tools and equipment to support these activities. AHIS would be enhanced to monitor key infectious diseases that affect livestock productivity, food security and human health. Its network would be expanded to selected District Livestock Services Offices and five Regional Veterinary Laboratories. Two-three labs would be further strengthened with equipment, kits and training. Some of the District Livestock Offices would be refurbished and provided with transportation. Additional training is needed at multiple levels. This project would build capacity at the more strategic crosscutting level and in collaboration with the AHIF-financed Regional Training Program in Epidemiology and Bio-security⁴ which is being further expanded to operate on the ground within the region and establish a resource hub in Nepal. Training will also enhance participatory disease surveillance at village level, engaging Village Organizations (VOs) involved in livestock rearing activities, which were formed by the IDA-financed Poverty Alleviation Fund (PAF). The subcomponent would also strengthen monitoring wild birds or wildlife, which would help control disease transmission from wild to domestic animals.

This component would enhance DLS capacity in preparing for and preventing priority zoonotic diseases by strengthening zoonotic disease inspection, quarantine, surveillance, diagnostics, bio-security, and institutional knowledge and capacity. The component would support upgrading key DLS facilities, such as quarantine check posts, Veterinary Epidemiology Center (VEC), Central Veterinary Laboratory (CVL), District Livestock Service Centers, and provide transportations to enable zoonotic disease inspection, surveillance, and quarantine. The Animal Health Information System (AHIS) developed by the IDA financed AICP would be expanded in terms of network and disease coverage. This would be undertaken in collaboration with the AHIF-financed Regional Training Program in

⁴ The Regional Training Program in Epidemiology and Bio-security trained 70 veterinarians and medical doctors from seven countries in South Asia to obtain master's degree in epidemiology. Five students participated from Nepal (two veterinarians and three medical doctors). The program would set up a center of excellence in epidemiology or one health hub in Nepal by strengthening the Nepal Health Research Council and/or the Central Veterinary Laboratory and developing national and regional information networks. The regional program is financed under the AHI Facility for US\$ 7.7 million.

Epidemiology and Bio-security⁵. The component would also train Livestock Service Officers, para-vets, farmers, security personnel, and other key stakeholder on disease awareness, inspection/detection, prevention, and bio-security. In enhancing preparedness, the project would also review veterinary legislations and implement the regulatory framework on food safety,⁶ in collaboration with MOHP. The project would also finance key studies (including identification of priority zoonotic diseases as well as high-risk districts in relation to the Component B and their impact on human health – jointly studied with DOHS).

Enhancing response and control will involve reinforcement and expanded bio-security training and awareness building at all levels, upgrading quarantine facilities at border checkpoints, providing transportation and communications equipment in support of these facilities, including training of personnel. Selected bird markets will be modernized and model small-scale bird slaughter facilities developed. Prevention will be supported by awareness campaigns, bio-security and quarantine measures (described earlier) climate related risk mapping and increased capacity to deliver animal health services through strategic planning and additional training. The live bird market would replicate good practices in Vietnam and Nigeria, by enhancing bio-security at slaughterhouses and collection points developed by the ADB-financed Community Based Livestock Project (CBLP – closed in 2009). There would also be training on bio-security and food safety among farmers, traders, and animal health workers.

Institutional capacity will be enhanced as a result of this project to address not only zoonotic but also non-zoonotic diseases. The recent OIE PVS Gap analysis provides a starting point to highlight institutional capacities, which in some cases need to be further clarified within both a development and OH context. While several basic institutional capacity needs have been provided for in this project and while the project builds on from AICP to address other zoonotic and non-zoonotic diseases it does not, and obviously cannot, address all institutional capacity needs but rather aims to expand and strengthen the existing foundation.

The project management sub-component would finance DLS operating costs. It will also finance setting up a crosscutting planning and monitoring unit to support overall project implementation. The unit will be composed of financial management, procurement, and monitoring consultants to monitor implementation progress and support to address bottlenecks.

Component B. Climate sensitive disease risk mitigation (US\$ 2 million). This component is implemented by Nepal Agriculture Research Council (NARC). NARC was established under the "Nepal Agricultural Research Council Act - 1991" to conduct agricultural research in the country to uplift the economic level of the people. Their objectives are to (a) conduct qualitative studies and researches on different aspects of agriculture; (b) identify the existing problems in agriculture and find out the solution; and (c) assist government in formulation of agricultural policies and strategies. This component focuses on innovation, and NARC is the responsible organization for research and innovation in Nepal and hence the implementation organization for this component.

This component leverages two World Bank supported projects, namely Pilot Program for Climate Resilience (PPCR) and Global Agriculture and Food Security Program (GAFSP). NARC, in

⁵ The World Bank supported Regional Training Program in Epidemiology and Bio-security (phase I and II ongoing) trained 70 veterinarians and medical doctors from seven countries in South Asia to obtain master's degree in epidemiology. Five students participated from Nepal (two veterinarians and three medical doctors). The program would set up a center of excellence in epidemiology or One Health hub in Nepal by strengthening the Nepal Health Research Council and/or the Central Veterinary Laboratory and developing national and regional information networks. The regional program is financed under the AHF Facility for US\$ 7.7 million with EU funding.

⁶ The food safety regulations have already been reviewed and updated by MOAC by the Bank-financed Project for Agriculture Competitiveness and Trade (PACT).

coordination with Ministry of Agriculture and Cooperative, is leading efforts to raise awareness and identify priority areas to address climate threats through the Pilot Program for Climate Resilience (PPCR). In addition, NARC would work closely with DLS in transferring technologies at the farm level. The anticipated outcomes of this component can add values to and support of GAFSP Development, Adoption, Technology Transfer, and Adaption aspects of the project. The activities under this component would be aligned with the National Adaptation Program of Action (NAPA), thus, would contribute to the PPCR Climate Resilience Agriculture Management Information System and also link to UK Global Food Security Program.

This program is innovative in introducing climate change mitigation in the proposed “One Health” approach by improving climate assessment on diseases and concrete interventions to mitigate climate risk. It would support building livestock climate resilience by benchmarking priority climate sensitive diseases and their impact on production, collecting information on climate vulnerability, and designing and implementing early warning mechanisms to mitigate livestock diseases risk induced by climate change. The component would support the Nepal Agriculture Research Council (NARC) to survey climate impact on livestock diseases in different agro-ecological zones. This would include (i) monitoring impacts on changes in epidemiology of diseases and emergence of new diseases (including parasitic diseases), (ii) statistical analysis of historical precipitation and temperatures (daily and seasonal) vis-à-vis emergence of climate sensitive disease cases, such as Japanese Encephalitis and bluetongue, and (iii) developing early action plans to mitigate climate induced risks, including extreme weather and preparedness for El Niño and La Niña years.

Specifically, there are four Sub-components in this project. They are:

- **Risk Mapping.** Retrospective Analysis of parasitic diseases (specifically fasciola, gastro – intestinal nematodes) and Japanese Encephalitis in order to develop a geographic diseases risk map. The Risk Map will be a combination of the parasitic disease and Japanese Encephalitis incidences and precipitation and temperature. If possible, vulnerability is recommended to be considered in developing Risk Maps.
- **Early Warning system for parasitic diseases and Japanese Encephalitis.** Conduct a study, including statistical analysis, of historical precipitation and temperature versus parasitic diseases and Japanese Encephalitis as a baseline to develop an outlook for these two diseases incidence. The outlook will be based on probability forecasts. The climatic variability will first focus on strong El Nino and La Nina years.
- **General surveillance of emerging diseases and tick Varieties.** Conduct general Surveillance of emerging diseases, including bluetongue, and tick variety in selected sampling areas.
- **Conduct socio-economic analysis** for the specific diseases studies in this project, namely parasitic diseases and Japanese Encephalitis. A reference of the economic analysis tool is attached in this email for your consideration

Component C. Human Health (US\$ 2 million). The component would support the Department of Health Services (DOHS) in enhancing surveillance, diagnostics, and case management of priority zoonotic diseases. More specifically, it would (a) strengthen sentinel sites by equipping them with adequate diagnostic facilities, treatment facilities (isolation, quarantine, drugs, Intensive Care Units) and trained personnel; (b) conduct frequent BCC campaigns to raise awareness about the priority zoonoses among the risk populations and advocate ways to avert the transmission of infections from animals to humans; and (c) conduct active/passive surveillance every 6 months to inform the health service centers in order to prepare them upfront for any untoward incidence.

In operationalizing the one health approach, DoHS or its Epidemiology Division would hold meetings with NARC and DLS quarterly or every trimester and also during an outbreak so as to be well informed with the current priority zoonoses and decide on joint effective actions. They would deploy

personnel at the sites where there is a zoonotic disease outbreak in (a) livestock to take stock of the situation and likely human cases and (b) humans to ensure that effective actions for case management are taken. And in the spirit of SWAp of Nepal health sector program (NHSP), this component will later be incorporated into the next annual work plan and budget (AWPB) discussions of NHSP in order to enhance harmonization and reduce the MOHP's administrative burden. The incorporation of this component into the health sector program would establish ownership by the government and ensure sustainability after the project ends. This component will later be incorporated into the next annual work plan and budget (AWPB) discussions of the on-going IDA-financed Second Health Population and Nutrition and HIV/AIDS Project (NHSP) in order to enhance harmonization and reduce the MOHP's administrative burden. NHSP will manage the environmental implications for waste management in this component.

Component D. Communication. This component would support DLS and DOHS in undertaking communication activities. These would include strengthening avian influenza communication strategy to encompass priority zoonotic disease, raising awareness on those diseases and preventive practices (including food safety and bio-security), improving risk communication (in particular, community mobilization), undertaking KAP surveys, and building institutional capacity. The communication component was successfully implemented in the AICP, as it improved the awareness rate by 21 percent (from 61 percent to 82 percent). The media awareness campaign covered at least 50 percent of the population in 26 high-risk districts.⁷ AICP also trained 750 media spokespersons on HPAI, and 1,703 security personnel, traders, and farmers on bio-security and quarantine. In strengthening these activities, DLS has mainstreamed communication activities in the Directorate of Extension Services and Training, and this component would build their capacity in undertaking these activities with technical support from a consulting firm.

The Nepal Agriculture Research Council (NARC) would implement this component. This would leverage PPCR and Global Agriculture and Food Security Program (GAFSP). NARC is an autonomous agency under MOAC to conduct agricultural research in the country in uplifting rural livelihoods. In PPCR, NARC is to identify priority areas to address climate threats, raise awareness, and transfer technologies at farm level in collaboration with DLS. The proposed GAFSP would build on technology transfer by strengthening evaluation and release of improved breeds and developing location specific animal husbandry practices.

