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**LAO PSEMD/PMUPLE'S DEMOCRATIC REPUBLIC
PEACE INDEPENDENCE DEMOCRACY UNITY PROSPERITY**

**Ministry of Energy and Mines
Department of Electricity**

No:/MEM.DOE
Vientiane Capital, Date.....

**RURAL ELECTRIFICATION PHASE II PROJECT (REP II)
and
GEF RURAL ELECTRIFICATION PHASE II PROJECT (GEF REP II)**

DEPARTMENT OF ELECTRICITY COMPONENT

**ENVIRONMENT AND SOCIAL SAFEGUARD FRAMEWORK
(ESSF)**

January 2011

1

Contents

I. INTRODUCTION.....	4
II. SAFEGUARD POLICIES STATEMENT.....	5
III. POTENTIAL IMPACTS AND MITIGATION OF REP II and GEF REP II	7
IV. ENVIRONMENT AND SOCIAL SAFEGUARD SCREENING.....	9
V. ENVIRONMENTAL ASPECTS.....	14
VI. SOCIAL ASPECTS.....	15
Table 1. Screening Process for Each Subproject.....	10
Figure 1. Key Steps of Safeguard management for REP II and GEF REP II.....	13
Annex 1: <i>Resettlement Policy Framework</i>.....	14
Annex 2: <i>Ethnic Group Development Frameworks</i>.....	25
Annex 3: <i>Environmental Management Framework</i>.....	29

Abbreviation

PDEM	Province Department of Energy and Mines
DOE	Department of Electricity
ECI	Electrical Installation and Construction Company
EDL	Electricite Du Laos
EGDF	Ethnic Groups Development Frameworks
EIA	Environmental Impact Assessment
SEMD	Social and Environmental Management Division
EMP	Environmental Management Plan
ESA	Environmentally Sensitive Areas
ESIA	Environmental and Social Impact Assessment
ESSF	Environment and Social Safeguard Frameworks
GEF	Global Environmental Facility
GoL	Government of Lao PDR
IEE	Initial Environmental Examination
NGO	Non-Government Organisation
PMU	Project Management Unit
REP I	Rural Electrification Phase I Project
REP II	Rural Electrification Phase II Project
GEF REP II	Rural Electrification Phase II Project
RP	Resettlement Plan
RPF	Resettlement Policy Frameworks
SEMD	Social and Environment Management Division
SOM	Safeguard Operation Manual
UXO	Unexploded Ordnance
WREA	Water Resources and Environment Administration
WB	World Bank

LAO PDR:
RURAL ELECTRIFICATION PHASE II PROJECT (REP II)
and
GEF RURAL ELECTRIFICATION PHASE II PROJECT (GEF REP II)

DOE Component
Environment and Social Safeguard Framework

I. INTRODUCTION

1. ***Background.*** The Government of Lao PDR (GOL) has been implementing the Rural Electrification Project Program (REP) with support from the World Bank (WB) -- Adaptable Program Loan (APL). The program development objectives (PDOs) are to: (i) increase access to electricity of rural households in villages of targeted provinces and (ii) improve financial performance of the power sector. The program consists of three components: (A) Electricity De Laos (EDL) on grid electrification and capacity building, (B) Ministry of Energy and Mines (MEM) off-grid electrification and capacity building, and (C) Safeguard capacity building for EDL and MEM. The EDL component comprises five subcomponents: (A1) Grid Extension, (A2) Loss Reduction, (A3) IT System, (A4) Tariff Reform, and (A5) DSM and Energy Efficiency. The MEM component which is implemented by the Department of Electricity (DOE) comprises: (B1) Off Grid Investment, (B2) Institutional Strengthening, (B3) Alternative Renewable Energy Delivery Models, (B4) Renewable Energy Master Plan, (B5) Sector Financing Strategy. The program activities were planned to be implemented in two phases: during 2006-2010 (REP I) and 2008-2011 (REP II). A budget of \$140,000 has been allocated for safeguard training and capacity building of EDL and DOE under REP I.

2. ***Off-Grid component.*** Under REP I, Department of Electricity (DOE) of MEM plans to provide modern energy services to between 10,000 and 20,000 households in hundreds of villages spread across 17 of the 18 provinces in Lao PDR. Most of the off-grid investment will be at the household level or village level, with average investments of a few hundred dollars. The systems considered include: Solar Home System (SHS), Pico-Hydro Systems, Household Biogas Digester, Village Hydro, and Village Biomass. DOE hired a group of consultant namely the Village Off-Grid Promotion and Support (VOPS) to assist in the development and management of this component. For planning and implementation of SHS, the VOPS hired a group of consultant namely the PESCO (Provincial Electricity Services Company) to assist in the process. Under REP I, about 9,000 households was electrified using SHS and 1-2 pilot studies was conducted at Ban Done Nang Xome, Champasak province for Village Hydro scheme. Over 20 villages in four target provinces (Phongsaly, Houphan, Xiengkhouang, Luang Prabang and Luangnamtha) received training on Pico Hydro safety awareness and other systems. Master plan study on renewable energy and sector financing strategy study are on going. Due to limited finance resources, under REP II, additional 10,000 households will be electrified

using SHS (7,000 units) and Pico (3,000 units). The proposed GEF Grant, as Additional Financing to the REP II, will support promotion of renewable energy (biogas and biomass energy) development in connection with rural electrification under the REP II.

3. ***Safeguard activities and implementation experience.*** The Environmental Management Framework (EMP), the Resettlement Policy Framework (RPF), and the Ethnic People's Development Plan (EPDP) were developed and adopted for REP I. DOE/PMU is responsible for ensuring that the consultants (VOPS) and service provider (PESCO) apply the safeguard instruments during the planning and implementation and provide safeguard training and awareness building as appropriate. Effort has also been made to develop a Safeguard Operation Manual (SOM) for DOE component and a draft SOM is being finalized. DOE staff also participated in the safeguard training conducted by EDL under the REP I safeguard capacity building program.

4. ***Objectives and scope.*** Main objectives of this framework are two fold: (i) to inform the public and DOE staff on PMU commitment to reduce and/or mitigate the potential negative impacts of MEM investment projects on local environment and local people and (b) to provide policy guidance to DOE staff on the screening procedure and actions to be carried out during the planning and implementation of the DOE's subprojects to be implemented under REP II and GEF REP II. This ESSF outlines DOE's safeguard policies statement (Section II) and highlights the potential impact and mitigation measures of REP II and GEF REP II (Section III), the safeguard screening framework (Section IV), the key issues on environment aspects (Section V), and key issues on social aspect (Section VI). This ESSF may be applied to REP I as appropriate. Actual implementation will be guided by the Safeguard Operation Manual.

II. SAFEGUARD POLICIES STATEMENT

5. ***General.*** DOE is committed to reduce and mitigate the potential negative impacts of DOE investment activities on the local community and local environment and when possible increase their positive impacts. At a minimum the following measures will be established and implemented by DOE staff:

- (1) All DOE staff is responsibility for ensuring full compliance with the Government's laws and regulations related to environmental and social safeguard
- (2) All units/offices, especially those involved in the planning, design, construction, and maintenance, are responsible for ensuring that the environment and social requirements are (a) incorporated into the project planning, detailed design, and contract documents and (b) in compliance with during construction and maintenance.
- (3) The Social and Environmental Management Division (SEMD) of DOE is responsible for developing appropriate policy direction, operational guidelines and procedures, and technical guidelines related to environmental and social safeguards and provide appropriate training and capacity building to other units/offices as needed.

