

Environmental Assessment and Review Framework

August 2014

Lao People's Democratic Republic: Northern Smallholder Livestock Commercialization Project

Prepared by the Ministry of Agriculture and Forestry for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 5 September 2014)

Currency unit	–	kip (KN)
KN1.00	=	\$0.000119
\$1.00	=	KN8.410

ABBREVIATIONS

ADB	-	Asian Development Bank
CEP	-	Commitment on Environmental Protection
CPC	-	Communal People's committee
CPMU	-	Central Project Management Unit
CSB	-	Commune Supervision Board
DARD	-	Department of Agriculture and Rural Development
DONRE	-	Department of Natural Resources and Environment
DPC	-	District Peoples Committee
EARF	-	Environmental Assessment and Review Framework
EIAR	-	Environmental Impact Assessment Report
EMP	-	Environmental Management Plan
GAP	-	good agricultural practice
GMS	-	Greater Mekong Subregion
IEE	-	Initial Environmental Examination
IFAD	-	International Fund for Agricultural Development
IMC	-	Independent Monitoring Consultant
IRDPCP	-	Integrated Rural Development Project in Central Provinces
LDP	-	Northern Region Sustainable Livelihoods through Livestock Development Project
LPG	-	livestock production group
LVC	-	livestock value chain
MARD	-	Ministry of Agriculture and Rural Development
MONRE	-	Ministry of Natural Resources and Environment
NPMO	-	National Project Management Office
PC	-	Peoples Committee
PMU	-	Project Management Unit
PPC	-	Provincial Peoples Committee
PPME	-	Participatory Project Monitoring and Evaluation
PPMU	-	Provincial Project Management Unit
SPS	-	Safeguard Policy Statement (of the ADB, 2009)
TOR	-	term of references
UXO	-	Unexploded Ordnance

NOTE

In this report, "\$" refers to US dollars.

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I. INTRODUCTION

A. The Project

1. The Northern Smallholder Livestock Commercialization Project (the Project) builds upon the recently completed Northern Region Sustainable Livelihoods through Livestock Development Project (LDP) by continuing to work on production at the farm level and by making improvements in selected livestock value chains. LDP has helped to form and strengthen 1,621 livestock production groups (LPGs) in 327 villages, which consist of farmers who voluntarily associate to improve their livelihoods. The Project will complement other ADB initiatives to improve trade in Greater Subregion (GMS) including: (i) the Core Agricultural Support Project II, for food safety, linkages to cross-border value chains and livestock management; (ii) the recently started Trade Facilitation: Improved Phytosanitary Handling in GMS Trade Project, for developing cross border trade; and (iii) the GMS Tourism Infrastructure for Inclusive Growth Project, currently under preparation for approval in 2014, which will be developing tourism value chains of which food is an important component particularly in Luang Prabang town.

2. The Project will raise rural incomes by enabling livestock producers and agribusinesses to meet the high demand for Lao livestock products, including live and processed beef, swine, goats and poultry. It will be carried out in the four northern provinces of Houaphanh, Luang Namtha, Luang Prabang and Xieng Khuang. The Project will make investments in strengthening smallholder LPGs improving value chain infrastructure and improving the knowledge base for livestock production. The total project cost is estimated at \$15.15 million. ADB will provide \$15 million from its Special Funds Resources, while \$0.15 million equivalent will be provided by the Government in counterpart funds. The International Fund for Agricultural Development (IFAD) will provide additional parallel financing of \$10 million in a mix of loan and grant.

3. The Project has been categorized as 'B' for environment in accordance with the Safeguard Policy Statement (SPS, 2009)¹ of the Asian Development Bank (ADB). It is to be funded under a program loan. Although this project does not take a sector approach, where investments are prepared during project implementation, the locations of the project's planned infrastructure components are yet to be determined and therefore further environmental assessment will be required for these. This environmental assessment and review framework (EARF) guides the process of environmental assessment and management planning for these infrastructure investments. It sets out institutional arrangements, responsibilities and procedures in relation to environmental management and monitoring, and defines environmental assessment requirements complying with the applicable laws and regulations of the Government and with ADB SPS (2009).

B. Investments to be Assessed

4. The project will have four outputs, as follows:

- (i) **Output 1: Strengthened Smallholder and Livestock Value Chain (LVC) Actors.** The project will: (i) help to organize smallholders into SLPMGs of 20 to 30 members and provide technical and business training oriented towards Global Good Agriculture Practice (GAP). Training for poorer members of the SLPMG's communities will also be provided to enable them to join the SLPMGs; (ii) train

¹ ADB. 2009. Safeguard Policy Statement. Manila.

other actors in the LVC in good practice that will raise meat quality, sanitation and food safety standards; (iii) carry out studies on policy issues to improve the regulatory environment; and (iv) cooperate with the Northern Agriculture and Forestry College (NAFC) to improve curricula, practice in butchering and provide opportunities for scholarship and intern experience.