Geographic Scope

Project activities will be implemented throughout the country and influence the entire geographic region of Nepal. The project will identify priority zoonotic diseases and high-risk districts, where key prevention and control activities, such as surveillance, diagnostics, quarantine, bio-security, and communication, would be implemented. Activities to strengthen DLS and DOHS capacities in disease mitigation will also focus on these key districts.

Project Cost and Financing

The project uses sector investment lending (SIL) instrument and is expected to be financed by the Avian Human Influenza Facility (AHIF) grant and government contributions. AHIF is administered by the Bank and was established with contributions from various bilateral and multilateral donors, including the European Commission (EC). Approximately, 45 avian influenza control projects have been partially or fully financed by AHIF. In South Asia, the AHIF is financing a regional bio-security

⁷ Messages were aired on one national television and 26 local FM radio stations. The April 2006 Aide Memoire indicates that the access to radio is estimated at 50 percent for rural population and 62 percent for urban but access to television estimated at 1 percent for rural and 20 percent for urban.

and epidemiology program which includes Nepal among other countries.⁸ The proposed project would be financed by a grant for US\$10 million. The project meets all the criteria for this grant and applicable Bank policies.

Program Objective and Phases

The project is designed to be self-contained and to achieve measurable results in a short timeframe. However, by building on and further strengthening the successful institutional mechanism created under the AICP, by financing several studies and diagnostics, and by collecting data, the project is expected to pave the way for a larger government-lead program within a comprehensive livestock and One Health strategy that the project would contribute to develop.

Lessons Learned and Reflected in the Project Design

Several lessons have been learned from the Nepal Avian Influenza Control Project (AICP – closed on July 31, 2011) and other avian influenza or one health projects Bank-wide have been reflected in the project design. An abbreviated list pertinent to environmental concerns follows:

Model live bird markets would enhance bio-security and food safety. The proposed project would establish model live bird/meat markets by replicating good practices in Vietnam and Nigeria. The markets would enhance bio-security in poultry/ meat supply chains and food safety through several activities including building awareness through a communication campaign.

Planning and monitoring unit would enhance FM, procurement and M&E capacity. One of AICP weaknesses was limited capacities in FM, procurement, and monitoring and evaluation (M&E). In the proposed project, DLS would establish a crosscutting planning and monitoring unit to provide technical support and facilitate project implementation.

Steering and technical committees should ensure multi-sectoral coordination. Based on in-country and global experiences in managing a multi-sectoral project, a high-level steering committee and a working-level technical committee would be established to facilitate coordination between DLS, NARC, and DOHS.

The environmental performance of AICP was evaluated and found to be satisfactory. Water was even tested around the disposal pits and no contamination was found indicating the soundness of the Standard Operating Procedures followed.

Institutional and Implementation Arrangements

The project will be implemented by three agencies, which are DLS, DOHS, and NARC, and the funds will be channelled to DLS and DOHS. Both DLS and DOHS maintained the AICP structures and will implement the animal and human health components respectively. Although limited, the AICP built capacity in project management, FM, procurement, and M&E at DLS and DOHS. In an effort to provide continuity, the Government has maintained the project staff and facilities for the proposed project.

A cross-cutting planning and monitoring unit with three consultants with FM, procurement and planning/monitoring expertise will support and provide on the job training to DLS, DOHS and NARC

⁸ The Regional Training Program in Epidemiology and Bio-security trained 70 veterinarians and medical doctors from seven countries in South Asia to obtain master's degree in epidemiology. Five students participated from Nepal (two veterinarians and three medical doctors). The program would set up a center of excellence in epidemiology or one health hub in Nepal by strengthening the Nepal Health Research Council and/or the Central Veterinary Laboratory and developing national and regional information networks. The regional program is financed under the AHF Facility for US\$ 7.7 million.

during the implementation period. The communication component will be implemented by both DLS and DOHS. However, in this project, DLS would hire a consultant to implement the activities (awareness raising and capacity building).

The climate change component will be implemented by NARC. Funds will flow from DLS to NARC through an internal MOU, since the two agencies are under the same Ministry of Agriculture and Cooperatives (MOAC). DLS will establish an internal procedure acceptable to the Bank to channel funds to NARC.

In facilitating coordination between three agencies at ministerial and working levels and building on the inter-agency structure successfully tested under the AICP, the Government of Nepal will broaden the scope of the AI steering and technical committees to effectively coordinate the project at ministerial and working levels under a broader One Health approach. The steering committee will be a high-level ministerial coordination body, chaired by MOAC Secretary. The technical committee will be at working level chaired by DLS Director General to coordinate and support project implementation. The crosscutting planning and monitoring unit would directly report to the technical committee on the implementation progress and facilitate their planning.

Safeguards Risks, Policies and Management

Because this project may have some important physical implications indirectly, the World Bank's Environmental Assessment 4.01 Safeguard Policy applies which means that environmental impacts of project activities must be evaluated and a plan should be developed to manage any negative impacts. No other World Bank environmental or social safeguard policies apply to this project.

This Environmental Management Plan (EMP) is the safeguard instrument developed to cover the entire Zoonoses Control Project except for the Human Health Component which will be managed under the Second Nepal Health Sector Program (IDA's Second Health, Nutrition, Population and HIV Project) environmental management arrangements. This project is unlikely to cause any significant adverse environmental impacts.

Institutional Capacity for Environmental Management

This project will build on GON's ability to address zoonotic and non-zoonotic diseases that were strengthened during AICP including management of environmental aspects. There will be a crosscutting planning and monitoring unit to support overall project implementation which will include monitoring consultants to monitor implementation progress (including environmental safeguards) and support to address bottlenecks. As in the AICP, the Deputy Project Coordinator located in the PMU, a Veterinary Doctor with previous environmental training, will be responsible for safeguards matters. In case very specific environmental expertise becomes necessary, the project will contract an environmental expert.

Potential Environmental Impact

Most activities proposed under the Nepal Zoonoses Control Project, like its similar predecessor the Avian Influenza Control Project, are likely to have limited adverse environmental impacts as they are designed to enhance capacity of relevant agencies, facilitate preparation for timely detection and dealing with HPED outbreaks in poultry, hygienic meat production and raise stakeholders' awareness regarding zoonotic diseases. In fact, the goal of the project is to prevent human and animal deaths from select zoonotic diseases by strengthening GON's capacity to effectively respond: containing the threat.

No large-scale, significant or irreversible negative impacts are likely from this project since project activities mainly consist of studies, increased coordination, case management and communication/information campaigns. However, there are minor physical implications from some project interventions therefore, Environmental Assessment is necessary.

Project activities that could have direct environmental impacts are the following:

1. Component A. Animal Health:
 - a. The diagnosis, control and prevention of infectious disease activities as well as the strategy and action plan to be developed may have environmental implications.
 - b. The refurbishing and upgrading of some of the DLS Offices and enhancing bio-security at the small-scale limited model live bird/meat markets (alterations to existing structures) would produce small-scale impacts from solid, liquid and chemical wastes and some noise. The refurbishing will be managed by the application of the *Public Works Directives* which include adequate and appropriate coverage of environmental management of construction activities.
2. Component B. Climate Sensitive Disease Risk Mitigation: are only research, benchmarking and studies and thus will not directly have any impacts on the environment. The studies themselves are looking at the impacts of climate change, an environmental phenomenon, on livestock diseases in different agro-ecological zones and how to build livestock climate resilience. This component does not need any mitigation since it is a type of environmental assessment.
3. Component C. Human Health: This component's environmental impacts will be managed under the Nepal Health Sector Program II (NHSP), which has its own Environmental Management Plans. It will therefore not be covered here. This component's environmental impacts would issue from the diagnostics and case management of priority zoonotic diseases. Such activities may result in collection of samples/ specimen, laboratory (similar to medical wastes) and setting up of sentinel outposts: these can easily be mitigated.
4. Component D. Communication does not have any negative environmental consequences that need to be mitigated. In fact, it should contribute positively by raising awareness of preventative practices (including food safety and bio-security).

Adverse indirect environmental impacts, however, may occur during emergency operation activities for containment of HPED outbreaks from *inappropriate culling and transportation of infected and at-risk birds, disposal of carcasses, and use of chemicals for disinfection*. Although this project is only financing studies, research, surveillance, testing and refurbishing, it also indirectly relates to these activities since the project is designed to strengthen GON to effectively manage an outbreak. Following are the main risks and concerns if an outbreak occurs and appropriate mitigation measures are not in place:

1. Risk of human exposure and spread of HPED due to: improper culling and disposal of dead birds and lack of or improper use of personal protection equipment (PPE).
2. Release of chemicals in the environment and risk of human exposure/ intoxication in the process of disinfection; release of chemicals and infectious agents into the environment and risk of human exposure from inadequate laboratory waste management or transportation; water and air pollution risks from disposal of carcasses, farm waste, and laboratory waste, etc.

Mitigation

The identified environmental impacts of the project could be avoided or minimized to acceptable level by integrating environmental and public health safety aspects in the design and implementation of

activities. Training on these measures and monitoring the preparation as well as enforcement are included in the project in order to ensure effective implementation of the recommended measures.

The project will follow all: Nepalese environmental laws, rules, regulations and policies; World Bank environmental and social Safeguard Policies including the Environment, Health and Safety Guidelines (notably the General Guidelines for construction and the Health Care Facilities Guidelines⁹ and any other Guideline that becomes applicable at any point during project implementation). Any deviations from World Bank Policies must receive clearance from the Bank and provide adequate justification.

Environmental safeguards are mainstreamed in the Standard Operating Procedures (SOP) for the project: these will not only ensure implementation of environmental measures in the project, but are likely to positively influence environmental practices and performance in the sector in general. All these are likely to result improved environmental management in the sector and hence positive environmental impacts in the long-run.

Direct Impacts:

The Project Management Unit will check through various methods such as reviewing Terms of Reference for research or developing policy and will add provisions for environmental consideration when necessary or review drafts of documents to ensure inclusion of environmental considerations. Similarly, in terms of Component D. on communication, advocacy, social mobilization and behavioural change communication, the Directorate of Livestock Services and Communication ensure inclusion of environmental aspects in the communication campaign as necessary. The Animal Health Directorate will check the campaign strategy and plan inclusion of environmental aspects in the communication campaign as necessary before campaign starts.