- (4) The Provincial Department of Energy and Mines (PDEM) is responsible for undertaking safeguard activities as agreed with PMU/SEMD, including ensuring effective communication with local authority and local community through out the project development cycle. When possible, efforts will be made to increase knowledge and awareness of the local authority and people on the importance of environmental protection and the Government and/or WB safeguard requirements.
- (5) DOE will ensure that all staff has an opportunity to increase their knowledge and understanding on environment and social safeguards related to solar system, hydropower development and grid extension by incorporating the safeguard training courses into the overall training program being carried out at EDL training center and/or MEM's training center which is to be established.. When possible, study visits to neighboring countries will be carried out to expand knowledge and experience of DOE managers and key staff on the institutional arrangement and capacity building and on appropriate technology that could enhance DOE performance inline with the National Policy on Environmental and Social Sustainability of the Hydropower Sector in Lao PDR (2005).
- (6) DOE will work closely with EDL and other agencies (both at national and local level) responsible for development and implementation of the Government's regulations related to social and environment safeguards, especially those (the Lao Women Union and the Lao Front) related to ethnic peoples.

6. ***For REP II and GEF REP II:***

- (1) This policy framework will be applied to all the civil works subprojects to be implemented under REP II and GEF REP II.
- (2) The safeguard implementation procedure will be guided by the Safeguard Operation Manual (SOM) which will be finalized by DOE/PMU. SOM will describe the safeguard procedure and process, including roles and responsibility of the offices/units as well as technical guidance, including standard screening and monitoring forms for social and environmental activities. DOE/PMU will also provide safeguard training to the concerned staff.
- (3) The concerned units are responsible for forging effective implementation of safeguard measures for all the subprojects, including timely submission of the safeguard screening and monitoring to DOE/PMU.
- (4) DOE/PMU will be responsible for monitoring the compliance with the safeguard requirement for DOE subprojects of REP II and GEF REP II, including ensuring that all Provincial Electricity Service Companies (PESCOs) and DOE contractors and/or development partners undertaking the investment activities of the subprojects are aware of and commit to comply with the safeguard requirements and that their performance are acceptable. The results will be reported to the DOE management and WB periodically.

(5) If IEE/EIA is required by the government and/or WB, the DOE/PMU will take the lead in the preparation with assistance from SEMD and other offices/units and/or consultants as needed.

III. POTENTIAL IMPACTS AND MITIGATION OF REP II AND GEF REP II

7. **Scope and description of REP II and GEF REP II.** Investment activities that require safeguard attention would be limited to the expansion of SHS system to 7,000 households and expansion of Pico Hydropower to 3,000 households and main activities will be similar to those implemented under REP I. If fund is available, one or two pilot schemes on Biogas Digester for electrification, Village Hydro, and/or Village Biomass would be implemented. Description of the SHS and Pico Hydro is briefly provided below while those of the Biogas Digester for electrification, Village Hydro, and/or Village Biomass are given in Annex 3.

- **Solar Home System (SHS) under REP II:** Photo voltaic cells transform solar energy into electrical energy without intermediate mechanical devices. Key investment includes a solar panel (0.02-0.05 kW) on a pole, controller, battery & indoor wiring. Up to 7,000 of these investments will be made over the course of REP II.
- **Pico Hydro under REP II:** A small hydropower with installing capacity of less than 5 kW. Pico Hydro is suitable for mountainous areas with falling water. It is a lowest-cost off-grid technology for generating electricity. Lighting from Pico Hydro is both cheaper and environmental friendlier than using kerosene lamps. This investment comprises a self-contained turbine-generator unit (0.2-2 kW), low voltage wiring, and voltage controller which can provide electricity to one or several households.
- **Biogas and Biomass Generation under GEF REP II:** The REP II supports the promotion of public and private investment in small scale renewable energy generation. The Finnish Government has supported the development of policies and regulations for promotion of renewable energy development in Lao PDR. The GEF Grant, as additional financing to the REP II, will finance the design, supply, installation, and supervision of four pilot biogas generation projects in a total capacity of 120 kW, of which pre-feasibility studies were completed under REP I. The GEF Additional Financing will also finance identification, preparation, and installation of two pilot biomass generation projects to achieve a total installed bio-energy generation capacity of 300 kW during the implementation period of REP II, in addition to replication of the pilot experience for future scale up.

8. **Potential impacts and proposed mitigations:** Implementation of REP II and GEF REP II will improve living standards and income generation of the local people. However, the project may require some land for the stations/poles and/or low voltage transmission line and may involve small land acquisition, limited land use (permanent or temporary), and/or ethnic peoples, and if this is the case the compensation amount and process and consultation with the affected population will follow the Resettlement Policy Framework (RPF) and/or the Ethnic Groups Development Framework (EGDF) detailed in Annex 1 and Annex 2. Potential impacts on local environment of the Solar Home System would be very small and limited to the disposal of lead acid or nickel-cadmium batteries used. Impacts of other systems (if the subproject is not located in the protected and/or sensitive areas) is also considered small and can be mitigated through good engineering practices and house keeping measures. The project is classified by WB as EA “category B”, and DOE is required to take appropriate measures to mitigate the potential negative impacts.

9. **Need for Good Management Practice for used batteries.** DOE/PMU will develop a set of Good Management system for used batteries and will apply them as the mitigation measures for all the SHS subprojects.

10. **Need for safeguard screening and monitoring.** Although adverse impacts are generally not expected from most works undertaken in REP II and GEF REP II, but the subproject locations have not been identified at appraisal stage. To ensure that proper issues and actions are identified at an early stage of the development process, DOE/PMU will carry out a screening process as shown in Section IV for all the subprojects with Pico Hydro and other off-grid systems described in Annex 3.

11. **Need for information disclosure.** To be in line with the WB disclosure policy, this ESSF will be translated into Lao language and publicly disclosed (both in English and Lao languages) locally in Lao PDR. Details on the final mitigation measures for each subproject will be disclosed at the local PDEM offices, local authority, and/or local communities as appropriate during the implementation of the project.

12. **Need for training and capacity building.** DOE recognizes the importance of environmental protection and the need to reduce negative impacts on local population, especially the ethnic and other disadvantaged peoples. Incorporating these concerns into the DOE operational process will be critical for forging effective implementation on the ground. During REP I safeguard training was provided to PMU/SEMD and other key staff, however, a more comprehensive and systematic training and capacity building will be necessary to widen and deepen the safeguard knowledge and practical experience of DOE staff. To address this issue, DOE will continue to participate in the training and capacity building to be carried out by EDL under REP I and will establish a permanent training course on safeguards as part of the training center to be established under a WB’s separate technical assistance (Hydropower and Mining Technical Assistance Project).

IV. ENVIRONMENT AND SOCIAL SAFEGUARD SCREENING

13. ***Objectives and scope.*** The safeguard screening aims to ensure that (a) REP II and GEF REP II activities do not create or result in serious adverse impacts on the local community and local environment, (b) the mitigation plan is carried out effectively, and (c) possible complaints from the local government authorities and community are minimized. The screening will be applied to the Pico Hydro and other off-grid systems identified in Annex 3. Table 1 and Figure 1 describe steps and actions to be carried out during the planning (subproject selection, preparation of environment and social mitigation measures, detailed design, bidding/contract signing process), implementation (resettlement, compensation, construction), and operations stages. The screening process has been developed based on the lessons learned from the implementation of REP I and it may be modified or revised when necessary with close consultation with WB.