- (ii) **Output 2: Effective Livestock Value Chains.** The project will assist SLPMGs at the village level to obtain needed equipment and materials to improve production. It will construct or improve for demonstration and training purposes, slaughtering and meat processing facilities as well as provincial and district wet markets.
- (iii) **Output 3: Improved access to commercially based sustainable LVC credit.**
- (iv) **Output 4: Enhanced project management.** This will comprise activities that include building counterpart capacity to ensure that financial management and procurement, civil works design and supervision, environmental and social safeguards monitoring, and the preparation of operation and maintenance (O&M) plans for project facilities are compliant with ADB and government requirements.

5. This EARF provides guidance for specific environmental assessment and management planning in relation to the infrastructure components within output 2, namely slaughtering and meat processing facilities, and wet markets.

II. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

A. Legal Framework for environmental assessment

6. The law governing the protection of the environment, including the assessment and management of projects, is the Environmental Protection Law (EPL), 1999. An update was prepared and released in 2013, reflecting rapid economic growth and socioeconomic development and the need to address increasing conflict and social impacts as well as pollution issues with some larger projects, increasing foreign investment, and climate change. Responsibilities and procedures for conducting environmental assessments, together with the requirements for environmental monitoring of projects, have been further revised in the Decree on Environmental Impact Assessment (the EIA Decree, of 16 February 2010), for which an unofficial English translation is available. The EIA decree is pursuant to the EPL.

7. The EIA Decree assigns primary responsibility for undertaking environmental assessment of projects to the project developer. The Ministry of Natural Resources and Environment (MONRE) is responsible for review and approval of environmental assessment reports, co-ordination of monitoring and evaluation, and issuance of compliance certificates. These functions may be fulfilled at central or provincial level, depending on the scope, size and nature of the project.

8. Investment projects are categorized according to a schedule in the EIA Decree as Category 1-small scale investments that require an IEE, or Category 2- large scale investments that require an EIA. Where a project is of a type that is not listed, an investment application should be submitted to MONRE for screening. The Decree sets out procedures, rights and responsibilities for the preparation and approval of IEEs and the preparation, approval, implementation and verification of environmental management and monitoring plans.

9. The EIA Decree stipulates responsibilities for the key stakeholders involved in the process. These are listed as MONRE (or the local DONRE), local administrations, development project responsible agencies (taken to mean, essentially, the line agency either at central or provincial level), concerned sector bodies and project developers. The responsibilities relate to the process of IEE preparation and approval. The tasks required, from inception through to approval, are investigations, field inspections, information dissemination, public consultation, review of draft IEEs, updating IEEs in response to comments and the issuance of certificates of compliance. The roles and responsibilities of the key stakeholder groups for the process, as described in Article 9 of the EIA decree, are summarized in Table 1.

Table 1: Roles of Stakeholders in Environmental Assessment

Stakeholders	Roles									Notes
	Investigations	Dissemination meetings	Field inspections	Consultation Meetings	IEE preparation	Review and comment on IEE	Incorporation of comment in IEE	Approval	Issuance of certification	
MONRE			✓	✓				✓	✓	MONRE may nominate provincial Water Resources and Environment Departments to act on its behalf
Local Administrations	✓	✓		✓					✓	Certification based on verification by MONRE
Line Ministries						✓				
Project Developers	✓	✓	✓	✓	✓		✓			

10. Project developers are defined in Article 3 of the EIA Decree as any person, legal entity or organization, from the public or private sector, who/which is licensed to undertake study, survey, design, construction and operation of an investment project. Procedures for IEE preparation and approval are described in Article 10 of the EIA Decree and are summarized as follows:

- (i) The project developer prepares the IEE report, in cooperation with other stakeholder agencies and including consultation at village, district and provincial levels;
- (ii) On completion of consultations at district level and subsequent updating of the IEE report based on comments received, the project developer should send the IEE report to the relevant line ministry. The line ministry should review the IEE report within 10 days and either accept or instruct the project developer to provide further information or make revisions;

- (iii) Once accepted by the line ministry, the project developer should submit 15 hard copies and a soft copy of the IEE to the line ministry;
- (iv) The line ministry should send the IEE report to the local administration and concerned agencies within five days of receipt;
- (v) Recipients of the IEE report must send any comments on the IEE reports within 20 working days of receipt;
- (vi) The line ministry should convene a technical workshop to review the IEE and, if necessary, undertake a field visit, following which comments are sent to MONRE with a recommendation as to the acceptability of the IEE; and
- (vii) MONRE decides whether to issue a certificate of compliance, instructs the project developer to amend the IEE report, instructs the project developer to undertake further investigations, or to reject the IEE report.