The Project Management Unit will ensure that health, safety and environment guidelines are followed for all upgrading/refurbishing or minor construction (as in the case of establishing the model bird markets and slaughter houses) by including provisions referencing the environmental management activities in the Nepal *Public Works Directives* in relevant bidding and other contractor documents governing refurbishing/upgrading/minor construction activities.

Construction Supervision team ensures contractor compliance with the Public Works Directives. With respect to capacity building for Livestock Service Officers, para-vets, farmers, security personnel and other key stakeholders on disease awareness, inspection/detection, prevention and bio-security. Directorate of Livestock Services and Communication will ensure inclusion of environmental safeguards in training course. Similarly, the Animal Health Directorate checks the course before training is organized and visits random selected training events. Ultimately, the Project Management Unit checks and ensures the inclusion of relevant environmental safeguards in training course by appropriate methods such as ensuring inclusion for such considerations in Terms of Reference, lesson plans, etc.

Indirect Impacts:

Since the project will finance formulation of legislation, strategies and other policies or action plans to guide implementation of prevention and control of animal diseases, it will impact implementation and could have physical consequences. Information on possible consequences of potential activities is provided in Table 4 as an easy reference for those developing the legislation, policies, plans and strategies to understand the environmental implications of actions that will result from implementation as well as the mitigation measures that are suggested. The information presented here may suggest to the policy maker/strategist that specialized analysis and mitigation strategies requiring specialized

⁹ This is most pertinent to the topic of the management of health care wastes.

expertise may be necessary. AICP developed and strengthened the institutions and the arrangements/systems designed to manage the indirect environmental implications (such as culling, etc.) of this Zoonosis Control Project.

Consultations

A consultation on the EMP as well as other aspects of the project was held February 29, 2012 with 130 stakeholders. Input on the EMP has been requested from a local NGO. Additionally consultation on outcomes of the previous project, AICP, was conducted in June 2011. A previous draft of this EMP was disclosed in country on February 27, 2012 on the Department of Livestock Services website (www.dls.gov.np). It will be disclosed in Nepali and in InfoShop. Information from these consultations was considered during the design of this project and its EMP.

The proposed project would engage FAO, OIE, and WHO, which are key UN agencies in leading the “One Health” agenda, as partners. It would also consult with key donors on this agenda as well as in the livestock sector, including USAID, EU, and ADB. The AICP implementation was supported by three UN partners, which were FAO, WHO, and UNICEF, under the overall framework of the Global Program for Avian Influenza Control and Human Pandemic Preparedness and Response (GPAI)¹⁰.

EMP Implementation

The following are the responsibilities of each project coordinating entity:

PMU: The overall responsibility for integrating and coordinating the efforts of all agencies involved in implementing the EMP shall be with the project management unit (PMU). The PMU shall include a core team of technical animal and human health specialists amongst other experts. The PMU is responsible for the following:

- (i) the implementation of mitigation measures identified in the EMP
- (ii) periodic reporting of EMP implementation activities
- (iii) maintaining adequate budget to implement the identified mitigation measures
- (iv) ensuring that contractors adhere to and comply with any health, safety and environment directives issued by relevant and authorized national and sub-national bodies guidelines (including such measures in *Public Works Directives*) through random visits to selected sites.
- (v) reviewing draft versions of legislation, strategy, planning and other relevant documents to ensure that they take pertinent environmental issues into consideration in a meaningful way and suggesting improvements as necessary. If significant points are not addressed, PMU should not clear such documents.
- (vi) reviewing draft versions of training program agendas to ensure inclusion of environmental safeguards in training courses and ensuring appropriate expertise is available to convey such information.
- (vii) ensuring that the project adheres to Nepal environmental laws and regulations.

Steering Committee: The steering committee is responsible to review project progress, approve work plans and ensure coordination among participating ministries (MOAC and MOHP) and international

¹⁰ GPAI was endorsed by the Bank’s Board of Directors in January 2006, as a horizontal adaptable program loan (APL) with a global envelope of \$500 million. GPAI was developed in 2005, at the height of the H5N1 spread in humans in several Asian countries. As AI virus constantly evolves with unpredictable results, the risk of a human pandemic was considered highly likely. Because of the multi-sectoral nature, involving health, agriculture, economics, finance, planning, and others, the Bank was considered the best suited institution to effectively coordinate UN and other specialized agencies, including FAO, WHO, and UNICEF.

partners. This committee will also ensure through the technical committee that adequate resources are available for the EMP implementation.

Technical Committee: The technical committee is responsible for ensuring adequate budget and procurement of goods, works and services for implementation of the EMP. The committee will coordinate the MOAC and MOHP on matters connected with EMP implementation.

DLS: In addition to other non-EMP specific responsibilities, DLS is responsible for developing and implementing appropriate procedures and standards for the implementation and management of all animal health measures, arranging animal carcass disposal and coordinating the activities for the diagnosis and investigation of livestock diseases.

Monitoring and Supervision

There will be a crosscutting planning and monitoring unit housed at DLS. The unit would assess the implementation progress in each component (to be reported by DLS on the Animal Health and Communication components; NARC for the Climate Change Component and DOHS for the Human Health Component), identify bottlenecks in implementation and report to the Steering and Technical Committees to facilitate overall planning and coordination between the implementing agencies.

Project Management Unit (PMU)

The PMU will be responsible for:

- (i) the implementation of mitigation measures identified in the EMP
- (ii) monitoring and periodic reporting of EMP implementation activities
- (iii) ensuring that contractors adhere to and comply with any health, safety and environment directives issued by relevant and authorized national and sub-national bodies' guidelines (including such measures in *Public Works Directives*) through random visits to selected sites.
- (iv) reviewing draft versions of legislation, strategy, planning and other relevant documents to ensure that they take pertinent environmental issues into consideration in a meaningful way and suggesting improvements as necessary. If significant points are not addressed, PMU should not clear such documents.
- (v) reviewing draft versions of terms of reference, training program agendas and the like to ensure inclusion of environmental safeguards in training courses and ensuring appropriate expertise is available to convey such information.

The cross-cutting planning and monitoring unit in DLS will monitor the mainstreaming of environmental management and its application in the project as measured by the following indicators:

1. Completion of plans for appropriate waste disposal methods during operation of model live bird/meat markets including solid and liquid waste for each market established. Plan can be brief detailing how waste is to be collected, where and how specifically and final disposal site. Once model live bird/meat markets are established, evidence (including pictures, site visit reports (completed by M&E or other acceptable party) or other of the successful operation of waste collection and disposal strategy.
2. Completion of reports on site-specific screening for each and every refurbishing, renovation or other minor construction site (including the model live bird/meat markets).
3. Legislation, strategy, terms of reference and other docs have an environmental section or mention project environmental concerns or the use of SOPs or other way to demonstrate consideration of environmental matters in its formulation.
4. Reference to the need to abide by environmental and safety requirements from the Public Works Directive (PWD) in completed bidding documents, and other such documents to govern contractor refurbishing, renovation or other minor construction as necessary.

Budget

The budget for environmental management will be developed as part of the budget for each specific Zoonoses Control Project activity. Project funds are set aside to finance 3 staff weeks per year of project operation of an environmental expert to be contracted if necessary. Any other environmental activities will be adequately funded as 15% of project total budget will be unallocated to cover any unexpected or special circumstances which may arise. This amount of funding is more than adequate for project (including environmental management) needs.

Timeline

Project is expected to begin implementation May 1, 2012 and will continue for two years. All environmental mitigation institutional arrangements are already in place since they were developed, used and strengthened during the original AICP project.

Background

Outbreaks of highly pathogenic emerging diseases (HPED) have been spreading across the globe since 2003. For example, Nepal has recorded eleven outbreaks of HPAI from 2009 to till 2012. Therefore, the country is at high risk, with the disease outbreaks recorded in China to the north and in India to the south. In addition, Nepal is on two routes for migratory birds which are known to be carriers of the disease.

Under the GPAL, the Government of Nepal implemented the Avian Influenza Control Project (AICP) between 2007 and 2011. The AICP supported the Department of Livestock Services (DLS) under the Ministry of Agriculture and Cooperatives (MOAC) and the Department of Health Services (DOHS) under the Ministry of Health and Populations (MOHP) in developing prevention and control mechanisms by strengthening their capacities in surveillance, diagnostics, bio-security and quarantine, response (containment among animals and human case management), and communication. Eleven avian influenza outbreaks in poultry and ducks have been successfully contained by DLS, with no human infection.

In Nepal, more than 80 percent of the population is engaged in agriculture. However, the sector accounts for only around 35 percent of GDP. The livestock subsector contributes about 13 percent of that, with an estimate of 24.5 million poultry, 11.8 million cattle and buffalos, and 9.3 million goats and sheep. There is a high incidence of infectious diseases, such as avian influenza, foot and mouth disease, pestes des petits ruminants and bluetongue, which causes annual losses of about US\$ 230 million¹¹. Many of these diseases could also transmit to humans, which could reduce production and income or even cause loss of lives. Evidence shows that climate change, including extreme weather and ENSO,¹² has posed significant losses and new challenges in sustaining Nepal's livestock subsector. In addition to projected rising temperatures, natural disasters, such as flood and drought, have also been associated with increased disease risk¹³.

The avian influenza prevention and control mechanisms developed by the AICP could be further enhanced by expanding the scope to priority zoonotic diseases that have an impact on animal production and productivity and on human health, while incorporating risk mitigation related to climate change impact on disease trends. Such mechanisms would complement the proposed Agriculture and Food Security Project to be financed by the Global Agriculture and Food Security Program (GAFSP) and the on-going Pilot Program for Climate Resilience (PPCR). GAFSP would support DLS in increasing livestock production and productivity in the mid- and far-west areas, and see a scope to increase cow milk yield from 450 liters/lactation to 1,600 liters, buffalo milk yield from 800 to 1,200 liters/lactation, and daily weight gain of goats from 45 to 90 grams/day. PPCR is financed by the Climate Investment Fund (CIF) and building capacities at the Nepal Agriculture Research Council (NARC) under MOAC.

The Nepal Zoonoses Control Project aims to minimize the threat posed by HPED to humans in Nepal.

¹¹¹¹ Other infectious or zoonotic diseases include brucellosis, tuberculosis, rabies H1N1, Newcastle disease, Porcine reproductive and respiratory syndrome (PRRS) and a host of parasitic diseases, to name a few.