14. ***Strategies.*** To achieve these objectives, the following actions will be undertaken:

- All proposed subprojects (except SHS) will be screened by the DOE/PMU which is responsible for identification and selection of the subprojects following the process described in Table 1 and schematically shown in Figure 1 and the results will be documented and properly kept for possible review by WB. PDEM will conduct public consultation and public awareness programs.
- DOE/PMU will ensure that appropriate mitigation measures during construction will be included in the bidding document and/or contract document; Compliance with these measures will be monitored, and the results will be documented and properly kept for possible review by WB.
- DOE/PMU will supervise and monitor the overall activities and prepare a semi-annual report on the application of the ESSF, RPF, and EGDF during the planning, design, and construction phase of the project. DOE/PMU will also develop the reporting requirements and procedures to ensure compliance of the contractors and periodically and carry out periodic training for field engineers and contractors. A semi-annual report on the implementation of the guidelines will be submitted to WB. Assistance from DOE/SEMD will be provided as required.
- A draft Safeguard Operation Manual (SOM) describing the process, reporting requirements, and standard forms has been prepared for environment and social aspects. DOE/PMU will finalize this draft and provide training to PDEM staff.

15. ***Assumptions.*** The screening is based on the assumptions described below. If this is not the case, WB will be informed and consulted.

- The project-related impacts are site specific; few of the effects are irreversible; and appropriate mitigation measures can be developed and implemented by the contractors and DOE. The use of large amount of pesticides and herbicides is prohibited.
- “*Environmentally Sensitive Areas (ESA)*” or “*sensitive area*” includes zones of significant human habitation; ecologically important zones such as National Biological Conservation Areas or Protected Areas, wetlands, forests, areas of high scenic value or any area relatively unaltered by humans, archeological/historical or cultural sites; and mountainous terrain especially when soils are eroded and adjacent to surface water channels. Special *attention will be given to ensure adequate safety of the workers and local people during construction and operation of the subproject.*

16. ***Screening procedures.*** The screening process is not intended to prohibit DOE from carrying out the subprojects in sensitive areas but is meant to ensure that proper mitigation measures are prepared and carried out effectively to avoid adverse impacts on the affected population, natural environment and cultural heritage. If the subproject is located in or near protected areas or other critical habitats or cultural property, a quick assessment of potential impacts will be carried out by the DOE/PMU in close cooperation with DOE/SEMD and other concerned agencies and in consultation with WB. Steps and actions for the screening are presented in Table 1 and Figure 1 below.

Table 1. Screening Process for Each Subproject (Pico Hydro and other off-grid)

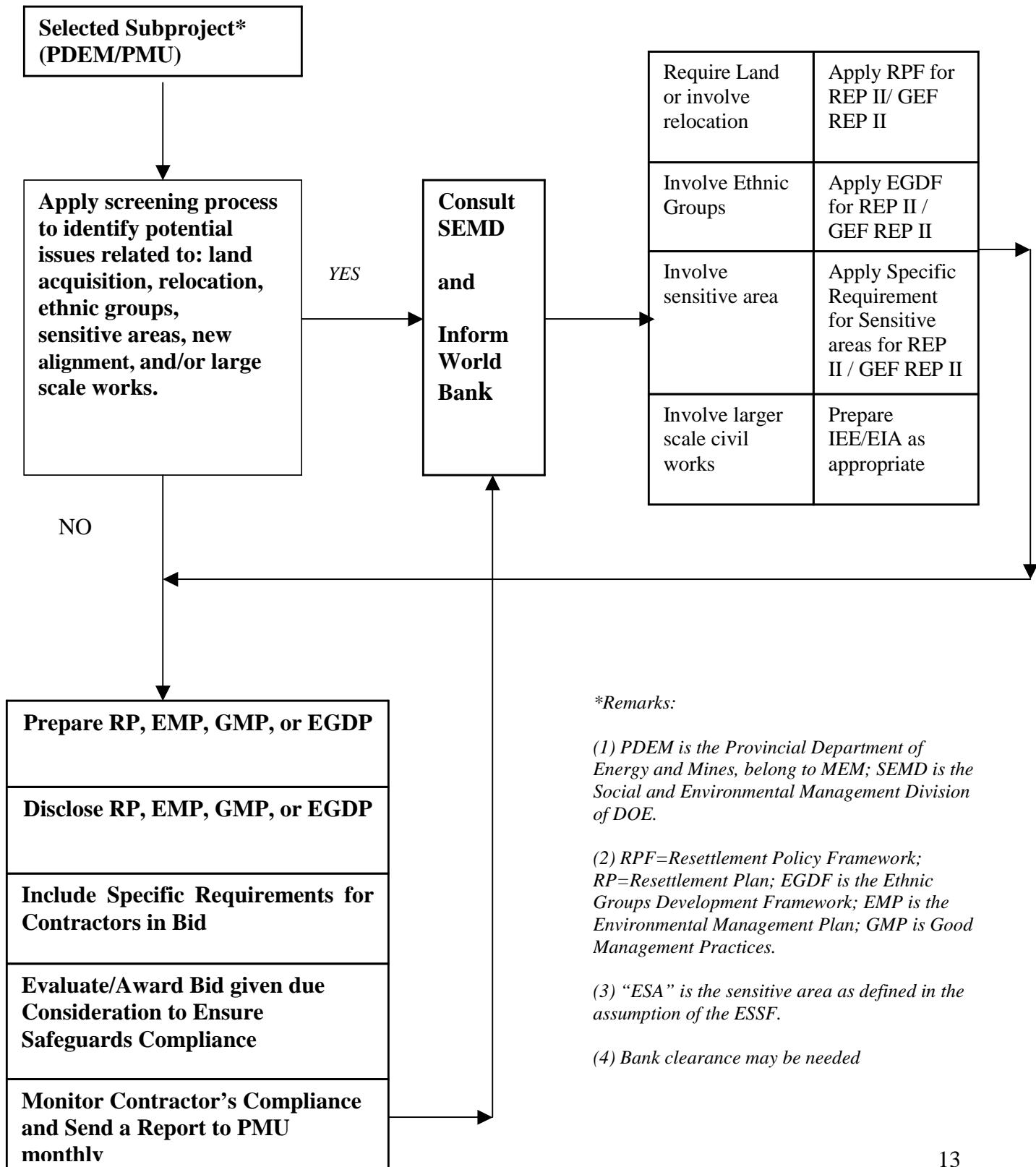
Screening check list	Yes	Actions to be undertaken	Remarks
A. Subproject selection stage			
(1) Involves <i>land acquisition, relocation, indirect loss of access and assets, and/or has adverse impacts on ethnic groups</i>	Y	<ul style="list-style-type: none"> • PMU consults SEMD and applies the RPF (<u>Annex 1</u>) and/or EGDF (<u>Annex 2</u>). If the impacts are significant, PMU/SEMD seeks WB clearance before selection of the subproject. Extensive consultation with affected population is expected during the planning and implementation 	
(2) <i>Scale of the civil works is larger than those identified in the project description or involves new construction</i>	Y	<ul style="list-style-type: none"> • PMU consults SEMD to seek appropriate guidance on the environmental impacts assessment requirements according to the government regulations and/or WB requirements. 	PMU to provide information on the scale and nature of the impacts to WB
(3) <i>The site is located in the protected area</i> (national, provincial, districts) and requires forest clearance.	Y	<ul style="list-style-type: none"> • PMU consults SEMD to seek appropriate guidance on the environmental impacts assessment requirements according to the government regulations and/or WB 	PMU to conduct rapid assessment.

