7 IDENTIFICATION OF BIOPHYSICAL AND SOCIO-ECONOMIC IMPACTS AND MITIGATION MEASURES

7.1 Introduction: Impact Matrix

Environmental and social impacts that may result from the construction or operation of the proposed transmission line are summarised in Table 7-1. Initiating action and impact duration is also provided. More detailed descriptions of these impacts, significance and mitigation measures are outlined in the following sections.

Table 7-1 Environmental and social impacts

Issue	Impact	Initiating project action	Impact duration
Biodiversity	Loss of habitat	ROW and easement establishment	Permanent
	Loss of wildlife (eg flying birds)	Presence of power line and tower structures	Permanent
Erosion	Erosion	Vegetation removal and ground disturbance; forming embankments	Permanent
Air quality	Dust emissions	Construction activities	Temporary
Noise	Noise emissions	Generation replacement	Permanent
Water quality & soil	Pollution of water and soil	Hazardous materials storage and handling; sub-station	Permanent / Temporary
Waste	Disposal of construction debris and wastes	Construction activities	Permanent / Temporary
Land acquisition and land use change	Loss of settlement	Construction activities	Permanent
	Permanent land use change	Tower construction; sub-station construction	Permanent
	Land use restriction	Temporary access tracks; batching plant operation; tower construction; line stringing; line maintenance	Temporary

Issue	Impact	Initiating project action	Impact duration
	Crop and land disturbance	Temporary access tracks; batching plant operation; tower construction; line stringing; line maintenance	Temporary
	Loss of tree resources	Easement establishment	Permanent
	Encroachment into village properties (eg cemetery)	Construction activities	Permanent
Health and safety	Injury and sickness of workers and members of the public	Construction activities	Permanent / Temporary
	Construction hazards (UXO)	Construction activities	Temporary
	Electrocution	Electricity train & distribution	Permanent
	Radio and TV interference	Electricity train & distribution	Permanent
	Electromagnetic fields	Operation	Permanent
Cultural and archeological heritage	Visual and cultural impact	Line structures	Permanent
Local Activities	Interference with local villagers' activities	Construction activities	Temporary
Local Infrastructure	Interference with other infrastructure	Construction activities	Temporary

Source: Adapted from MEM & KEPC 2006

7.2 Biophysical Impacts and Mitigation Measures

7.2.1 Biodiversity

Issues and Findings

The construction of a transmission line can have similar impacts to the construction of roads, which in Lao PDR has been responsible for severe, widespread, and irreversible impacts on biodiversity especially where these roads bisect Protected Areas or where their “zones of influence” extend into Protected Areas or important biodiversity corridors. In this case, the transmission line will be constructed along existing roads (Road 13 S and Road 15), from a biodiversity perspective, the

additional impact of the clearance of a transmission line ROW and the construction of towers will is likely to only have a minor additional impact.

The primary potential impact of the project on biodiversity is likely be related to vegetation clearance for the ROW establishment. Table 7-2 provides a summary of the forest land impacted by the project

Table 7-2 Impact on Forested and Plantation Areas

District	Number of villages	Line distance on village land (m)	Total Area within TL ROW (Ha)	Forested Land* within ROW clearance (m^2)		Agricultural land within ROW clearance (m^2)
				Mixed deciduous forest	Unstocked forest (dry diptrocarp and unstocked)	Plantation
Kaysone	8	25382	63.46	22.76	10.25	2.27
Champhone	2	4654	11.64	0.00	10.01	0.00
Xaiphouthong	6	23786	59.47	10.10	23.41	0.00
Songkhonee	19	54327	135.82	4.10	43.15	0.00
Lakhonpheng	21	52803	132.01	11.55	62.95	0.00
Vapi	13	31952	79.88	0.90	16.97	0.00
Salavan	12	24814	62.04	0.00	21.96	0.00
-	81	217718	544.30	49.41	188.70	2.27

(*source: FIPD 2002)

The current project design stipulates that tall trees within 12.5 m on both sides of the centre line will be cut to ground level (on government land) and on private land a 2.48 m clearance below the conductors will be maintained with pruning. Trees beyond the 12.5 m area on both sides will also be trimmed and pruned to maintain clearance.

The proposed alignment does not directly intersect a National Protected Area (NPA), however it does pass within 400 m of the Phou Xieng Thong NPA, and is less than 5 km from the north eastern side of the NPA for approximately 25 km. The line also passes within 5 km of the Xe Bang Nuan NPA, and is within 6 km of the south-western boundary for approximately 30 km of its length. Although there is already a major road between Phou Xieng NPA and Xe Bang Nuan NPA, the proposed transmission line will add to the barriers between the two national parks, and may potentially have a cumulative impact on the migration of fauna between the two areas.

There is also potential for the two nearby NPAs to be indirectly impacted by increased wildlife exploitation, erosion, fragmentation and edge effects (ADB, 2005), particularly as the village use forests adjacent to the Phou Xient Thong NPA will be affected by the Project, and therefore, local residents may start to use the NPA to collect for forest resources. The presence of construction workers including migrant labour may place pressure on the timber and Non-timber Forest Products (NTFPs), particularly for Phou Xieng Thong NPA due to its close proximity to the alignment. The potential impact of construction workers on protected areas may also be an issue for the construction of the sub-station at Taothan.

There is also the potential for impacts on birds, particularly migratory birds, due to collision and electrocution from transmission lines. The whole of Lao PDR is within the East Asian–Australasian Flyway, which is a major migratory route for waterbirds. This may also be a concern for bird species of conservation significance within the nearby NPAs. Mammals such as monkeys also have the potential to be electrocuted through climbing the transmission line towers.