B. Further legislation pertinent to the project

11. In addition to the EIA decree, relevant legislation that is to be referred to in the process of planning project investments are the following:

- (i) **The Law on Livestock Production and Veterinary Matters No.03/NA (2008).** The Livestock law defines the principles, rules and regulations related to the organization, management and inspection of livestock production and veterinary activities in order to boost, promote and develop the nation's potential in animal production and related livestock resources. Its objectives are: to help to guarantee food security and ensure standards to safeguard consumers; to create the conditions necessary for the growth and development of the animal product processing industry; to participate and contribute to strong social and economic development (i.e. National Development); to help to create a better quality of life for the people of Lao PDR; and to ensure sustainable environmental protection.
- (ii) **The “Draft” Law on Food (2013)** This Law defines principles, regulations and measures on the management, monitoring and inspection of food [and] food business to ensure quality, effectiveness, safety and nutrition and to aim at protecting consumers' health, promoting food business, and contributing to the protection and development of the nation.

III. ANTICIPATED ENVIRONMENTAL IMPACTS

12. Output 2 will include small scale investments in items such as fences, scales and loading ramps, with a maximum value of \$2,500. There will also be some infrastructure investments, which will require environmental examination. These include slaughterhouses, meat processing facilities and wet markets. The magnitude and nature of impacts is largely dependent on scale and location of the facilities. The investments are specifically intended to introduce sanitary practices in the slaughter and processing of livestock and the management of waste, designs will therefore include facilities for treatment and where feasible of liquid waste (including blood) and solid waste, including items such as hide, feathers and bone.

13. A summary of potential impacts that need to be addressed during the design, construction and operation phases of the project is given in **Table 2** below:

Table 2: Potential Environmental Impacts and Mitigation Measures

Potential Environmental Impact	Nature and Duration	Locations	Mitigation Measure(s)
Design and Preconstruction Phase			
Effects on cultural heritage and biodiversity	Impairment of the natural qualities of sites such as temples, shrines, protected areas and dense forests	Slaughterhouses, processing facilities and markets	Mandatory siting of all facilities well away from any sites of cultural or biodiversity significance.
Effects on downstream water use	Drainage from markets will carry a high nutrient load, which can impair the quality of water in nearby waterways	Markets	Provision for improved drainage systems and of treatment of effluent from market sites, such as small settling ponds.
	Waste from slaughterhouses and meat processing facilities is potentially highly hazardous, if released from the site in an untreated form.	Slaughterhouses; meat processing facilities	(i) Selection of sites that are in designated industrial zones or are distant from residential areas, and that have sufficient space for adequate waste treatment facilities such as settling/aeration ponds and digesters (ii) design of appropriate treatment facilities to render products such as blood and animal effluent safe to handle, and to distribute as by-products.
Flood hazard	Many towns in Lao PDR are situated on valley floors, potentially vulnerable to hazardous flooding events	All facilities	Identification of flood hazard zones (using GIS data where available) and siting of facilities away from them
Construction			
Release of silt	Release of silt from excavation or landscaping work, into drains and waterways	All sites where earthworks/landscaping takes place to prepare for construction	(i) Adequate supervision of the works, (confining excavation works to the dry months, (iii) discretionary use of silt traps where warranted and (iv) careful placing of excavated material
Dust generation	Release of dust from site preparation (earthworks; demolition), site preparation and storage of materials	Sites near homes, schools, hospitals or offices	Wetting of excavation sites and stockpiled material during dry and windy weather, when within 50m of an occupied dwelling