Screening check list	Yes	Actions to be undertaken	Remarks
		<p>requirements.</p> <ul style="list-style-type: none"> Large forest clearance is prohibited. A rapid assessment and prior consultation with WB are required before selection of the subproject. 	
(4) The site is located in sensitive area (known to be contaminated with UXO or less than 50 m of villages, residential, or other “ESA”); involve safety issues that can significantly affect the human health/life; and/or involve the use of toxic chemicals, pesticides, and herbicides.	Y	<ul style="list-style-type: none"> PMU consults EO and includes appropriate mitigation measures during planning and design stages. PMU will establish criteria and technology appropriate for ensuring safety as well as measures to mitigate dust, noise, and vibration in the sensitive area in consultation with the affected groups. 	A set of standard measures to mitigate these impacts will be part of SOM.
B. Design and preconstruction stage			
(5) If steps (1) is triggered	Y	<ul style="list-style-type: none"> PMU will supervise PDEM to conduct compensation and/or action plan following RPF and/or EGDF as appropriate. PMU will ensure full compliance. 	PDEM will conduct compensation in consultation with the local authority
(6) If steps (2)–(4) are triggered and a contractor will carry out the works, the mitigation plans and/or measures will be prepared as the Environmental Management Plan (EMP) for the subproject.	Y	<ul style="list-style-type: none"> PMU will ensure that the agreed EMP is incorporated into the design and the contract documents and that the bidders are informed of this obligation. Local authority and community will also be informed. PDEM will inform local authority and community on these measures. 	
(7) If no significant impacts is anticipated and a contractor will carry out the works	Y	<ul style="list-style-type: none"> PMU will ensure that the Good Management Practices (GMP) is incorporated in the contract document and ensure that the contractors are aware and willing to comply with the safeguard requirements. PDEM will inform local authority and community on these measures. 	PMU will further develop the GMP.
C. Implementation stage			
(8) Construction	-	<ul style="list-style-type: none"> PDEM will closely monitor the contractor performance and document it in the supervision/progress report. Recommendations that are useful to increase efficiency and effectiveness of the mitigation plan should be provided. PMU will periodically review the supervision report, periodically inspect 	

Screening check list	Yes	Actions to be undertaken	Remarks
		the contractor performance, conduct public consultation, and prepare a semi annual report to send to the Bank.	
(9) Maintenance	-	<ul style="list-style-type: none"> • PDEM will maintain proper maintenance and close consultation with local authority and community to ensure adequate safety of the local people. Periodic education and awareness program should be conducted. 	

*If No go to next step

Figure 1. Key Steps of Safeguard Management for REP II and GEF REP II



V. ENVIRONMENTAL ASPECTS

17. Solar Home Systems, Pico Hydro, Household Biogas, Village Hydro, and Biogas which will be used/considered under the off-grid component of the REP II and GEF REP II are among the least environmentally damaging power generation options. These technologies will result in the replacement of kerosene and other fuels that are currently used for lighting resulting in corresponding reductions in indoor air pollution. Below summarizes the potential negative impacts and mitigation measures of SHS and Pico Hydro which will be implemented under REP II / GEF REP II while the potential negative impacts and mitigation measures for other off-grid technologies are given in Annex 3.

- **Solar Home Systems:** This is a very small investment at the household level comprising a solar panel (0.02-0.05 kW) on a pole, controller, battery & indoor wiring. Potential negative impacts could include tree cutting to allow more sunlight on panel and improper disposal of used batteries (lead acid or nickel-cadmium). The impacts due to vegetation clearance are expected to be negligible or minor in most cases. To mitigate the impact due to improper disposal of used batteries, during the subproject design DOE/PMU will explore options for recycling the batteries used. If recycling is not possible batteries will be collected for proper disposal.
- **Pico-Hydro Systems:** Pico Hydro is a small scale hydroelectric power system that has no significant environmental impact because the system requires minimal modification of the surrounding environment and diversion of water. Further, Pico Hydro can be constructed easier than the larger hydro and thus no significant construction related impacts. The only major concern relating to Pico Hydro System is safety for villagers and animal during electricity generation and some potential impacts due to small amounts of oil leakage into streams. This impacts can be mitigated by providing training and prohibiting the use of livewires.
- **Pilot Biogas Project:** small generators will be installed at pig farms to be identified. The GEF includes technical assistance activities for screening and assessment of the potential environmental impacts. This ESSF will be followed to identify impacts and preparation and implementation mitigation measures to avoid or mitigate the impacts to acceptable level.
- During the consultation and discussion with the target groups, DOE/PMU will integrate the knowledge on safety, toxicity, and other related environmental issue of use battery and operation of Pico Hydro and Household Biogas on how to handle them properly. Efforts will also be made to reduce the need for construction of civil works and disturbance of local community during

construction. Specific plan and management procedures will be described in the Safeguard Operation Manual.

VI. SOCIAL ASPECTS

a) Land Acquisition and resettlement

18. REP II and GEF REP II are not expected to cause significant land acquisition nor resettlement. SHS will be installed in existing premise while the Pico Hydro may require only a small piece of land for housing generator. Biogas generators will be installed at the existing premise of pig farms to be identified. However, for other type of Off-grid systems as described in the project description (paragraph 7) may require small land and/or restriction of land use. Compensation will be provided in line with the Resettlement Policy Framework (RPF) (See Annex 1) which the key elements could be highlighted as follows:

- **RPF:** In order to ensure that impacts are compensated in compliance with World Bank policy, the RPF specifying eligibility and entitlement principles and guidelines for preparation of the Resettlement Plan (RP). RPF will be translated in Lao language and distributed to the Province Department of Energy and Mines, for planning and implementation of works.
- **Implementation:** The compensation of impacts will be implemented and managed by the PDEM under close supervision of DOE/PMU and/or DOE/SEMD.
- **Public Information and consultation:** DOE will ensure that all PDEM are properly and timely informed of the subproject activities to be carried out and that the provisions of the RPF are effectively disclosed to the local population and local authority. Compensation plan for each subproject will be disclosed to the public and make available in the project files for possible WB review.
- **Complaints and Grievances:** Complaints and grievances procedures will be established at PDEM in the provinces and SEMD/PMU in Vientiane. In case complaint and grievances issues are appealed they will be first dealt with by the PDEM and the district administration. If the issues could not be resolved, it will be dealt with by the SEMD/PMU and the provincial authorities. Project Displaced Persons will be exempted from all administrative and legal fees incurred in pursuant to the grievance redress procedures.
- **Voluntary Contributions:** Where local communities willing to make voluntary contribution of affected land without compensation, SEMD/PMU will ensure that the impacts on the affected people are marginal (partial impact on land without causing any displacement or impact on structures, and with remaining assets viable for continued use) and benefits to the affected people can be assured. The process of consultation with potential contributors will be conducted in an open and transparent manner by PDEM and the district officials and decisions for 'voluntary' contributions will be based on the 'informed choice' of affected people. People who are willing to make voluntary contributions must be informed of their

rights to compensation, and the process and decisions must be documented by the district authorities.

(b) Impacts on Ethnic Peoples

19. The project is not expected to generate adverse impacts on ethnic peoples living in the vicinity of the project area. However, DOE has prepared an Ethnic Group's Development Framework (EGDF) (See Annex 2) in line with the Bank's policy and it will be applied to the REP II and GEF REP II subprojects. The EGDF describes the screening requirements, the principles and procedures for consultation, and reporting and monitoring activities.