¹² El Niño/La Niña – Southern Oscillation

¹³ Intergovernmental Panel on Climate Change, 2007

Project Description

Building on the avian influenza prevention and control mechanisms developed by the IDA-financed AICP, the proposed project would expand the scope to key zoonotic diseases under a “One Health” approach. The project would enhance the country overall planning; coordination, preparedness, and prevention, while specifically strengthen capacities of the Department of Livestock Services (DLS) under the Ministry of Agriculture and Cooperative (MOAC) and the Department of Health Services (DOHS) under the Ministry of Health and Population (MOHP). Moreover, in innovatively addressing animal and human interface with the eco-system, the project would also support the National Agriculture Research Council (NARC) under MOAC in developing early warning mechanisms to mitigate livestock disease risks induced by climate change. The project has four components: (a) animal health, (b) climate sensitive disease risk mitigation, (c) human health, and (d) communication. Each component includes a sub-component to support project management.

Component A. Animal Health. This component would enhance DLS to build on and further enhance capacity to control and prevent AI and move towards a wider set of diseases. This component will encompass planning, surveillance, diagnosis, control, response, and prevention. Planning would support development of veterinary legislation for prevention and control of animal diseases; provide support for reform for the management of animal health within the DLS. Furthermore, an OH strategy and action plan would be developed and guided by risk-based disease identification and informed by economic assessment of diseases using tools developed by the Central Asia Regional OH project. Capacity for strategic planning supports not only the ability to respond to changing disease dynamics but increased clarity of priority diseases afforded by improved surveillance and diagnosis capacity. The economic assessment will engage DLS, DOHS and economists working together to agree on the common data needs. Key studies would include identification of key infectious diseases in all five regions in Nepal as well as high-risk districts in relation to the Component B and their impact on animal and human health – jointly studied with DOHS. These studies not only support identification of a common set of priorities, guide implementation of control and prevention but are also important to support advocacy.

The surveillance and diagnosis subcomponent would strengthen the Animal Health Information System (AHIS) developed by the AICP and would provide tools and equipment to support these activities. AHIS would be enhanced to monitor key infectious diseases that affect livestock productivity, food security and human health. Its network would be expanded to selected District Livestock Services Offices and five Regional Veterinary Laboratories. Two-three labs would be further strengthened with equipment, kits and training. Some of the District Livestock Offices would be refurbished and provided with transportation. Additional training is needed at multiple levels. This project would build capacity at the more strategic cross-cutting level and in collaboration with the AHIF-financed Regional Training Program in Epidemiology and Bio-security¹⁴ which is being further expanded to operate on the ground within the region and establish a resource hub in Nepal. Training will also enhance participatory disease surveillance at village level, engaging Village Organizations (VOs) involved in livestock rearing activities, which were formed by the IDA-financed Poverty Alleviation Fund (PAF). The subcomponent would also strengthen monitoring wild birds or wildlife, which would help control disease transmission from wild to domestic animals.

¹⁴ The Regional Training Program in Epidemiology and Bio-security trained 70 veterinarians and medical doctors from seven countries in South Asia to obtain master’s degree in epidemiology. Five students participated from Nepal (two veterinarians and three medical doctors). The program would set up a center of excellence in epidemiology or one health hub in Nepal by strengthening the Nepal Health Research Council and/or the Central Veterinary Laboratory and developing national and regional information networks. The regional program is financed under the AHI Facility for US\$ 7.7 million.

This component would enhance DLS capacity in preparing for and preventing priority zoonotic diseases by strengthening zoonotic disease inspection, quarantine, surveillance, diagnostics, bio-security, and institutional knowledge and capacity. The component would support upgrading key DLS facilities, such as quarantine check posts, Veterinary Epidemiology Center (VEC), Central Veterinary Laboratory (CVL), District Livestock Service Centers, and provide transportations to enable zoonotic disease inspection, surveillance, and quarantine. The Animal Health Information System (AHIS) developed by the IDA financed AICP would be expanded in terms of network and disease coverage. This would be undertaken in collaboration with the AHIF-financed Regional Training Program in Epidemiology and Bio-security¹⁵. The component would also train Livestock Service Officers, para-vets, farmers, security personnel, and other key stakeholder on disease awareness, inspection/detection, prevention, and bio-security. In enhancing preparedness, the project would also review veterinary legislations and implement the regulatory framework on food safety,¹⁶ in collaboration with MOHP. The project would also finance key studies (including identification of priority zoonotic diseases as well as high-risk districts in relation to the Component B and their impact on human health – jointly studied with DOHS).

Enhancing response and control will involve reinforcement and expanded bio-security training and awareness building at all levels, upgrading quarantine facilities at border check points, providing transportation and communications equipment in support of these facilities, including training of personnel. Selected bird markets will be modernized and model small-scale bird slaughter facilities developed. Prevention will be supported by awareness campaigns, bio-security and quarantine measures (described earlier) climate related risk mapping and increased capacity to deliver animal health services through strategic planning and additional training. The live bird market would replicate good practices in Vietnam and Nigeria, by enhancing bio-security at slaughterhouses and collection points developed by the ADB-financed Community Based Livestock Project (CBLP – closed in 2009). There would also be training on bio-security and food safety among farmers, traders, and animal health workers.

Institutional capacity will be enhanced as a result of this project to address not only zoonotic but non-zoonotic diseases. The recent OIE PVS Gap analysis provides a starting point to highlight institutional capacities, which in some cases need to be further clarified within both a development and OH context. While several basic institutional capacity needs have been provided for in this project and while the project builds on from AICP to address other zoonotic and non-zoonotic diseases it does not, and obviously cannot, address all institutional capacity needs but rather aims to expand and strengthen the existing foundation.

The project management sub-component would finance DLS operating costs. It will also finance setting up a crosscutting planning and monitoring unit to support overall project implementation. The unit will be composed of financial management, procurement, and monitoring consultants to monitor implementation progress and support to address bottlenecks.

Component B. Climate sensitive disease risk mitigation (US\$ 2 million). This component is implemented by Nepal Agriculture Research Council (NARC). NARC was established in 1991 under "Nepal Agricultural Research Council Act - 1991" to conduct agricultural research in the country to

¹⁵ The World Bank supported Regional Training Program in Epidemiology and Bio-security (phase I and II ongoing) trained 70 veterinarians and medical doctors from seven countries in South Asia to obtain master's degree in epidemiology. Five students participated from Nepal (two veterinarians and three medical doctors). The program would set up a center of excellence in epidemiology or One Health hub in Nepal by strengthening the Nepal Health Research Council and/or the Central Veterinary Laboratory and developing national and regional information networks. The regional program is financed under the AHI Facility for US\$ 7.7 million with EU funding.

¹⁶ The food safety regulations have already been reviewed and updated by MOAC by the Bank-financed Project for Agriculture Competitiveness and Trade (PACT).

uplift the economic level of the people. Their objectives are to (a) conduct qualitative studies and researches on different aspects of agriculture; (b) identify the existing problems in agriculture and find out the solution; and (c) assist government in formulation of agricultural policies and strategies. This component focuses on innovation, and NARC is the responsible organization for research and innovation in Nepal and hence the implementation organization for this component.

This component leverages with two World Bank supported projects, namely Pilot Program for Climate Resilience (PPCR) and Global Agriculture and Food Security Program (GAFSP). NARC, in coordination with Ministry of Agriculture and Cooperative, is leading efforts to raise awareness and identify priority areas to address climate threats through the Pilot Program for Climate Resilience (PPCR). In addition, NARC would work closely with DLS in transferring technologies at the farm level. The anticipated outcomes of this component can add values to and support of GAFSP Development and Adoption and Technology Transfer and Adaption aspects of the project. The activities under this component would be aligned with the National Adaptation Program of Action (NAPA), thus, would contribute to the PPCR Climate Resilience Agriculture Management Information System and also link to UK Global Food Security Program.

This program is innovative in introducing climate change mitigation in the proposed “One Health” approach by improving climate assessment on diseases and concrete interventions to mitigate climate risk. It would support building livestock climate resilience by benchmarking priority climate sensitive diseases and their impact on production, collecting information on climate vulnerability, and designing and implementing early warning mechanisms to mitigate livestock diseases risk induced by climate change. The component would support the Nepal Agriculture Research Council (NARC) to survey climate impact on livestock diseases in different agro-ecological zones. This would include (i) monitoring impacts on changes in epidemiology of diseases and emergence of new diseases (including parasitic diseases), (ii) statistical analysis of historical precipitation and temperatures (daily and seasonal) vis-à-vis emergence of climate sensitive disease cases, such as Japanese Encephalitis and bluetongue, and (iii) developing early action plans to mitigate climate induced risks, including extreme weather and preparedness for El Niño and La Niña years.

Specifically, there are four Sub-components in this project. They are:

- **Risk Mapping.** Retrospective Analysis of parasitic diseases (specifically fasciola, gastro – intestinal nematodes) and Japanese Encephalitis in order to develop a geographic diseases risk map. The Risk Map will be a combination of the parasitic disease and Japanese Encephalitis incidences and precipitation and temperature. If possible, vulnerability is recommended to be considered in developing Risk Maps.
- **Early Warning system for parasitic diseases and Japanese Encephalitis.** Conduct a study, including statistical analysis, of historical precipitation and temperature versus parasitic diseases and Japanese Encephalitis as a baseline to develop an outlook for these two diseases incidence. The outlook will be based on probability forecasts. The climatic variability will first focus on strong El Nino and La Nina years.
- **General surveillance of emerging diseases and tick Varieties.** Conduct general Surveillance of emerging diseases, including bluetongue, and tick variety in selected sampling areas.
- **Conduct socio-economic analysis** for the specific diseases studies in this project, namely parasitic diseases and Japanese Encephalitis. A reference of the economic analysis tool is attached in this email for your consideration

Component C. Human Health (US\$ 2 million). The component would support the Department of Health Services (DOHS) in enhancing surveillance, diagnostics, and case management of priority zoonotic diseases. More specifically, it would (a) strengthen sentinel sites by equipping them with adequate diagnostic facilities, treatment facilities (isolation, quarantine, drugs, ICU care) and trained

personnel; (b) conduct frequent BCC campaigns to raise awareness about the priority zoonoses among the risk populations and advocate ways to avert the transmission of infections from animals to humans; and (c) conduct active/passive surveillance 6 monthly to inform the health service centers in order to prepare them upfront for any untoward incidence.