Potential Environmental Impact	Nature and Duration	Locations	Mitigation Measure(s)
Effects of temporary worker populations	Where teams of workers or technicians are brought to the site to carry out construction work, there may be potential risks associated with generation of liquid and solid waste around temporary accommodation, and transmission of communicable diseases.	Larger construction sites (slaughterhouses and meat processing factory)	(i) engaging local contractors as far as capabilities allow, to undertake the construction, (ii) consultation with local people on acceptable areas for siting of facilities, (iii) if construction camps are required, installation of suitable toilets such as pit latrines and grey water drainage facilities such as soakage pits (iv) arrangements for collection of solid waste, (v) briefing of workers and awareness raising of the local population on dangers of communicable diseases.
Safety hazards to workers and local people	Hazards from use of plant and machinery, fuels and hazardous substances, and dangerous operations such as excavation and working at height.	All construction sites	Allocation of responsibility for site safety to the Contractor's site supervisors staff, who will ensure that all reasonable safety measures, such as use of safety clothing and equipment and placing of hazard warnings are taken.
Disruption of traffic	Construction works are likely to involve temporary market closure and constriction of access roads	All construction sites within or adjoining towns	Contractors should plan construction operations in consultation with market users, and local commune or district authorities can arrange temporary trading sites while construction work takes place
Operation			
Obstruction of drains in towns	Large quantities of solid waste are handled by markets, which can be casually discarded into nearby drains, causing obstruction and ponding.	Markets	Provision for improved drainage systems and support to commune authorities and market management organizations in awareness raising over solid waste collection and management
Occurrence of water related diseases	In existing markets, uneven market floors and poor drainage can result in ponding of water, providing habitats in which insect vectors of disease can breed	All facilities	For markets: provision for concrete market floors, roofs over trading areas, and improved drainage systems, making the markets easier to keep clean and free of areas where insects can breed. For slaughterhouses and meat processing facilities: inclusion in design of drainage for the buildings, drained, hard parking surfaces and drainage and landscaping for the entire compound to prevent ponding

Potential Environmental Impact	Nature and Duration	Locations	Mitigation Measure(s)
Eventual degradation of water bodies	Slaughterhouses, meat processing facilities and markets which produce waste high in biological oxygen demand	All facilities	Sound operation and maintenance of treatment facilities included with design and construction of each facility. Technical assistance to capability building in O&M.
Obstruction to traffic by inadequate parking facilities for markets	Traffic problems frequently occur in existing markets in towns in Lao PDR, as vehicles often hold up traffic flows while offloading, and constrict traffic flows when parked at the side of the road near the market.	Markets	Provision for improved layout, including loading/offloading bays away from the road, and for vehicle parking facilities
Concentration of solid waste	Solid waste accumulates in markets during trading hours, and if left on site, causes unsanitary conditions and encouraging vermin.	Markets	Provision for areas where solid waste is placed by market users, and readily collected for transport to a suitable landfill site.
Hazardous waste	Products such as blood, hides and feathers can contain growing populations of dangerous pathogens and become hazardous, if not rapidly collected from the work site treated.	Slaughterhouses and meat processing facilities	Provision of facilities for collection and treatment of all waste, and training in O&M.
Odor	Waste from carcasses can rapidly decompose and emit strong odor	Slaughterhouses and meat processing facilities	Technical assistance to training in management of each facility, including procedures for regular sluicing/cleaning of work surfaces and floors, and allocation of responsibility to supervisory and management staff. Training in O&M of treatment facilities to ensure continuous operation.

IV. ENVIRONMENTAL ASSESSMENT FOR PROJECT INVESTMENTS

14. The following procedures provide guidance for assessment of environmental impacts, reporting and environmental management planning and have been designed to meet both Government of Lao PDR (GOL) requirements as specified in the EIA Decree (2010) and ADB requirements, as specified in the Safeguards Policy Statement (2009).

A. Responsibilities and Authorities

15. The executing agency (EA) will be MAF. National Project Management Office (NPMO) will retain responsibilities for central level project management and coordination. NPMO will be responsible for overall coordination and project delivery. This will include (i) reporting on project progress to the EA and to ADB; (ii) consolidation of the project work plan; (iii) establishment and management of PPME; (iv) recruitment of consultants and procurement of civil works and goods; (v) establishment and management of a sub-account and supervision and consolidation of 4 sub-accounts in each PIU; and (vi) monitoring of safeguard compliances.

16. The participating provincial governments will be the implementing agencies, which will discharge their responsibility through their Provincial Agriculture and Forestry Offices (PAFOs) and their District Agriculture and Forestry Offices (DAFOs). Provincial implementation units (PIUs), established under the previous Livestock Development Project (LDP), will be strengthened to coordinate implementation in each project province. The PIU will comprise one provincial coordinator (Deputy Director of PAFO) and one full-time deputy coordinator (from the PAFO Planning Unit) for provincial implementation, and the necessary administrative support staff. PAFO will coordinate with provincial line agencies including the governor's office, industry and commerce, customs, etc.

17. MAF will, in terms of the EIA decree, assume the role of the "project developer" and be responsible for IEE preparation and approval. MAF, through its DLF, and with technical support coordinated through PAFO/PIU will ensure that consultations and environmental assessment investigations take place in accordance with the EIA decree (ensuring that consultations take place at provincial, district and community level as appropriate) and for responding to comments from all stakeholder groups.