Annex 1: Resettlement Policy Framework

Introduction

1. This document constitutes the Policy Framework for Compensation, Resettlement and Rehabilitation of Displaced Persons (RPF) for Rural Electrification Phase II Project (REP II) of the APL Program and GEF REP II project, of which implementation started / will be started in 2010 the Lao People's Democratic Republic. Department of Electricity and Electricite Du Laos has agreed to apply World Bank environmental and social safeguard policies in the design and implementation of these projects, including OP 4.12, "Involuntary Resettlement." For this project, design and scheduling considerations make it impossible to determine the extent of resettlement planning requirements at appraisal. This is also in line with Lao government law and regulation on compensation and resettlement. The RPF establishes principles and procedures to be followed if subsequent stages of project design or implementation are to cause land acquisition or other involuntary restrictions on access to land or other resources. In such instances, the RPF requires that a Resettlement Plan (RP) is prepared for World Bank review and approval. The RP ensures that any such potential impacts are minimized, and that any persons affected by such impacts are provided ample opportunity, through provision of compensation or other forms of assistance, to improve or at least restore their incomes and living standards.

Project Description

2. Investment activities that require safeguard attention would be limited to the expansion of grid-extension provide modern energy services to between 10,000 and 20,000 households in hundreds of villages spread across 17 of the 18 provinces in Lao PDR. Main activities will be similar to those implemented under REP I. Off-grid electrification under REP II and GEF REP II will consist of (i) installation of household-based solar home systems and pico hydro Systems; and (ii) biogas generators at pig farms.

Policy Objectives and Key Definitions

3. OP 4.12 provides essential guidance on objectives and principles that are applicable in projects generating land acquisition and resettlement-related impacts. Key objectives and definitions are as follows:

4. Every reasonable effort will be made to avoid or minimize the need for land acquisition, and to minimize all resettlement-related adverse impacts. If land acquisition and associated adverse impacts cannot be avoided, the principle objective of the RPF is to ensure that all persons subjected to adverse impacts ("displaced persons" as defined below) are compensated at replacement cost (as defined below) for lost land and other assets and otherwise provided with any rehabilitation measures or other forms of assistance necessary to provide them with sufficient opportunity to improve, or at least restore, their incomes and living standards.

5. "Displaced persons" refers to all of the people who, on account of the activities listed above, would have their (1) standard of living adversely affected ; or (2)right, title, interest in any house, land (including premises, agricultural and grazing land) or any other fixed or movable asset acquired or possessed temporarily or permanently; (3) access to productive assets adversely affected, temporarily or permanently; or (4) business, occupation, work or place of residence or habitat adversely affected; and "displaced person" means any of the displaced persons.

6. "Replacement cost" is the method of valuation of assets which determines the amount of compensation sufficient to replace lost assets, including any necessary transaction costs. Compensation at replacement cost is defined as follows: For agricultural land, it is the pre-project or pre-displacement, whichever is higher, market value of land of equal productive potential or use located in the vicinity of the affected land, plus the cost of preparing the land to levels similar to those of the affected land, plus the cost of any registration and transfer taxes. For land in urban areas, it is the pre-displacement market value of land of equal size and use, with similar or improved public infrastructure facilities and services and located in the vicinity of the affected land, plus the cost of any registration and transfer taxes. For houses and other structures, it is the market cost of the materials to build a replacement structure with an area and quality similar to or better than those of the affected structure, or to repair a partially affected structure, plus the cost of transporting building materials to the construction site, plus the cost of any labor and contractors' fees, plus the cost of any registration and transfer taxes. In determining the replacement cost, depreciation of the asset and the value of salvage materials are not taken into account, nor is the value of benefits to be derived from the project deducted from the valuation of an affected asset. Where domestic law does not meet the standard of compensation at full replacement cost, compensation under domestic law is supplemented by additional measures so as to meet the replacement cost standard. Such additional assistance is distinct from resettlement measures to be provided under other clauses in OP 4.12, Para. 6.

7. "Land acquisition" is the process whereby a person involuntary loses ownership, use of, or access to, land as a result of the project. Land acquisition can lead to a range of associated impacts, including loss of residence or other fixed assets (fences, wells, tombs, or other structures or improvements that are attached to the land).

8. "Rehabilitation" is the process by which displaced persons are provided sufficient opportunity to restore productivity, incomes and living standards. Compensation for assets often is not sufficient to achieve full rehabilitation.

9. "Cut-off Date" is the date prior to which the ownership or use establishes eligibility as displaced persons for compensation or other assistance. The cut-off date is established in the RP. It normally coincides with the date of the census of Displaced Persons, or the date of public notification regarding the specific civil works that would cause displacement. Persons coming into the project area after the cut-off date are not eligible for compensation or other assistance.

Key Principles

10. World Bank's OP 4.12 establishes several key principles to be followed in resettlement planning and implementation. Of particular relevance for this RPF are the following:

- a) Wherever possible, project designs and RPs should be conceived as development opportunities, so that displaced persons may benefit from the services and facilities created for, or by, project activities.
- b) All displaced persons are entitled to compensation for lost assets, or to alternative but equivalent forms of assistance in lieu of compensation; lack of legal rights to the assets lost will not bar displaced persons from entitlement to such compensation or alternative forms of assistance.
- c) Compensation rates as established in a RP refer to amounts to be paid in full to the individual or collective owner of the lost asset, without depreciation or deduction for taxes, fees or any other purpose.
- d) When cultivated land is acquired, effort should be made to provide land-for-land replacement.
- e) Replacement house plots, sites for relocating businesses, or replacement agricultural land should be of equivalent use value to the land that was lost.
- f) The resettlement transition period should be minimized. Compensation for assets should be paid prior to the time of impact, so that new houses can be constructed, fixed assets can be removed or replaced, and other necessary mitigation measures can be undertaken prior to actual displacement.
- g) Displaced persons are to receive support (direct assistance or allowances) to meet moving expenses or for temporary subsistence until they can resume productive activities.
- h) Displaced persons should be consulted during the process of RP preparation, so that their preferences regarding possible resettlement arrangements are solicited and considered; RPs are publicly disclosed in a manner accessible to displaced persons.
- i) The previous level of community services and access to resources will be maintained or improved after resettlement.
- j) Responsibility must be clearly established for meeting all costs associated with land acquisition and resettlement, and for ensuring that sufficient funds are available as they become needed.
- k) Clear institutional arrangements must be established to ensure effective and timely implementation of all resettlement and rehabilitation measures.
- l) Adequate arrangements for effective monitoring will be made on implementation of all resettlement measures.
- m) Methods by which displaced persons can pursue grievances will be established, and information about grievance procedures will be provided to displaced persons.

Lao PDR Legal and Regulatory Framework

11. The legal context in Lao PDR has been changing rapidly over the last few years. A Constitution was introduced in 1991, forestry and water resources laws in 1996, and land law in 1997. While they are subject to interpretation, the various legislative initiatives provide a legal foundation for the consideration of resettlement and compensation. Recently WREA (Water

Resources and Environment Administration) has drafted a National Policy on Resettlement and Compensation, which is still to be approved. The policy is based on the following laws and decrees:

- The Constitution of the Lao PDR
- The Land Law No. 01/97 SPS, dated 12 April 1997
- The Forestry Law No. 01/96, dated 11 October 1996
- The Water and Water Resources Law No. 02/96, dated 11 October 1996
- The Environmental Protection Law No. 02/99 SPS, dated 3 April 1999
- The Electricity Law No. 02/97 SPS, dated 12 April 1997
- The Road Law No. 04/99 SPS, dated 03 April 1999
- The Mineral Resources Law (April 1997)
- The Town Planning Law No. 03/99 SPS, dated 03 April 1999
- Regulation 1266/95 of MCTPC on Valuation of Vehicles, Houses, Built Structures and Household Facilities for Government Employees-Personnel

Preparing and Approving RPs

12. For this project, overall responsibility for preparation and implementation of any necessary RPs rests with Department of Electricity, Ministry of Energy and Mines. Other agencies or jurisdictional units with direct responsibility for acquiring land or implementing resettlement measures include provincial authority, WREA. As relevant, Environmental of DOE will coordinate activities as necessary to ensure effective resettlement planning and implementation in a timely manner.