In operationalizing the one health approach, DoHS or its Epidemiology Division would hold meetings with NARC and DLS quarterly or every trimester and also during an outbreak so as to be well informed with the current priority zoonoses and decide on joint effective actions. They would deploy personnel at the sites where there is a zoonotic disease outbreak in (a) livestock to take stock of the situation and likely human cases and (b) humans to ensure that effective actions for case management are taken. And in the spirit of SWAp of Nepal health sector program (NHSP), this component will later be incorporated into the next annual work plan and budget (AWPB) discussions of NHSP in order to enhance harmonization and reduce the MOHP's administrative burden. The incorporation of this component into the health sector program would establish ownership by the government and ensure sustainability after the project ends. This component will later be incorporated into the next annual work plan and budget (AWPB) discussions of the on-going IDA-financed Second Health Population and Nutrition and HIV/AIDS Project (NHSP) in order to enhance harmonization and reduce the MOHP's administrative burden. NHSP will manage the environmental implications for waste management in this component.

Component D. Communication. This component would support DLS and DOHS in undertaking communication activities. These would include strengthening avian influenza communication strategy to encompass priority zoonotic disease, raising awareness on those diseases and preventive practices (including food safety and bio-security), improving risk communication (in particular, community mobilization), undertaking KAP surveys, and building institutional capacity. The communication component was successfully implemented in the AICP, as it improved the awareness rate by 21 percent (from 61 percent to 82 percent). The media awareness campaign covered at least 50 percent of the population in 26 high-risk districts.¹⁷ AICP also trained 750 media spokespersons on HPAI, and 1,703 security personnel, traders, and farmers on bio-security and quarantine. In strengthening these activities, DLS has mainstreamed communication activities in the Directorate of Extension Services and Training, and this component would build their capacity in undertaking these activities with technical support from a consulting firm.

The Nepal Agriculture Research Council (NARC) would implement this component. This would leverage PPCR and Global Agriculture and Food Security Program (GAFSP). NARC is an autonomous agency under MOAC to conduct agricultural research in the country in uplifting rural livelihoods. In PPCR, NARC is to identify priority areas to address climate threats, raise awareness, and transfer technologies at farm level in collaboration with DLS. The proposed GAFSP would build on technology transfer by strengthening evaluation and release of improved breeds and developing location specific animal husbandry practices.

Geographic Scope

Project activities will be implemented throughout the country and influence the entire geographic region of Nepal. The project will identify priority zoonotic diseases and high-risk districts, where key prevention and control activities, such as surveillance, diagnostics, quarantine, bio-security, and communication, would be implemented. Activities to strengthen DLS and DOHS capacities in disease mitigation will also focus on these key districts.

¹⁷ Messages were aired on one national television and 26 local FM radio stations. The April 2006 Aide Memoire indicates that the access to radio is estimated at 50 percent for rural population and 62 percent for urban but access to television estimated at 1 percent for rural and 20 percent for urban.

Project Cost and Financing

The project uses sector investment lending (SIL) instrument and is expected to be financed by the Avian Human Influenza Facility (AHIF) grant and government contributions. AHIF is administered by the Bank and was established with contributions from various bilateral and multilateral donors, including the European Commission (EC). Approximately, 45 avian influenza control projects have been partially or fully financed by AHIF. In South Asia, the AHIF is financing a regional bio-security and epidemiology program which includes Nepal among other countries.¹⁸ The proposed project would be financed by a grant in the amount of US\$10 million. The project meets all the criteria for this grant and applicable Bank policies.

Table 1. Project Cost and Financing

Project Components	Project cost	AHIF Financing	% Financing
Animal Health	US\$ 5.4 million	US\$ 5.4 million	100%
2.Climate Sensitive	US\$ 2 million	US\$ 2 million	
Human Health*	US\$ 2 million	US\$ 0 million	
Communication	US\$ 0.6 million	US\$ 0.6 million	
Total Baseline Costs			
Physical contingencies			
Price contingencies			
Total Project Costs	US\$ 10 million	US\$ 8 million	100%
Interest During Implementation			
Front-End Fees			
Total Financing Required	US\$ 10 million	US\$ 8 million	

*To be financed and managed by the Second Nepal Human Health, Nutrition and Population and HIV/AIDS Project.

Program Objective and Phases

The project is designed to be self-contained and to achieve measurable results in a short timeframe. However, by building on and further strengthening the successful institutional mechanism created under the AICP, by financing several studies and diagnostics, and by collecting data, the project is expected to pave the way for a larger government-lead program within a comprehensive livestock and One Health strategy that the project would contribute to develop.

Lessons Learned and Reflected in the Project Design

Several lessons have been learned from the Nepal Avian Influenza Control Project (AICP – closed on July 31, 2011) and other avian influenza or one health projects Bank-wide have been reflected in the project design:

¹⁸ The Regional Training Program in Epidemiology and Bio-security trained 70 veterinarians and medical doctors from seven countries in South Asia to obtain master's degree in epidemiology. Five students participated from Nepal (two veterinarians and three medical doctors). The program would set up a center of excellence in epidemiology or one health hub in Nepal by strengthening the Nepal Health Research Council and/or the Central Veterinary Laboratory and developing national and regional information networks. The regional program is financed under the AHIF Facility for US\$ 7.7 million.

The project builds on regional and global experiences in operationalizing the one health approach. The South Asia Region is implementing the Regional Training Program in Epidemiology and Bio-security, in which five Nepalese students (two veterinarians and three medical doctors) are studying to obtain a master's degree in epidemiology. This program would also develop one health hubs in the region. In the Eastern Europe and Central Asia Region, the one health project has developed tools to evaluate economic burden of zoonotic diseases and performance of public health service in controlling zoonotic diseases. The proposed project would build on these investments.

Model live bird markets would enhance bio-security and food safety. The proposed project would establish model live bird/meat markets by replicating good practices in Vietnam and Nigeria. The markets would enhance bio-security in poultry/ meat supply chains and food safety through several activities including building awareness through a communication campaign.

Planning and monitoring unit would enhance FM, procurement and M&E capacity. One of AICP weaknesses was limited capacities in FM, procurement, and monitoring and evaluation (M&E). In the proposed project, DLS would establish a crosscutting planning and monitoring unit to provide technical support and facilitate project implementation.

Steering and technical committees should ensure multi-sectoral coordination. Based on in-country and global experiences in managing a multi-sectoral project, a high-level steering committee and a working-level technical committee would be established to facilitate coordination between DLS, NARC, and DOHS.

The project would collaborate with UN partners. Because FAO and WHO are leading global One Health agenda in the UN system, the project will continue engaging the UN agencies and key donors, such as EU and USAID, as strategic partners.

The environmental performance of AICP was evaluated and found to be satisfactory. Water was even tested around the disposal pits and no contamination was found indicating the soundness of the Standard Operating Procedures followed.

Implementation

Institutional and Implementation Arrangements

The project will be implemented by three agencies, which are DLS, DOHS, and NARC, and the funds will be channeled to DLS and DOHS. Both DLS and DOHS maintained the AICP structures and will implement the animal and human health components respectively. Although limited, the AICP built capacity in project management, FM, procurement, and M&E at DLS and DOHS. In an effort to provide continuity, the Government has maintained the project staff and facilities for the proposed project.

A cross-cutting planning and monitoring unit with three consultants with FM, procurement and planning/monitoring expertise will support and provide on the job training to DLS, DOHS and NARC during the implementation period. The communication component will be implemented by both DLS and DOHS. However, in this project, DLS would hire a consultant to implement the activities (awareness raising and capacity building).

The climate change component will be implemented by NARC. Funds will flow from DLS to NARC through an internal MOU, since the two agencies are under the same Ministry of Agriculture and Cooperatives (MOAC). DLS will establish an internal procedure acceptable to the Bank to channel funds to NARC.

In facilitating coordination between three agencies at ministerial and working levels and building on the inter-agency structure successfully tested under the AICP, the Government of Nepal will broaden the scope of the AI steering and technical committees to effectively coordinate the project at

ministerial and working levels under a broader One Health approach. The steering committee will be a high-level ministerial coordination body, chaired by MOAC Secretary. The technical committee will be at working level chaired by DLS Director General to coordinate and support project implementation. Table 2 below details the committee members. The crosscutting planning and monitoring unit would directly report to the technical committee on the implementation progress and facilitate their planning.

Table 2. Members of Steering and Technical Committees

Steering Committee	Technical Committee
<p>Chair: Secretary, MOAC</p> <p>Representatives at Joint secretary level</p> <ul style="list-style-type: none"> - National Planning Commission - Min of finance - Min of Health - Foreign Aid Coordination, MoAC <p>Representatives at DG level</p> <ul style="list-style-type: none"> - Executive Director NARC - DG DOL - DG Health <p>Secretary of the Steering Committee will be the Project Coordinator, Animal Health, while the Project Coordinator Human Health will act as member.</p>	<p>Chair: DG, DLS</p> <ul style="list-style-type: none"> - Project Coordinator, Animal Health - Project Coordinator, Human Health - Program Director, Training - Program Director, Animal Health - Program Director, Livestock Production - Program Director, Market - Chief Animal Health Division of NARC <p>Member Secretary of the technical committee will be the Chief of the Veterinary Epidemiology Center. Similar arrangements if needed can be replicated at district and regional level.</p>

Project administration mechanisms

The project has four components: (a) animal health, (b) climate sensitive disease risk mitigation, (c) human health, and (d) communication. The animal health component will be implemented by the Department of Livestock Services (DLS) under the Ministry of Agriculture and Cooperatives (MOAC). The climate sensitive disease risk mitigation component will be implemented by the Nepal Agriculture Research Council (NARC), also under MOAC. The human health component will be implemented by the Department of Health Services (DOHS) under the Ministry of Health and Population (MOHP). The communication component is a cross-cutting component and will be implemented jointly by DLS and DOHS. Each component has a project management sub-component.

The proposed project would have the same fund flow mechanisms with the AICP. The grant will be channeled to DLS and DOHS. Both DLS and DOHS maintained the AICP structures and will implement the animal and human health components respectively. Although limited, capacity was built in project management, FM, procurement, and M&E at DLS and DOHS. In the proposed project, these capacities would be enhanced by the crosscutting planning and monitoring unit, which would be placed in DLS to provide technical support to three agencies. The communication component will be implemented by both DLS and DOHS with technical support from a consulting firm (in particular, strategy and KAP surveys).

Results Monitoring and Evaluation

During the AICP implementation, the M&E capacity was gradually built at both DLS and DOHS, although limited. The proposed project would further enhance their capacities on data collection (segregated by gender or target group), reporting, and utilization. Each component would monitor its

outcome and outputs and report progress in achieving outcome indicators to the crosscutting planning and monitoring unit. This unit would assess bottlenecks in implementation and report to the Steering and Technical Committees to facilitate overall planning and coordination between the implementing agencies.