B. Categorization of Investments

18. The schedule to the EIA subdecree (2010) places food processing factories for the meat industry in category 1 (requiring an IEE) if the output is under 20 T/day, and category 2 if the output exceeds 20 T/day. Categorization must be confirmed by MNRE via the NPMO, and with the ADB, through use of the ADB's rapid environmental assessment checklists.

19. The magnitude of environmental impacts will be determined largely by the scale of the investments, however the following considerations should be applied to site selection and the preparation of design briefs to limit potential environmental impacts.

- (i) Distance from Urban Development: Slaughterhouses and meat processing facilities should not be located close to dwellings, schools, churches and other public or commercial buildings to limit or eliminate possible nuisance from noise and smell. Likely future commercial and residential developments should also be taken into account.

- (ii) Accessibility: The site should be accessible from a permanent road to allow ready transport of both livestock and meat and to minimize traffic impacts.
- (iii) Water Supply: A water supply sufficient for processing and maintaining sanitary conditions is essential. The volume available must comply with appropriate design standards for slaughterhouses and processing facilities. If a town water supply is not available (either because none exists in the area where the slaughterhouse is to be located, or because the requirements for the facility exceed the capacity of the existing supply) a separate source must be identified. As constant groundwater sources are rare in the Northern Provinces, this is likely to involve a surface water source and an appropriate treatment system for the facility.
- (iv) Waste management and recycling. A system for rapid collection of blood, bone, hide, feathers and any other discarded animal parts is necessary to kill any pathogens and render these items safe for handling and, where appropriate, further processing into products that can be sold or distributed, such as soil additives. Consideration should be given to the use of a biogas digester.

C. Preparation of Investments

20. Small investments will take place over the life of the project. Larger scale investment in infrastructure, including two slaughterhouses and one meat processing facility and wet markets, will take place in the second or third year of the project. The following pre-conditions are necessary for the siting of these investments:

- (i) Sites will be outside a flood prone zone;
- (ii) Sites will be at least 100m away from any temple, monastery or site of cultural significance;
- (iii) Sites will be outside the buffer zone of any protected area; and
- (iv) Where possible, sites will be within a designated industrial area

D. IEE Preparation

21. The following steps will ensure for the compliance with the Environmental Protection Law (amended, 2013), the EIA Decree (2010) and the ADB SPS 2009.

- (i) The IEE will be prepared by the Technical Unit of NPMO with participation from the relevant PAFOs/PCUs and with the assistance from loan implementation consultants (LIC);
- (ii) The draft IEEs will be disclosed at district level and updated based on comments received, and then sent to MAF for review;
- (iii) MAF reviews the IEEs and either accepts or instructs the Technical Unit of NPMO to provide further information or revisions; On acceptance, 15 hard copies of the IEEs will be submitted to MAF;
- (iv) MAF will send the IEE reports to MONRE or relevant DONREs for review and approval; and
- (v) IEEs will be sent to ADB for review and endorsement.

V. PUBLIC CONSULTATION, INFORMATION DISCLOSURE AND GRIEVANCE

A. Public Consultation and Disclosure

22. Public consultation shall include discussions with members of project beneficiary groups, affected persons and commune officials, as a part of IEE preparation, in order to ascertain any concerns that may need to be addressed. The consultation procedures shall be conducted as set out the EIA Decree (2010) and include the following aspects as per the ADB's SPS (2009):

- (i) A summary of the proposed works;
- (ii) A summary of objectives and likely positive and negative environmental impacts for the investment, covering the impacts in design, construction and operation phases for engaging stakeholders, including information disclosure and consultation with affected people and other stakeholders;
- (iii) Invitation for feedback in respect of any areas of concern that the public may have;
- (iv) Suggested means of implementation; and
- (v) Summarizes comments and concerns.

23. Dates, attendees, topics covered and conclusions should be recorded and included in the IEE reports. Once the IEE is completed, versions in both English and in relevant Lao ethnic group language should be distributed to Districts or villages, and made available for public review for at least 30 days. All IEEs will be submitted to ADB for disclosure on the ADB website.

B. Grievance Redress Mechanism

24. The grievance redress mechanism (GRM) developed by NPMO/PIU/DIU is in place (Figure 1) to ensure that any complaint raised by the community related to adverse environmental impacts will be addressed in a timely manner. In each commune where the investments are to be made, Community Supervision Board will be set up and facilitate the timely.