13. Once it is determined that land acquisition or any associated impacts is essential to complete any project activities, and once siting criteria establish the land area to be acquired, resettlement planning should begin. The project owner will carry out, or cause to be carried out, a census survey to identify and enumerate all displaced persons, and a socioeconomic survey to determine the range and scope of adverse impacts in the affected area. The census survey must cover 100% of the persons to be displaced; the socioeconomic survey may be undertaken on a sample basis. The surveys, which may be undertaken separately or simultaneously, determine whether a full RP or an “abbreviated” RP (as defined in OP 4.12, Annex A) is necessary. When the number of persons affected exceeds 200, a full RP is necessary. Where impacts on all displaced persons are relatively minor, or fewer than 200 people are affected, an abbreviated RP may be prepared. Impacts are considered “minor” if the affected people are not physically displaced and less than 10% of their productive assets are lost.

14. If a RP is necessary, it will be prepared in accordance with the policy principles and planning and implementation arrangements set forth in this RPF. The RP is based on accurate baseline census and socioeconomic survey information, and establishes appropriate mitigation measures (e.g., compensation for assets, transitional assistance and economic rehabilitation assistance) as appropriate for all categories of adverse impacts. Depending on the categories of impacts, the RP specifically addresses the following:

- a) description of the activity causing land acquisition;
- b) range and scope of potential adverse impacts;
- c) socioeconomic survey and baseline census survey information;
- d) review of relevant laws and regulations relating to land acquisition and resettlement;
- e) specific compensation rates (or alternative measures) for all categories of affected assets;
- f) other measures, if any, necessary to provide opportunities for economic rehabilitation of displaced persons;
- g) eligibility criteria for compensation and all other forms of assistance;
- h) relocation arrangements, if necessary, including transitional support;
- i) site selection and site preparation, if necessary;
- j) restoration or replacement of community infrastructure and services;
- k) organizational arrangements for implementation;
- l) consultation and disclosure arrangements;
- m) resettlement implementation schedule;
- n) costs and budget;
- o) monitoring arrangements;
- p) grievance procedures;
- q) summary entitlements matrix

15. If an abbreviated RP is to be prepared, it also must be based on principles and planning and implementation arrangements established in this RPF. An abbreviated RP normally includes the following contents:

- a) a census survey of displaced persons and valuation of assets;
- b) description of compensation and other resettlement assistance to be provided;
- c) eligibility criteria;
- d) consultation and disclosure arrangements;
- e) organizational arrangements for implementation
- f) timetable and budget;
- g) monitoring arrangements;
- h) grievance procedures

Any RPs prepared in accordance with this RPF must be reviewed and approved by the Bank prior to awarding of contracts for the civil works causing the displacement.

Entitlement Policy

16. All displaced persons are eligible for compensation and/or other forms of assistance, as relevant to the nature of impacts affecting them.

In general, people eligible for compensation would include those affected in the following ways:

Land to be permanently acquired for the project: This includes a) owners with formal legal title, b) land users eligible for formal legal title under Lao PDR law, and c) those residing on, or using, state land prior to an established cut-off date, usually the date of public notification regarding the specific civil works activity that would cause displacement. Displaced persons in categories a) and b) are entitled to compensation at replacement cost. In lieu of formal compensation, displaced persons in category c) are provided with alternative forms of assistance, in value equivalent to replacement cost.

Loss of houses, other structures and fixed assets, including trees and standing crops: Owners of houses and other assets (regardless of whether they hold land title or building permits for structures erected prior to the cut-off date).

Losses associated with temporary impacts: This includes temporary loss of land, and transitional costs associated with moving, or disturbance to businesses during construction.

Specifically, displaced persons will be entitled to the following types of compensation and rehabilitation measures:

1. Displaced persons losing agricultural land:

- a) The preferred mechanism for compensation of lost agricultural land will be through provision of replacement land of equal productive capacity and satisfactory to the displaced person. If satisfactory replacement land cannot be identified, compensation at replacement cost may be provided.
- b) Displaced persons will be compensated for the loss of standing crops at market price, for economic trees at net present value, and for other fixed assets (ancillary structures, wells, fences, irrigation improvements) at replacement cost.
- c) Compensation will be paid for temporary use of land, at a rate tied to duration of use, and the land or other assets will be restored to prior use conditions at no cost to the owner or user.

2. Displaced persons losing residential land and structures

- a) Loss of residential land and structures will be compensated either in-kind (through replacement of house site and garden area of equivalent size, satisfactory to the displaced person, or in cash compensation at replacement cost).
- b) If after partial land acquisition the remaining residential land is not sufficient to rebuild or restore a house or other structures of equivalent size or value, then at the request of the displaced person the entire residential land and structure will be acquired at replacement cost.
- c) Compensation will be paid at replacement cost for fixed assets.

- d) Tenants, who have leased a house for residential purposes will be provided with a cash grant of three months rental fee at the prevailing market rate in the area and will be assisted in identifying alternative accommodation.

3. Displaced persons losing business

- a) Compensation for loss of business will involve, as relevant: (i) provision of alternative business site of equal size and accessibility to customers, satisfactory to the displaced business operator; (ii) cash compensation for lost business structures; and (iii) transitional support for loss of income (including employee wages) during the transition period.

4. Infrastructure and access to services

Infrastructure (such as water sources, roads, sewage systems or electrical supply) and community services (such as schools, clinics or community centers) will be restored or replaced at no cost to the communities affected. If new resettlement sites are established, infrastructure and services consistent with local standards will be provided at no cost to the relocated persons.

Rehabilitation Measures

17. Compensation may be sufficient to allow displaced persons to restore incomes if paid at replacement cost, assuming that replacement assets are available. Often, however, resettlement may require displaced persons to obtain new skills required for resuming production in a new environment, or to pursue new sources of income. The RP should assess the significance of impacts to be imposed on displaced persons, and provide measures to assist those significantly affected in adapting to new livelihood challenges. Terms for participation in such measures, including training, extension services, or employment, along with responsibility for providing them, should be specified in the RP.

Consultation and Disclosure

18. To promote active project engagement and adaptation to changed living circumstances, displaced persons should be provided with opportunities to participate in planning and implementation. At minimum, displaced persons should be consulted on preferences and concerns during the resettlement planning process. All displaced persons are to be informed regarding potential impacts and proposed mitigation measures, including compensation rates. The RP will be disclosed, in a manner and location accessible to displaced persons while in draft, and subsequently disclosed again following finalization.

Implementation Arrangements

19. The RP reviews organizational arrangements, to ensure that implementation procedures are clear, that responsibility is clearly designated for provision of all forms of assistance, and that adequate coordination among all agencies involved in RP implementation is assured. The RP must include a detailed implementation schedule, linking the project construction timetable to resettlement-related activities. The implementation timetable should establish that compensation (in cash or in kind) should be completed at least one month prior to initiation of civil works, and at least three months before residential structures are demolished.

Costs and Budget

20. Each partial and full resettlement plan will include detailed cost of compensation and other rehabilitation entitlements and relocation of displaced persons, if that be the case, with a breakdown by agricultural land, residential land, business land, houses, businesses and other assets. The cost estimates will make adequate provision for contingencies. The resettlement plans will explicitly establish sources for all funds required, and will ensure that fund flow is compatible with the timetable for payment of compensation and provision of all other assistance.

Grievance Procedure

21. RPs will establish means for displaced persons to bring complaints to the attention of relevant project authorities. Grievance procedures should include reasonable performance standards, e.g., time required to respond to complaints, and should be provided without charge to displaced persons. The RP should also state other avenues available to aggrieved persons if the project-related procedures fail to resolve complaints.