Sustainability

The proposed project builds on the previous AICP institutional capacity, further strengthens and broadens its scope to other key zoonoses. In responding to outbreaks of avian influenza in animals (containment) and H1N1 in humans (case management), the institutional system has proven DLS and DOHS capacity beyond the project support. It is expected that at the end of the project implementation, the DLS and DOHS capacity in zoonoses planning, preparedness and prevention will be further strengthened. In addition, government resources have been timely allocated to maintain the current units in DLS and DOHS. The government is also committed to permanently maintain these structures and fund them beyond the project period.

MOAC has a high level of interest and ownership in the proposed project. Both MOAC and MOHP jointly implemented the AICP, and their cooperation would continue in designing and implementing this project, in particular, at the district level. Among donors, EU is supporting FAO, OIE, and WHO in implementing a regional highly pathogenic and emerging disease (HPED) control project (2009-2012) and is also developing a regional One Health project in Asia, including Nepal (2013-2016). The Bank team is in close collaboration with the EU team, as this project is funded by EU through the AHIF.

KEY RISKS AND MITIGATION MEASURES

Risk Ratings Summary Table

Stakeholder Risk	Rating
Implementing Agency Risk	
Capacity	Substantial
Governance	Substantial
Project Risk	
Design	High
Social and Environmental	Moderate
Program and Donor	Low
Delivery Monitoring and Sustainability	Moderate
Other (Optional)	
Other (Optional)	
Overall Implementation Risk	Substantial

Overall Risk Rating Explanation

The main risk in the implementation is that activities would have to be completed in two years, because the AHI Facility which finances this project will close on June 30, 2014. However, potential delays are mitigated by: (i) the substantial experience already acquired under the previous AICP project, (ii) the continuity of the existing structure established under the previous project, and (iii) the establishment of a facilitating unit for FM, procurement and planning/monitoring activities. The procurement plans for all components has been developed with frontload key civil works and large goods procurement (such as a transportation package). Another risk is the complex project design which is multi-sectoral in nature and complements and integrates other ongoing projects such as PPCR. It would also specifically complement the GAFSP project, by potentially sharing intermediate outcome indicators and/or providing information to feed into their M&E system. Because both GAFSP

and the proposed project are developed by the Ministry of Agriculture and Cooperatives (MOAC) in cooperation with the Ministry of Health and Population (MOHP), a natural convergence between the two projects is expected.

Safeguards Risks, Policies and Management

Because this project may have some important physical implications indirectly, the World Bank's Environmental Assessment 4.01 Safeguard Policy applies which means that environmental impacts of project activities must be evaluated and a plan should be developed to manage any negative impacts. No other World Bank environmental or social safeguard policies apply to this project.

This Environmental Management Plan (EMP) is the safeguard instrument developed to cover the entire Zoonoses Control Project except for the Human Health Component which will be managed under the Second Nepal Health Sector Program (IDA's Second Health, Nutrition, Population and HIV Project) environmental management arrangements. This project is unlikely to cause any significant adverse environmental impacts.

Policy and Legal Framework

The Government of Nepal (GON) has prepared strategic plan, "National Avian Influenza Control and Influenza Pandemic Preparedness and Response Plan (NAIIPPRP)" with the objective of protecting people and livestock against future outbreaks of AI within Nepal border. This plan has been build on the National Contingency Plan for Highly Pathogenic Avian Influenza that was in place since 2004. And the government of Nepal will prepare strategic plan for Other HPED (Foot and Mouth Disease—FMD, PPR, CSF and meat borne zoonoses).

The Animal Health and Livestock Services Act 1998, the Slaughterhouse and Meat Inspection Act 1999 and the Nepal Veterinary Council Act 1999 are the three acts relevant to the livestock sector. These acts and their rules made provisions and define procedures relating to animal quarantine, regulating slaughter of animals and sale of meat, disposal of animal or products of animal origin or livestock product materials, disease information, disinfection, etc. For example, the Animal Health and Livestock Services Regulation 1999 requires that any animal, products of animal origin or livestock product materials be either burnt or buried in 3 feet deep pit or disposed of in accordance with the procedures set forth by the Department. The dead body of an animal should be disposed of so as not to causing spread of disease and the vehicle transporting such animal shall have to be disinfected.

The Department of Livestock Services has issued the Hatchery Standard: the standard also includes code of practice and defines requirements for hatchery building, sanitation, and bio-security.

The Environmental Protection Act (EPA) 1997 and Environmental Protection Rules (EPR) 1997 define when environmental study is required, including procedures for undertaking such study. According to the Environmental Protection Rules 1997 establishing a farm for **2000 to 5000 domestic fowl** require Initial Environmental Examination (IEE) and an Environmental Impact Assessment (EIA) is necessary if the number exceeds 5000. Importing, sale, supply, storage, disposal and use of substances defined by the government as toxic require environmental studies if these exceeds certain threshold: for example, an IEE is required for storage of 100 kg to 1 ton of toxic substances.

The strategic plan, acts and regulations, and standard provides basic legal framework for environmental management in the Nepal Zoonoses Control Project.

The implementation/ enforcement of the regulatory provisions have been generally weak, basically due to capacity constraints, weak monitoring and inadequacy or lack of details in the provisions. The GON has already prepared a *Guideline for Investigation, Prevention and Control of Bird Flu (Highly Pathogenic Avian Influenza)*: this explains standard operating procedures (SOP) for investigation, prevention and control of bird flu and will prepared similar documents of FMD, PPR and meat borne disease. This is much more detailed than the provisions made in the rules, and adapts relevant international / neighbouring countries experiences.

Institutional Capacity for Environmental Management

This project will build on GON's ability to address zoonotic and non-zoonotic diseases that were strengthened during AICP including management of environmental aspects. There will be a crosscutting planning and monitoring unit to support overall project implementation which will include monitoring consultants to monitor implementation progress (including environmental safeguards) and support to address bottlenecks. As in the AICP, the Deputy Project Coordinator located in the PMU, a Veterinary Doctor with previous environmental training, will be responsible for safeguards matters. In case very specific environmental expertise becomes necessary, the project will contract an environmental expert.

Potential Environmental Impact

Most activities proposed under the Nepal Zoonoses Control Project, like its similar predecessor the Avian Influenza Control Project, are likely to have limited adverse environmental impacts as they are designed to enhance capacity of relevant agencies, facilitate preparation for timely detection and dealing with HPED outbreaks in poultry, hygienic meat production and raise stakeholders' awareness regarding zoonotic diseases. In fact, the goal of the project is to prevent human and animal deaths from select zoonotic diseases by strengthening GON's capacity to effectively respond: containing the threat.

No large-scale, significant or irreversible negative impacts are likely from this project since project activities mainly consist of studies, increased coordination, case management and communication/information campaigns. However, there are minor physical implications from some project interventions therefore Environmental Assessment is necessary.

Project activities which could have direct environmental impacts are the following:

1. Component A. Animal Health:
 - a. The diagnosis, control and prevention of infectious disease activities as well as the strategy and action plan to be developed may have environmental implications.
 - b. The refurbishing and upgrading of some of the DLS Offices and enhancing bio-security at the small-scale limited model live bird/meat markets (alterations to existing structures) would produce small-scale impacts from solid, liquid and chemical wastes and some noise. The refurbishing will be managed by the application of the *Public Works Directives* which include adequate and appropriate coverage of environmental management of construction activities.
2. Component B. Climate Sensitive Disease Risk Mitigation: are only research, benchmarking and studies and thus will not directly have any impacts on the environment. The studies themselves are looking at the impacts of climate change, an environmental phenomenon, on livestock diseases in

- different agro-ecological zones and how to build livestock climate resilience. This component does not need any mitigation since it is a type of environmental assessment.
3. Component C. Human Health: This component's environmental impacts will be managed under the Nepal Health Sector Program II (NHSP) which has its own Environmental Management Plans. It will therefore not be covered here. This component's environmental impacts would issue from the diagnostics and case management of priority zoonotic diseases. Such activities may result in collection of samples/ specimen, laboratory (similar to medical wastes) and setting up of sentinel outposts: these can easily be mitigated.
 4. Component D. Communication does not have any negative environmental consequences that need to be mitigated. In fact, it should contribute positively by raising awareness of preventative practices (including food safety and bio-security).

Though not directly resulting from the project, significant adverse indirect environmental impacts could occur during emergency operation activities for containment of HPED outbreaks from *inappropriate culling and transportation of infected and at-risk birds, disposal of carcasses, and use of chemicals for disinfection*. Although this project is only financing studies, research, surveillance, testing and refurbishing, it also indirectly relates to these activities since the project is designed to strengthen GON to effectively manage an outbreak. These risks, however, will be minimized by the project through the building of enhanced capacity in the GON to safely carry out these activities during an outbreak. Moreover, consideration of these risks must be balanced against the greater risks resulting from failure to strengthen the GON to contain and respond to an outbreak. Following are the main risks and concerns if an outbreak occurs and appropriate mitigation measures are not in place:

1. Risk of human exposure and spread of HPED due to: improper culling and disposal of dead birds and lack of or improper use of personal protection equipment (PPE).
2. Release of chemicals in the environment and risk of human exposure/ intoxication in the process of disinfection; release of chemicals and infectious agents into the environment and risk of human exposure from inadequate laboratory waste management or transportation; water and air pollution risks from disposal of carcasses, farm waste, and laboratory waste, etc.

Mitigation

The identified environmental impacts of the project could be avoided or minimized to acceptable level by integrating environmental and public health safety aspects in the design and implementation of activities. Training on these measures and monitoring preparation are included in the project in order to ensure effective implementation of the recommended measures.

The project will follow all: Nepalese environmental laws, rules, regulations and policies; World Bank environmental and social Safeguard Policies including the Environment, Health and Safety Guidelines (notably the General Guidelines for construction and the Health Care Facilities Guidelines¹⁹ and any other Guideline which becomes applicable at any point during project implementation). Any deviations from World Bank Policies must receive clearance from the Bank and provide adequate justification.

Environmental safeguards are mainstreamed in the Standard Operating Procedures (SOP) for the project: these will not only ensure implementation of environmental measures in the project, but are likely to positively influence environmental practices and performance in the sector in general. All these are likely to result improved environmental management in the sector and hence positive environmental impacts in the long-run.

¹⁹ This is most pertinent to the topic of the management of health care wastes.

Direct Impacts

Table 3. Environmental Management Plan to Mitigate Potential Adverse Direct Impacts of the Nepal Zoonoses Control Project.