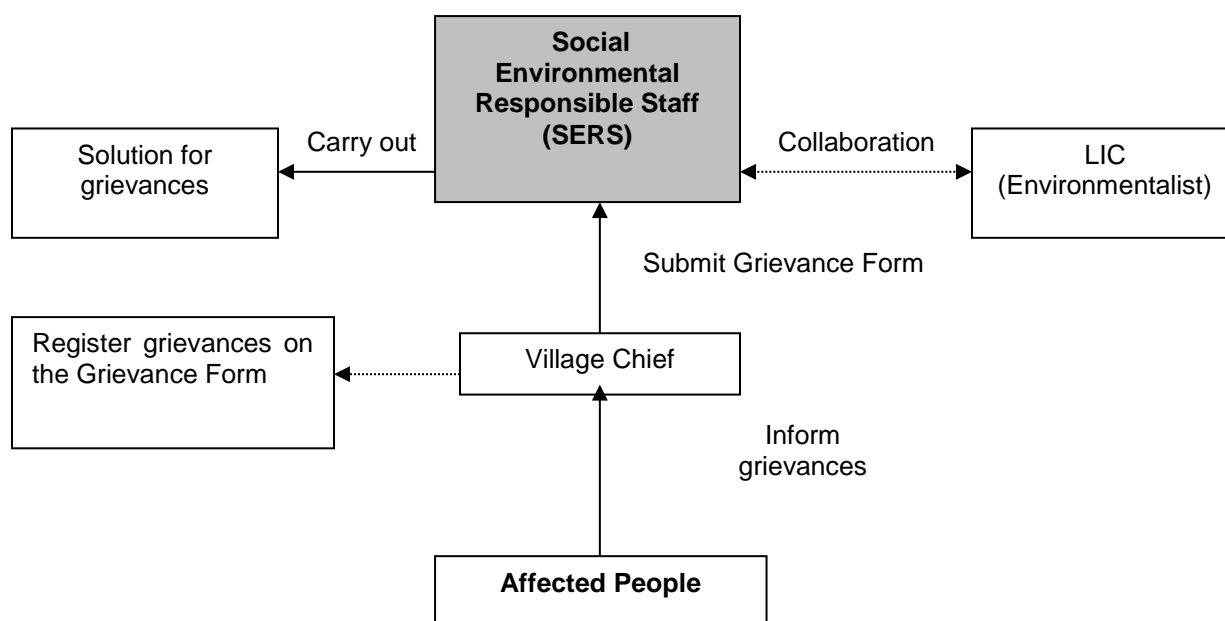
25. The grievances/complaints can be made in relation to the design, the implementation and the maintenance of the project activities including the misuse of funds, resettlement and environmental issues. The procedures for Grievance/Complaints and Redress Mechanism as below described:

- (i) **Stage 1:** The grievance/complaints can be made by an individual household or as a community depending on the type of complaint that they are facing. First the complainant must go to meet the village chief to explain their problem. The Village Head will then review the complaint and either redress it at village level or refer to a higher authority if a solution cannot be found. The Village Chief will provide and assist to fill in the Project Complaint Register Form by clearly statement or describing the causes of the problems and possible/preferable settlement of the problems. The results of the settlement will be put in writing and signed by both parties;
- (ii) **Stage 2:** After completing the Project Complaint Register Form one copy will be filed at Village Chief Office, one copy for the individual complainant or representative of the complainants and each will be submitted to the District Task Force and DIU. Within 15 working days after receiving the official complaint, the District Task Force, Village Chief and DIU and including the related field

specialists, will visit the complainant at his village to find out the cause of problems and agree up on the solution. This solution will be signed by all concerned parties;

- (iii) **Stage 3:** In case the complainant is dissatisfied with the District Task Force and DIU in settling the complaints/grievance, the Official Complaint will be submitted to the PIU/PAFO/DAFO Task Force to settle the complaint within 10 Working days. This solution will be signed by all concerned parties;
- (iv) **Stage 4:** In case of the final settlement or solution of Grievance/Complaint is not acceptable to the dissatisfied complainant, the next step, will be to submitted to the People's Court at each level. This implies that as this is now a judicial matter the applicable Lao PDR Laws will be applied. However, at this stage, the responsibility will be with the courts and not with the District and Provincial Task Force or PIU/PAFO/DAFO Task Force.

Figure 1: Grievance Redress Mechanism



Procedure on Grievance Absorption and Solution

VI. INSTITUTIONAL ARRANGEMENT AND RESPONSIBILITIES

26. The responsible agency will be the executing agency, MAF, which will discharge its function through the National Project Management Office (NPMO) which has responsibility for overall planning and coordination of implementation, including programming, budgeting, financial planning, accounting and reporting. NPMO will receive overall direction and policy guidance from a Project Steering Committee (PSC). PSC will include one representative from MONRE.