Resettlement Monitoring

22. In addition to internal project monitoring arrangements, the project owner will ensure that RP implementation will be monitored by a qualified agency independent of project implementing agencies. The RP should establish the scope and frequency of monitoring activities. External monitoring reports will be prepared for simultaneous submission to the project office and the World Bank.

Resolving Inconsistencies

23. As provided in legal documentation for the project, if there is any inconsistency between the laws and regulations of Lao PDR and this policy framework, the domestic law or regulation shall be waived to the extent necessary to achieve RPF requirements.

Annex 2: Ethnic Group Development Frameworks

Introduction

1. As a prerequisite to WB support, DOE and EDL needs to meet the requirements of Operational Policy 4.10 (Indigenous Peoples). This policy requires that special planning measures be established to protect the interests of ethnic groups with a social and cultural identity distinct from the dominant society that makes them vulnerable to being disadvantaged in the development process.
2. As characterized in OP 4.10, ethnic groups can be identified in particular geographical areas by the presence in varying degrees of the following characteristics:
 - (a) a close attachment to ancestral territories and to the natural resources in these areas;
 - (b) self-identification and identification by others as members of a distinct cultural group;
 - (c) an indigenous language, often different from the national language;
 - (d) presence of customary social and political institutions; and
3. Based on the above characteristics, there are many ethnic groups in Laos. According to recent classification by Lao Front for National Construction (LFNC), the country could be classified into four linguistic groups with 49 ethnic categories. Different ethnic groups other than Lao account for over 40% of total population. They are Lao-Tai, Mon-Khmer, Hmong-Iumien, and Sino-Tibetan groups. The Bank has determined that OP 4.10 will apply to at least three linguistic groups except for Lao-Tai, who still maintain cultural and socioeconomic practices different than those practiced by the Lao national majority.
4. OP 4.10 requires the borrower to conduct free, prior and informed consultations with potentially affected ethnic groups. As a prerequisite for Bank project approval, this consultation process must establish a pattern of broad community support for the project and its objectives. In the context of this project, it is important to note that the OP 4.10 refers to social groups and communities, and not to individuals. The primary objectives of OP 4.10 are:
 - to ensure that such groups are afforded meaningful opportunities to participate in planning that affects them;
 - to ensure that opportunities to provide such groups with culturally appropriate benefits are considered; and
 - to ensure that any project impacts that adversely affect them are avoided or otherwise minimized and mitigated.

5. Since both network development component and rural access improvement component will include subprojects across the whole country, they will benefit ethnic groups in different regions. This ethnic framework has been prepared in order to provide some general principles and procedures that will be applied during project implementation, if ethnic groups are reported in any of the subprojects. In the REP II and GEF REP II projects, therefore, the purpose of the

framework is one of *ensuring consultation, giving ethnic groups a voice, and an opportunity to participate in the projects.*

Screening for ethnic people among beneficiary populations

6. The project design recognizes that ‘meaningful’ participation by poor and disadvantaged sections of society requires special focus that goes beyond routine project implementation management. In the operation manual for REP II, detailed guidelines on social assessment and resettlement aspects are included. Under these guidelines, the preparation of each subproject under REP II and GEF REP II will carry out preliminary social assessment during the preparation of project feasibility report, which will be prepared by experienced consulting team. Such effort is designed to understand the basic socioeconomic needs of the communities and support key activities aimed at empowering beneficiary populations to exercise their voices and choices.

7. The project is, therefore, committed to, and has the organizational instruments to, ensure that ethnic groups are (i) consulted in matter relating to each subproject, (ii) provided opportunities for participation in decision making related to the subproject, and (iii) provided opportunities for participation in project activities should they so desire.

8. Re-confirming that there are any ethnic groups among beneficiary populations will be undertaken in the social assessment process. By gathering both qualitative and quantitative data in the project areas through a range of PRA techniques, the basic social economic profile of beneficiary population or project affected people will be developed. Such procedures have already been used in the preparation of Ethnic Groups Development Plans in two subprojects to be implemented in the first year, which are aimed at ensuring that all ethnic voices and opinions are heard through the project preparation and implementation process.

Principles and procedures applied where the project involves ethnic peoples

9. The PDEM/PMU will ensure that free, prior and informed consultations are undertaken, in a language spoken by the ethnic groups. The views of ethnic groups are to be taken into account during preparation and implementation of subprojects, while respecting their current practices, beliefs and cultural preferences. The outcome of the consultations will be documented into the project documents. (See Annex A for detailed procedures of such consultation efforts.)

10. If the ethnic people conclude that the project will be beneficial, or non-harmful to their way or life or cultural beliefs, and the adverse impacts are minimal measures and assistance will be developed based on consultation with ethnic groups, local Lao Front for Construction, and independent and assigned NGOs. The community should also be consulted to ensure that their rights and culture are respected. The assistance may also include institutional strengthening and capacity building of ethnic villages and community groups working with the project.

Reporting, Monitoring and Documentation

11. The proposed screening, social assessment and consultation process will provide comprehensive baseline data on social, economic and technical aspects of each subproject. This includes also participatory mapping of community access to road and other key services. If the social assessment confirms that no ethnic minority populations exist in the project areas, no further action is necessary. If the social assessment indicates that there are potential social issues because of ethnic group populations in such subproject, it will be ensured that the responsible project sponsor will undertake specific measures to consult with, and give opportunity for ethnic group populations in participating decision making related to the subproject, should they so desire.

12. Besides specific attention to ethnic group issues in supervision and monitoring, the DOE/PMU will include these matters in their progress reporting. The World Bank's supervision missions will periodically pay special attention to ensure that the subproject affords benefits to vulnerable groups and ethnic minorities.

Annex A: Consultation Framework for Ethnic Group Issues under REP II and GEF REP II

1. The consultation framework aims to ensure that ethnic groups are well informed, consulted and mobilized to participate in the sub-projects to be supported under REP II and GEF REP II. Their participation can either provide them benefits with more certainty, or protect them from any potential adverse impacts of sub-projects to be financed by the Projects. The main features/process of the consultation framework includes a preliminary screening process, then a social impact assessment to determine the degree and nature of impact of each subproject to be supported by REP II and GEF REP II, and an action plan will be developed if warranted. Consultations with and participation of ethnic groups, their leaders and local government officials will be an integral part of the overall Ethnic Group Development Plan (EGDP), which should be prepared along with the project feasibility report. The EGDP consist of the following sections:

1. preliminary screening
2. social assessment
3. mitigation measures
4. development assistance
5. monitoring

2. The Project will provide a series of training to all implementers and local agencies preparing and implementing EGDPs.

Preliminary Screening

3. All subproject areas which have ethnic group communities and are candidates for REP II and GEF REP II support will be visited (at the time of first consultation with communities) by project sponsor, relevant local authorities, and consultants. Prior to the visit, respective project sponsor will send a letters to the communities informing their leaders that they will be visited by the respective project sponsor and local authorities and consultation will be conducted on the subproject. The letter will request that the communities invite to the meeting representatives of farmers, women associations and village leaders for discussion on the subproject. During the visit, the community leaders and other participants will present their views with regards to the subproject.

4. At this visit, the social scientists (consultants) will undertake a screening for ethnic minority population with the help of ethnic group leaders and local authorities. The screening will check for the following:

- (a) names of ethnic groups in the affected village
- (b) total number of ethnic groups in the affected villages
- (c) percentage of ethnic people in affected villages

- (d) number and percentage of ethnic households along the zone of influence of the proposed sub-Project.
5. If the results show that there are ethnic group communities in the zone of influence of the proposed subproject, a social assessment will be planned for those areas.