Component A. Animal Health

Project Activity	Potential Impact/Issue	Mitigation Measures	Mitigation, Monitoring and Supervision Responsibility
Institutional Capacity Building			
a. Enhance capacity for planning, surveillance, diagnosis, control, response and prevention to diseases through supporting legislation, studies, economic analysis.	No potential direct adverse effects however such analytical work/legislation will affect implementation of response to diseases which may have environmental consequences.	Such studies should take into consideration environmental impacts of activities proposed such as culling, sampling, testing and associated waste management strategies as outlined in this EMP in Table 4.	Project Management Unit checks and ensures through various methods such as reviewing Terms of Reference for research or developing policy and adding provisions for environmental consideration when necessary or reviewing drafts of documents to ensure inclusion of environmental considerations.
b. Refurbishing of existing physical facilities of DLSDLS Offices. Upgrading of existing key DLS facilities such as quarantine check posts, Veterinary Epidemiology Center (VEC), Central Veterinary Laboratory, DLS Service Centers.	Minor impacts such as noise, dust, sanitation, etc., due to limited construction activities.	Follow standard construction practices as prescribed in the <i>Public Works Directives</i> which includes appropriate environmental management consideration.	Project Management Unit ensures that health, safety and environment guidelines including the Environmental Management of Refurbishing/Upgrading Activities in <i>Public Works Directives</i> in relevant bidding and other contractor documents governing the refurbishing/upgrading activities. Construction Supervision team ensures contractor compliance with the Public Works Directives.
c. Development of model live bird/meat market which may involve minor construction on already	Minor impacts such as noise, dust, sanitation, etc., due to limited construction activities. Long-term waste management	Follow standard construction practices as prescribed in the <i>Public Works Directives</i> which includes appropriate environmental management consideration.	Construction Supervision team (or equivalent responsible person) ensures compliance with the Public Works by the contractor (person doing actual construction).

Project Activity	Potential Impact/Issue	Mitigation Measures	Mitigation, Monitoring and Supervision Responsibility
existing facilities.	during operation of markets to avoid effluent and solid waste pollution of drinking water or other environmental services enjoyed by communities is a concern.		Other parties with some responsibility: Directorate of Livestock promotion and market. DLS Veterinary Public Health Municipalities
d. Capacity building of Livestock Service Officers, para-vets, farmers, security personnel and other key stakeholders on disease awareness, inspection/detection, prevention and bio-security.	No negative environmental impacts. This will also increase the capacity of the stakeholders in managing environmental impacts and concerns.	Training also to include relevant environmental management and safety measures recommended in this EMP.	Directorate of Livestock Services and Communication ensure inclusion of environmental safeguards in training course. Animal Health Directorate checks the course before training is organized and visits random samples of training events. Project Management Unit checks and ensures the inclusion of relevant environmental safeguards in training course by appropriate methods such as ensuring inclusion for such considerations in Terms of Reference, lesson plans, etc.
<u>Component D. Communication</u>			
Advocacy, social mobilization and behavioural change communication	No adverse environmental impacts. This can play positive role in promoting improved environmental management.	Sensitize stakeholders for environmental good practices, safeguard requirements and disseminate management guidelines.	Directorate of Livestock Services and Communication ensure inclusion of environmental aspects in the communication campaign as necessary. Animal Health Directorate checks the campaign strategy and plan inclusion of environmental aspects in the communication campaign as necessary before campaign starts.

Indirect Impacts

Since the project will finance formulation of legislation, strategies and other policies or action plans to guide implementation of prevention and control of animal diseases, it will impact implementation and could have physical consequences. Information on possible consequences of potential activities is provided in Table 4 as an easy reference for those developing the legislation, policies, plans and strategies to understand the environmental implications of actions that will result from implementation as well as the mitigation measures that are suggested. The information presented here may suggest to the policy maker/strategist that specialized analysis and mitigation strategies requiring specialized expertise may be necessary.

Table 4. Environmental Management Plan to Mitigate Potential Adverse Indirect Impacts/Activities of the Nepal Zoonoses Control Project²⁰

Animal Health Component

Project Activity	Potential Impact/Issue²¹	Mitigation Measures	Mitigation, Monitoring and Supervision Responsibility
Institutional Capacity Building: Legislation, Strategy, Planning Formulation, Surveillance, Diagnosis, Control, Response and Prevention			Policy makers, strategists, researchers must take the need for mitigation and worker safety measures into consideration when developing action plans to implement legislation, strategy or plans for responses and management of outbreaks/HPEDs.

²⁰ These potential impacts and issues are not financed or supported by this project. They are possible and likely in some cases as plans and strategies whose development is financed by the project are implemented. This information is provided as an easy reference for those developing the legislation, policies, plans and strategies to understand the environmental implications of actions that will result from implementation as well as the mitigation measures that are suggested. The information presented here may suggest to the policy maker/strategist that specialized analysis and mitigation strategies requiring specialized expertise may be necessary.

²¹ For consideration.

Project Activity	Potential Impact/Issue²¹	Mitigation Measures	Mitigation, Monitoring and Supervision Responsibility
	Collection of samples specimens from backyard poultry, organized poultry farm and sentinel birds (samples or specimen would include blood – serum samples as well as tracheal and cloacae swabs). Sampling team is at risk of exposure to infection.	In normal case, wear generally prescribed safety items such as mask, globe and other. Sampling from the area identified as high AI and other disease risk, use SOP prescribed procedures and measures. Train staff.	DLS supervises and ensure that safety procedure fully followed. Animal Health Directorate randomly checks the availability of safety gear and use of safety procedures during sampling (once every six months).
	Increased load / samples at laboratories and increased amount of laboratory wastes generation lead to increased risk of pollution and infections	Appropriate laboratory waste management practices	Concerned laboratory authority ensures that proper waste system is in-place and waste is managed properly. Animal Health directorate checks waste management practices in all laboratories every six months.
	Haphazard disposal of syringe/ needle / swap etc., causing pollution, cross-contamination and public health hazard.	Disinfect and burn these items in appropriate chamber or bury in a pit.	DLS supervise and ensure implementation of the mitigation. Animal Health Directorate monitors the practices randomly (once every six month).
	Chemical disinfection of certain sampling items such as globes. Chemical pollution and human exposure to chemicals-intoxication and burn.	Use only the safe/ prescribed chemical in prescribed amount only by trained person. Use personal protective equipment (PPE) as necessary.	Follow standard laboratory disinfection protocol.
	Risk of disease transmission from sentinel bird to wild bird or vice versa.	Use only healthy, disease free bird as sentinel bird. SOP to be applied to AI infected sentinel bird (s) in same way as infected domestic bird.	DLS
	Transportation of infected samples poses risk of virus	Collection transport in closed containers that do not leak or release air emissions	Sampling team under supervision of DLS implements mitigations

Project Activity	Potential Impact/Issue ²¹	Mitigation Measures	Mitigation, Monitoring and Supervision Responsibility
	spreading and exposure of personnel	<p>Only use trained and certified personnel that have access to and use the recommended protective gear.</p> <p>Only use personnel that have been vaccinated.</p>	Regional Directorate checks/ monitors / verifies availability of containers and protective gear. Randomly checks proper use of these. District Health Office monitors health status/ record of the personnel involved (six monthly).
	<p>Animal Quarantine Transportation/ communication facilities, and host of equipments such as chilling and fumigating equipments, sprayers, etc. Potential impacts are from use of chemicals.</p>	<p>Mitigation of potential impacts from use of chemicals: Use only the safe/ prescribed chemical in prescribed amount only by trained person.</p> <p>Use personal protective equipment (PPE) as necessary.</p>	Various parties formulating strategy, legislation, planning, control, response and prevention.
Formulation of legislation, strategy, planning and training activities for Disease Emergency Response	<p>Activities: - Formation of Rapid Response Teams (RRTs) -Training and equipping RRTs on HPED Control and Outbreak Containment Operation.</p> <p>No adverse impacts. Training can enhance RRTs environmental management capacity during control and containment operations.</p>	Training should also include key environmental issues and appropriate ways to manage the environmental impacts/ concerns.	<p>Directorate of Livestock Services and Communication ensure inclusion of environmental safeguards in training course.</p> <p>Animal Health Directorate checks the course before training is organized and visits random samples of training events.</p> <p>Project Coordination Unit ensures compliance by ensuring inclusion of environmental safeguards in training agenda.</p>
	Stocking of chemicals in outbreak of HPED situation. Chemical intoxication and burns or accidents.	Follow standard stocking practice. <i>Environmental Protection Rule</i> requires environmental study for storage, use and disposal of defined/ notified toxic substances in quantity exceeding 100 kg.	<p>Project Coordination Unit ensures compliance with EPR and other legal requirements.</p> <p>Animal Health Directorate checks code of conduct for storage of chemicals and status of stored chemicals (annually).</p>
	HPED Control and Outbreak Containment Operation	Follow procedure prescribed by the <i>Bird Flu (Highly pathogenic Avian Influenza)</i>	DLS and Action Team follow the standard procedures.

Project Activity	Potential Impact/Issue ²¹	Mitigation Measures	Mitigation, Monitoring and Supervision Responsibility
	<p>Activities:</p> <ol style="list-style-type: none"> 1. Collection and disposal of infected dead birds 2. Culling of birds <p>Risks:</p> <ol style="list-style-type: none"> 1. Spreading the virus and exposure of personnel 2. Intoxication when using chemical for culling 3. Stress, heat and fatigue from working in PPE 4. Distress to residents, farmers and owners (particularly children) observing on-site culling of their birds 	<p><i>Investigation, Prevention and Control Guidelines / Standard Operating Procedures (SOP) for destruction and disposal of affected poultry and disinfection of HPAI infected places.</i></p> <p>Use of personnel protective equipment (PPE), and use only the safe/ prescribed chemical in prescribed amount only by trained person.</p> <p>Workers must have rest/breaks.</p> <p>Public education/ awareness and warning through communication campaign.</p> <p>Provide compensation for loss of the birds and counselling for distressed people. Prohibit children from observing culling.</p>	<p>DoLS and Animal Health Directorate checks availability of PPE and other necessary items (six monthly)</p> <p>DoLS and Animal Health Directorate check that technicians and workers are adequately trained and prepared for quick mobilization (annually).</p> <p>DoLS and Animal Health Directorate check plan and activities related to awareness and communication campaign as well as counselling.</p>
	<p>Transportation of infective materials and dead birds poses risk of spreading the virus and exposure to personnel.</p>	<p>Collection and transport in closed container that does not leak or release air emissions.</p> <p>Only use trained and certified personnel that have access to and use the recommended protective gear.</p> <p>Only use personnel that have been vaccinated.</p>	<p>DLS and Action Team follow the standard procedures.</p> <p>DoLS and Animal Health Directorate check that technicians and workers are adequately trained and prepared for quick mobilization (annually).</p> <p>Regional Directorate checks/ monitors / verifies availability of containers and protective gear (six-monthly). Randomly checks proper use of these. District Health Office monitors health status/ record of the personnel involved (during outbreaks).</p>
	<p>Disposal of culled birds'</p>	<p>Chose proper disposal method and site</p>	<p>DLS and Rapid Response Team to check proper</p>