27. Within the meaning of the EIA Decree, the project developer is MAF. As such, MAF is responsible for ensuring that environmental compliance certification is obtained, prior to allowing works to commence (EIA Decree section 4 (1)), the accuracy of information in the IEE (or EIA) and to ensure adherence to the EMP. The PIU in the Provincial Agricultural Office (PAFO) and the DIU in the District Agricultural Office (DAFO) will be responsible for day to day implementation, on behalf of the Provincial Government, including liaison with DONRE and other provincial and district level agencies.

28. The government and the ADB agreed to include a safeguard specialist in the Start-up component to build awareness among the project stakeholders of the importance of compliance with safeguards, including environment. An input of 4 person-months has been provided. In addition, there is provision in the Loan Implementation Consultant (LIC) package for one international and one national environment specialists to support NPMO for IEE and EMP preparation for all Project investments, provide safeguard review services, which will include advisory to NPMO for integration of environment issues in the procurement process, and support for project environmental monitoring. There is provision for 6 person-months of international input and 18 person-months of national input. The proposed TOR are in Attachment 1.

VII. MONITORING AND REPORTING

A. Environmental Monitoring Programs

29. General environmental safeguard monitoring with associated grievance mechanisms will be undertaken by the environmental specialists in LIC during the construction phase, and by PAFO/DAFO or Operating Company during the operations phase to ensure compliance with the required policies and procedures and plans for minimization of negative environmental impacts. Environmental monitoring programs have been developed in terms of environmental effects monitoring and environmental compliance monitoring.

30. Environmental effects monitoring is carried out to examine impacts of the investment in relation to ambient environmental conditions e.g. ambient air, noise, sensitive water bodies, soil and groundwater and sensitive ecosystems etc.

31. Environmental compliance monitoring is carried out to test compliance with operating procedures, technical standards and/or contractor specifications in the EMP e.g. the safety during construction, construction worker camp sanitation and hygiene conditions, wastes including hazardous disposal practices during construction, erosion control etc.

32. The environmental monitoring programs have been developed to reflect the generally low level of environmental impact expected to arise from implementation. Moreover, monitoring methods have been developed in recognition of existing human and technical resource levels and focus on observation based methods with quantitative monitoring recommended for key environmental issues only. For each specific investment, NPMO in consultation with PIU will determine the appropriate level of environmental monitoring that best suits local conditions and the predicted level of environmental impact.

B. Environmental Reporting System

33. Table 3 describes the reporting system that will apply to environmental management activities for each investment.

Table 3: Environmental Reporting System

Project Phase	Type of Report	Frequency	Responsibility	Submitted To Whom
Construction	Site Environmental Performance Report indicating compliance with Site EMP and monitoring results	Monthly	LIC (construction supervision)	PIU/DIU
	EMP Compliance Report indicating compliance with all EMPs and monitoring results	Quarterly	PIU	NPMO
	EMP Compliance Report indicating compliance with all EMPs and monitoring results	Bi-annually or twice during construction depending on construction duration	NPMO	ADB
	Investment Environmental Report indicating overall investment environmental performance and EMP compliance	At completion of investment	NPMO	ADB
Operation	EMP Compliance Report: Operation indicating compliance with investment EMP commitments during operation	Once per year for first two years of operation. Ongoing frequency to be determined based on review after 2 years.	NPMO and/or Operating Company	ADB

**ATTACHMENT 1: TERMS OF REFERENCE FOR ENVIRONMENT SAFEGUARD
SPECIALISTS
(6pm international; 18pm national; both intermittent)**

Qualifications: The specialists will have appropriate tertiary qualifications in environmental science or natural resource management from recognized institutions.

Experience: The specialist(s) will have more than 10 years' experience working in the field of environmental impact assessment, environment monitoring and will be familiar with the laws of Lao PDR associated with the environment. The specialist(s) shall have experience in internationally funded development projects, preferably ADB and/or World Bank-funded projects, as an environmentalist.

Duties: The environment specialists will both be recruited through the Loan Implementation Consultant. Specific tasks of the specialists will include the following:

- (i) Review the project documents and provide recommendations regarding to the environmental issues that need to be covered in IEE and EMP preparation;
- (ii) Work closely with NPMO and relevant PIUs/DIUs to support for screening and selection of the equipment and materials infrastructure investments in output 1 and the siting of 2 slaughterhouses in output 2 to ensure that these selection would compliance with the environment assessment and review framework (EARF);
- (iii) Review the reports on consultations conducted by PPTA environment consultant, identify the gap need to be added and carry out additional consultation to ensure meaningful consultation is conducted and met with ADB/ Government requirements;
- (iv) Review and comment on the design and implementation of capacity building program relating to the livestock waste management to ensure that livestock waste generated by the project will be adequately handed;
- (v) Review and provide recommendations regarding the environmental recommendations of the PPTA Final Report and the formats for environmental examinations contained therein;
- (vi) Brief the participating NPMO, PIUs, DIUs and participating district staff in participating provinces on environmental procedures and requirements for investment preparation;
- (vii) Assist NPMO and PIUs/DIUs to prepare IEEs identified in EARF, which will be approved by MONRE/DONREs and ADB;
- (vi) Visit investment locations during preparation and implementation to ensure environmental safeguards studies are being properly conducted;
- (vii) Liaise with the safeguards officers in each PIU and make spot checks during Implementation to ensure that environmental plans are being properly implemented;