Social Assessment

6. The social assessment (SA) will be undertaken by the social scientists (consultants). The SA will gather relevant information on the following: demographic data; social, cultural and economic situation; and social, cultural and economic impacts - positive and negative.

7. Free, prior and informed consultations will be conducted through a series of meetings, including separate group meetings: ethnic village chiefs; ethnic men; and ethnic women, especially those who live in the zone of influence of the proposed work under subproject. Discussions will focus on subproject impacts, positive and negative; and recommendations for design of subproject. If the SA indicates that the potential impact of the proposed sub-project will be significantly adverse or that the ethnic community rejects the project, the subproject will not be implemented in that locality; no further action is needed in this case. If the ethnic group supports the subproject implementation an EGDP will be developed to address any concerns or negative impacts by the proposed subprojects.

Ethnic Groups Development Plan

8. The EGDP will consist of a number of activities and will include mitigation measures of potentially negative impacts, modification of subproject design, and development assistance. Where there is land acquisition in ethnic minority communities, the project will ensure that their rights will not be violated and that they be compensated for the use of any part of their land in a manner that is culturally acceptable to them. The compensation and rehabilitation will follow the Resettlement Policy Framework of the project. An EGDP will include:

- (1) legal framework
- (2) baseline data;
- (3) land tenure information;
- (4) local participation;
- (5) technical identification of development or mitigation activities;
- (6) institutional arrangement;
- (7) implementation schedule;
- (8) monitoring and evaluation; and
- (9) cost and financing plan.

Implementation Arrangement

9. Consultants will also be responsible for training respective project sponsor or local authorities to undertake the work of consultation, screening, social impact assessment, analyses and preparing EGDPs.

10. Project sponsors of individual subprojects and local authorities are responsible for implementing EGDP (arrange adequate staff and budget).

Monitoring

11. Implementation of the EGDPs will be regularly supervised and monitored by DOE/PMU. The findings and recommendations will be recorded in quarterly reports and to be furnished to the World Bank.

12. The independent agency which would be used by DOE to undertake external monitoring and evaluation of the implementation of resettlement action plans for the REP II and GEF REP II will also be asked with monitoring the activities for EGDP. While, the external monitoring agency will visit a sample of affected households for resettlement in each relevant province on an annual basis, it will also visit a sample of at least 10% of ethnic minority households in the project affected areas.

Schedule

13. The EGDP should have an implementation schedule that is coordinated with the subproject implementation. Logically, social assessments and group meetings should be undertaken before subproject designs are prepared. Compensation for land acquisition should be satisfactorily completed at least one month prior to start of civil work. Monitoring should take place at the recommended times during and after civil work.

Budget

14. The EGDP will include information on detailed cost of mitigation measures and other rehabilitation entitlements for ethnic minority in the affected areas. Sources of funding for the various activities and financing plans will be clearly specified in the cost tables.

Reporting/Documentation

15. The EGDPs will be prepared and submitted by the PDEM Office to PMU/SEMD of DOE for review.

Annex 3 **Environmental Management Framework** **For Other Off-Grid Technologies**

A. Types of Other Off-Grid Investments

- *Biogas Digesters for electrification:* This is a small anaerobic masonry digester constructed below ground level. The system will be used to convert animal wastes and plant wastes through anaerobic digestion processes to produce energy that can be converted to electricity. Investment may comprise a buried masonry anaerobic digester which provides gas to lamps and cook stoves and possibly a small engine.
- *Village-Hydro:* This is a run-of-the-river hydroelectric plant. Run-of-the river projects do not require the construction of a reservoir and can be installed in places where the water drop and the steady flow rate are high enough. It will involve construction of canals, tunnels, penstocks, access roads, power-house and transmission lines. Key investment includes some civil works to allow access to the run of the river, a penstock, a 10-50 kW turbine-generator, and a low voltage network.
- *Village Biomass Gasification:* Biomass fuel encompasses diverse fuels derived from timber, agriculture and food processing wastes or from fuel crops that are specifically grown or reserved for electricity generation. Given the capacity of biomass to regenerate, electricity derived from biomass gasification is considered renewable. Burning crop residues, food wastes or manure to generate electricity can also offer environmental benefits in the form of waste reduction and landfill space preservation. Key investment comprises a gravity feed hopper, gasifier chamber, modified gas engine (5-20 kW), generator, and low voltage network.
- *Mini-grids:* Mini-grids would be built to distribute generated capacity from village-hydro or biomass plants. They would contain poles, transformers and low voltage lines.

B. Potential Impacts and Mitigation Measures

In general, the impacts of the off-grid subprojects are expected to be relatively minor and mostly temporary in nature, and can be easily managed through good engineering design and construction practices, and good housekeeping measures during project implementation. Below discusses the potential negative impacts of these technologies and its potential mitigation measures to be implemented under REP II and GEF REP II.

- **Biogas Digester for electrification.** Many studies have shown that electricity generated from biogas production is considered CO₂ neutral, assuming that biogas is recovered properly. Under the REP II and GEF REP II, no significant environmental impact is expected for the development of biogas generation facilities. The only minor potential environmental impacts are associated with dust and noise during construction and improper waste handling during operation. However, identification of impacts for potential projects will be conducted following the process specified in this ESSF. These impacts, however, will be avoided /mitigated using good housekeeping measures or other measures needed.
- **Village Hydro.** Potential negative impacts: include dust, noise, and increased pH during construction reduced fish mobility & eco-systems, and erosion and sedimentation. During the site selection, planning, and design of the system, the following actions will be undertaken to avoid the following impacts:
 - damage to aquatic ecosystems in case the reserved minimum flow conditions in the river are not ensured and too much water is directed into diversion channel;
 - damage to fish stocks if no proper fish by-passes are installed or if no proper precautionary measures are implemented to avoid fish being sucked in the turbines;
 - littering of territories adjacent to the installation if the trash collected at the screens in front of the water intakes is not handled properly;
 - erosion if no proper landscaping is done during and after completion of construction of water intake;
 - alteration of habitats in backwater areas due to inadequate design;
 - damage to the river bed and habitats and increase in erosion due to badly selected routing of the headrace and tailrace channels.
- **Village Biomass.** Potential negative impacts of these schemes will depend on type and size of the activities as well as the location of the site, especially when the project is designed to serve more than one village. Key issues may include inappropriate site location of these schemes may create disturbance to the protected/sensitive areas or post safety risk to community; significant modification of river/stream may affect fish migration or other natural habitats; inappropriate planning and management of raw materials of Village Biomass may create local demand for forest clearance. To mitigate these risks, the following actions will be carried out:
 - DOE will ensure that all the contractors/consultants involved in the planning, design, and operation of these schemes understand and compliance with DOE's obligation on safeguard required under REP II and GEF REP II .

- DOE through its contractors/consultants will conduct an environmental screening during the pre-feasibility and feasibility studies for the proposed subproject. If the project site is located in protected and/or other sensitive area, rapid assessment will be conducted and the required mitigation measures will be integrated into the project planning and site selection process. None of the subprojects to be implemented under the off-grid component of REP II and GEF REP II will require an IEE or EIA however if an IEE or EIA is required by the EIA regulation being revised by the Government, the IEE or EIA will be carried out in line with the Government requirement.
- **Mini-Grids.** Minor environmental impacts are expected by the construction and operation of mini-grids for distributing power generated by biomass or village-hydro subproject. The main impacts are likely to occur during construction, and include issues of dust, noise, land clearing, cutting and trimming of trees, and some temporary use of land for storage of materials. However, these impacts are expected to be minimal.