Project Activity	Potential Impact/Issue ²¹	Mitigation Measures	Mitigation, Monitoring and Supervision Responsibility
	<p>carcasses (pit-burial, or burning: SOP recommends burial as preferred option in Nepal condition) poses risk of spreading virus, pollution of groundwater as well as surface water, and odour and air pollution; scavenging animals could dig up the burial site; volume expansion and expulsion of carcasses from the pit due to gas produced by decomposition.</p>	<p>considering environmental factors as prescribed in SOP/ the <i>Bird Flu (Highly pathogenic Avian Influenza) Investigation, Prevention and Control Guidelines</i> as well as provision <i>the Animal Health and Livestock Services Regulation 2056 (2000)</i>.</p> <p>Design of the burial pit should ensure protection against digging by scavenging animals.</p> <p>Closure of the pit ensuring no-expulsion of carcasses from the pit (e.g. by sufficient cover material on top, gas vent-pipe)</p>	<p>site.</p> <p>DoLS and Animal Health Directorate checks availability of PPE and other necessary items (six monthly) and appropriateness of burial pit design and closure plan.</p> <p>During outbreaks, Regional Directorate checks/ monitors / verifies randomly the use of standard procedures.</p>
	<p>Disposal of infected materials including farm waste (manure, eggs, feathers) and contaminated equipment, disposable PPE etc. pose risk of virus spreading and/ or human exposure:</p> <ul style="list-style-type: none"> - during movement and transport of manure - when handling contaminated eggs, hatchery waste and / or equipment - including risk of water pollution (surface and ground) - sites unpleasant in appearance (i.e., bad aesthetics), public nuisance and air pollution/ odour. 	<p>Use the standard procedures prescribed in the <i>Bird Flu (Highly pathogenic Avian Influenza) Investigation, Prevention and Control Guidelines</i> (or in the SOP for the destruction and disposal of affected poultry and disinfection of HPAI infected places) as well as provision of the <i>Animal Health and Livestock Services Regulation 2056 (2000)</i>.</p>	<p>DLS and Rapid Response Team to check proper site.</p> <p>DoLS and Animal Health Directorate checks availability of PPE and other necessary items (six monthly) and appropriateness of burial pit design and closure plan.</p> <p>During outbreaks, Regional Directorate checks/ monitors / verifies randomly the use of standard procedures.</p>

Project Activity	Potential Impact/Issue²¹	Mitigation Measures	Mitigation, Monitoring and Supervision Responsibility
	Disinfection of infected premises (or decontamination) poses: <ul style="list-style-type: none"> • Risk of virus dissemination • Risk of water pollution (surface and groundwater) • Risk of intoxication and chemical burns when using chemicals. 	Use the standard procedures prescribed in the Bird Flu (Highly pathogenic Avian Influenza) Investigation, Prevention and Control Guidelines (or in the SOP for the destruction and disposal of affected poultry and disinfection of HPAI infected places) as well as provision of Schedule -1 of the Animal Health and Livestock Services Regulation 2056 (2000).	DLS and Action Team follow prescribed standard procedure. Animal Health Directorate checks availability/ stocking of disinfectants (six monthly) Regional Directorate checks/ monitors / verifies disinfection practices and procedures in random samples (during outbreaks).

Budget

The budget for environmental management will be developed as part of the budget for each specific Zoonoses Control Project activity. Project funds are set aside to finance 3 staff weeks per year of project operation of an environmental expert to be contracted if necessary. Any other environmental activities will be adequately funded as 15% of project total budget will be unallocated to cover any unexpected or special circumstances which may arise. This amount of funding is more than adequate for project (including environmental management) needs.

EMP Implementation

The following are the responsibilities of each project coordinating entity:

PMU: The overall responsibility for integrating and coordinating the efforts of all agencies involved in implementing the EMP shall be with the project management unit (PMU). The PMU shall include a core team of technical animal and human health specialists amongst other experts. As in the AICP (the previous project), the Deputy Project Coordinator located in the PMU, a Veterinary Doctor with previous environmental training, will be responsible for safeguards matters. The PMU is responsible for the following:

- (i) the implementation of mitigation measures identified in the EMP
- (ii) periodic reporting of EMP implementation activities
- (iii) maintaining adequate budget to implement the identified mitigation measures
- (iv) ensuring that contractors adhere to and comply with any health, safety and environment directives issued by relevant and authorized national and sub-national bodies guidelines (including such measures in *Public Works Directives*) through random visits to selected sites.
- (v) reviewing draft versions of legislation, strategy, planning and other relevant documents to ensure that they take pertinent environmental issues into consideration in a meaningful way and suggesting improvements as necessary. If significant points are not addressed, PMU should not clear such documents.
- (vi) reviewing draft versions of training program agendas to ensure inclusion of environmental safeguards in training courses and ensuring appropriate expertise is available to convey such information.
- (vii) ensuring that the project adheres to Nepal environmental laws and regulations.

In case very specific environmental expertise becomes necessary, the project will contract an environmental expert.

Steering Committee: The steering committee is responsible to review project progress, approve work plans and ensure coordination among participating ministries (MOAC and MOHP) and international partners. This committee will also ensure through the technical committee that adequate resources are available for the EMP implementation.

Technical Committee: The technical committee is responsible for ensuring adequate budget and procurement of goods, works and services for implementation of the EMP. The committee will coordinate the MOAC and MOHP on matters connected with EMP implementation.

DLS: In addition to other non-EMP specific responsibilities, DLS is responsible for developing and implementing appropriate procedures and standards for the implementation and management of all animal health measures, arranging animal carcass disposal and coordinating the activities for the diagnosis and investigation of livestock diseases.

Monitoring and Supervision

There will be a cross-cutting planning and monitoring unit housed at DLS. The unit would assess the implementation progress in each component (to be reported by DLS on the Animal Health and Communication components; NARC for the Climate Change Component and DOHS for the Human Health Component), identify bottlenecks in implementation and report to the Steering and Technical Committees to facilitate overall planning and coordination between the implementing agencies.

Project Management Unit (PMU)

The PMU will be responsible for:

- (i) the implementation of mitigation measures identified in the EMP
- (ii) monitoring and periodic reporting of EMP implementation activities
- (iii) ensuring that contractors adhere to and comply with any health, safety and environment directives issued by relevant and authorized national and sub-national bodies guidelines (including such measures in *Public Works Directives*) through random visits to selected sites.
- (iv) reviewing draft versions of legislation, strategy, planning and other relevant documents to ensure that they take pertinent environmental issues into consideration in a meaningful way and suggesting improvements as necessary. If significant points are not addressed, PMU should not clear such documents.
- (v) reviewing draft versions of terms of reference, training program agendas and the like to ensure inclusion of environmental safeguards in training courses and ensuring appropriate expertise is available to convey such information.

The World Bank

The World Bank has responsibility to ensure its safeguard policies are complied and should review legislation, strategy, planning and other documents to ensure that pertinent environmental issues are taken into consideration appropriately. There will be missions including field visits to follow-up on GON implementation of this project.

The cross-cutting planning and monitoring unit in DLS will monitor the mainstreaming of environmental management and its application in the project as measured by the following indicators:

5. Completion of plans for appropriate waste disposal methods during operation of model live bird/meat markets including solid and liquid waste for each market established. Plan can be brief detailing how waste is to be collected, where and how specifically and final disposal site. Once model live bird/meat markets are established, evidence (including pictures, site visit reports (completed by M&E or other acceptable party) or other of the successful operation of waste collection and disposal strategy.
6. Completion of reports on site-specific screening for each and every refurbishing, renovation or other minor construction site (including the model live bird/meat markets).
7. Legislation, strategy, terms of reference and other docs have an environmental section or mention project environmental concerns or the use of SOPs or other way to demonstrate consideration of environmental matters in its formulation.
8. Reference to the need to abide by environmental and safety requirements from the Public Works Directive (PWD) in completed bidding documents, and other such documents to govern contractor refurbishing, renovation or other minor construction as necessary.

Timeline

The Project is expected to begin implementation May 1, 2012 and will continue for two years. All environmental mitigation institutional arrangements are already in place since they were developed, used and strengthened during the original AICP project.

Consultation

Three consultations on the project, including this EMP or safeguards aspects have been conducted. At least two more consultations in the districts are planned before this project is finalized. The last consultation held March 23, 2012 found that stakeholders requested burial pits. A consultation on the EMP as well as other aspects of the project was held February 29, 2012 with 130 stakeholders. Input on the EMP has been requested from a local NGO. Additionally consultation on outcomes of the previous project, AICP, was conducted in June 2011. A previous draft of this EMP was disclosed in country in English on February 27, 2012 on the Department of Livestock Services and MoAC's websites (www.dls.gov.np and www.moac.gov.np). A summary was disclosed in Nepali on March 20, 2012. Both versions will be disclosed in April 2012 in InfoShop. Information from these consultations was considered during the design of this project and its EMP. In the March 2012 consultation, the project decided to add 75 burial pits and instruments to be financed by the project and GON.

The proposed project would engage FAO, OIE, and WHO, which are key UN agencies in leading the "One Health" agenda, as partners. It would also consult with key donors on this agenda as well as in the livestock sector, including USAID, EU, and ADB. The AICP implementation was supported by three UN partners, which were FAO, WHO, and UNICEF, under the overall framework of the Global Program for Avian Influenza Control and Human Pandemic Preparedness and Response (GPAI)²².

²² GPAI was endorsed by the Bank's Board of Directors in January 2006, as a horizontal adaptable program loan (APL) with a global envelope of \$500 million. GPAI was developed in 2005, at the height of the H5N1 spread in humans in several Asian countries. As AI virus constantly evolves with unpredictable results, the risk of a human pandemic was considered highly likely. Because of the multi-sectoral nature, involving health, agriculture, economics, finance, planning, and others, the Bank was considered the best suited institution to effectively coordinate UN and other specialized agencies, including FAO, WHO, and UNICEF.