- (viii) Review the existing environmental monitoring system set up in Northern Region Sustainable Livelihoods through Livestock Development Project (NRSP) and suggest any modification for the Project, if necessary.
- (ix) Support NPMO and PIUs/DIUs to run the project environmental monitoring system and prepare quarterly and semi-annual monitoring reports.
- (x) Assist in the preparation and implementation of training activities with regard to the environmental aspects of the Project;
- (xi) Review and comment for the design of the wet markets to ensure hygienic standards are maintained and wastes are managed in a sanitary manner; and
- (iv) Review and comment for the design of slaughterhouse processing and waste treatment system to ensure the effluent standard will be met during slaughterhouse implementation.

ATTACHMENT 2: SAMPLE ENVIRONMENTAL MANAGEMENT PLAN FOR DESIGN, CONSTRUCTION AND OPERATION OF A MARKET

Responsibilities for Environmental Management

1. Table A2.1 describes the mitigation measures required for design, construction and operation of a wet market, as well as the cost and responsibility allocation arrangements. Overall responsibility for implementing the Environmental Management Plan rests with PAFO, which during design and construction will be supported by the NPMO, and during operation will involve co-operation with the appropriate DAFO and the market operators. Responsibility for incorporating mitigation into scheme design rests with PAFO, supported by the project implementation consultants.
2. Responsibility for carrying out environmental mitigation of construction impacts again rests with the PAFO, as the agency responsible for construction supervision. However, the EMP should form part of the works contract documentation so that the contractor in each case incorporates the cost of mitigation into the bid price, including provision of staff and equipment necessary to carry out all mitigation tasks in full. These plans must be approved and adhered to throughout construction. DAFOs will be responsible for monitoring of compliance with the EMP, assisted by the implementation consultants.
3. During scheme operation, responsibility for mitigation rests primarily with the market users, supported by PAFO and the relevant town authority.

Table A2.1 - Environmental Management Plan Summary

Potential Environmental Impact	Mitigation measure(s)	Cost Allocation	Responsibility for Implementation
Pre-Construction Stage			
Effects on downstream water use	Provision for improved drainage systems and of treatment of effluent from market sites, such as small settling ponds.	Investment budget	NPMO / Consultants
Flood hazard	Identification of flood hazard zones (using GIS data where available) and siting of facilities away from them	Investment budget	NPMO / Consultants
Impacts from Construction			
Release of silt	(i) Adequate supervision of the works, (confining excavation works to the dry months, (iii) discretionary use of silt traps where warranted and (iv) careful placing of excavated material	Construction Cost	Contractor
Dust generation	Wetting of excavation sites and stockpiled material during dry and windy weather, when within 50m of an occupied dwelling	Construction Cost	Contractor
Safety hazards to workers and local people	Allocation of responsibility for site safety to the Contractor's site supervisors staff, who will ensure that all reasonable safety measures, such as use of safety clothing and equipment and placing of hazard warnings are taken.	Construction Cost	Contractor
Disruption of traffic	Contractors should plan construction operations in consultation with market users, and local commune or district authorities can arrange temporary trading sites while construction work takes place	Construction Cost	Contractor
Impacts from Operation			
Obstruction of drains in towns	Provision for improved drainage systems and support to commune authorities and market management organizations in awareness raising over solid waste collection and management	Included in project design	PAFO
Occurrence of water related diseases	For markets: provision for concrete market floors, roofs over trading areas, and improved drainage systems, making the markets easier to keep clean and free of areas where insects can breed.	Included in project design	PAFO
Eventual degradation of water bodies	Sound operation and maintenance of treatment facilities included with design and construction of each facility. Technical assistance to capability building in O&M.	Included in project design	PAFO
Obstruction to traffic by inadequate parking facilities for markets	Provision for improved layout, including loading/offloading bays away from the road, and for vehicle parking facilities	Included in project design	PAFO
Concentration of solid waste	Provision for areas where solid waste is placed by market users, and readily collected for transport to a suitable landfill site.	Included in project design	PAFO