Specific potential impacts include:

- Approximately 49 ha of deciduous forested area and 188 ha of dry diptrocarp and unstocked forest will be affected due to the establishment of the transmission line ROW (see Table 7-2). A small area of vegetation clearance (approximately 1 ha) may also be required for the establishment of the Taothan sub-station however satellite imagery reveals that this area is mostly cleared already (Google 2009);
- The establishment of the ROW will also result in forest loss and fragmentation in forested areas near Ban Lak 90 and Ban Lak 94 that act as a buffer zone for the Phou Xieng Thong NPA. Approximately 12 ha of forest within this buffer area will be affected;
- Loss of natural vegetation and habitat through harvesting of firewood by construction workers;
- Noise impacts on fauna species associated with construction activity (heavy vehicles, use of construction equipment etc);
- Soil erosion and consequent impacts on water quality and habitat of aquatic species during construction;
- Impacts of the project on agricultural areas may lead to impacts on aquatic biodiversity food resources for local communities;
- Avifauna and mammal fatalities during operations due to direct impact and electrocution;
- Creation of physical and visual barriers to wildlife movement corridors and home ranges resulting in a reduction of the effective habitat area of wildlife species;
- Introduction of invasive species of animals and plants; and
- Increased extraction of forest products by construction workers for personal use and trade.
- Impacts on water quality and soil fertility due to the use of herbicides.

Avoidance, Mitigation and Management Measures

Measures to mitigate the potential impacts on terrestrial and aquatic biodiversity could include:

- Ensure that the alignment is as far from the NPAs and other environmentally sensitive sites as possible.

- As part of the 'Detailed Measurement Survey' (DMS), conduct detailed vegetation mapping to accurately assess the amount of each vegetation type potentially impacted by the vegetation clearance required for the transmission line corridor, particularly the area adjacent to the NPA.
- Carefully monitor land clearance activities throughout the construction phase to ensure that vegetation is not cleared beyond pre-defined project boundaries. This should include clear marking of the boundaries of vegetation clearance prior to clearance.
- Ensure that ground vegetation and shrubs are not disturbed in the ROW below the required clearance height (7.5 m). Prune trees that can survive pruning to less than 3 m within the ROW, rather than removing them where possible.
- Ensure appropriate design of infrastructure to minimise erosion and potential disturbance to drainage lines;
- Establish camps, depots, quarries and borrow pits in locations that will minimize their environmental impact and during clearing for camps and depot areas, stockpile surface soils from areas of depot to enable rehabilitation these areas on Project completion;
- Use endemic and non-invasive plant species for revegetation and rehabilitation work;
- Prohibit the use of herbicides to control vegetation along the ROW.
- Prohibit the use of burning to clear and control vegetation along the ROW.

To minimise impacts on wildlife:

- Construction workforce will be restricted from fishing, hunting and trading wild animals and ensure that adequate alternate sources of food are available; and
- Supply alternative fuel for cooking and heating in the labour camp or ensure fuel wood supplies are purchased from village sources. Collection of firewood and other forest products should be prohibited.
- Location of towers will be adjusted to avoid wetlands.
- Consider the implementation of measures to minimise impacts on birds and mammals due to electrocution and wire strikes, particularly where the transmission line alignment passes in the vicinity of the NPAs. Measures could potentially include:
    - Coloured markings on conductors visible to birds such as aerial marker spheres.
    - Attachment of silhouettes of birds of prey to conductors.
    - Modifications to mitigate electrocution such as perch guards and conductor installation.
    - Screens to prevent arboreal mammals from climbing towers.
    - Monitoring of fauna deaths associated with the transmission line.

Impact Assessment

In this case, the transmission line will be constructed along existing roads (Road 13 S and Road 15) where the land and forest adjacent to the roads has already been affected by human activities, from a biodiversity perspective, the additional impact of the clearance of a transmission line ROW and the construction of towers is expected to have only a minor additional impact. The exception to this is the NPA buffer area near Ban Lak 90, where the clearance of the transmission line ROW and the construction of towers will result in further fragmentation of habitat and possible increased encroachment into the NPA.

Careful management and monitoring will be required, particularly during clearance and construction in the NPA buffer area, to ensure that impacts are minimised.

7.2.2 Other Impacts

The following impacts are primarily short-term construction impacts that, if managed properly, will have no lasting impact on the environment or local residents.

Erosion and Sediment Transport

Earthworks associated with tower construction will be limited to excavation for four sunken concrete footings, so soil disturbance will be confined to the immediate tower base. Limited cut and filling will also be required for access tracks and sub-station sites. The engineering design will ensure that the towers are not located on in areas prone to erosion.

Erosion and sediment transport from construction of the transmission line towers and sub-stations may result in the loss of some productive land immediately adjacent to the tower and sub-station footprint Sediment deposition can also impact the quality of water in community water resources (such as open wells).

Erosion and sediment transport measures will focus largely on preventing the loss of adjacent productive land and impacts on water resources. The following measures will be implemented to minimise impacts associated with erosion and sediment transport during the construction phase of the Project:

- Schedule construction activities during the dry season (low rainfall), where possible.
- Minimise the area of land cleared for project construction work, and retain vegetation in riparian and other suitable locations to maximise filtration of sediment from turbid runoff, during and post construction.
- Carefully monitor land clearance activities throughout the construction phase to ensure that vegetation is not cleared beyond pre-defined project boundaries.

- Install drainage control structures at suitable locations to divert clean runoff away from disturbed land surfaces, and to allow for frequent and safe discharge where runoff is concentrated, but without creating deeply incised scour paths.
- Install erosion and sediment control structures such as silt fences and sediment ponds at suitable locations to filter or collect eroded sediments from turbid runoff, where necessary.
- Once construction activities are complete, progressively revegetate disturbed land surfaces at the sub-station and tower sites as soon as practicable, to facilitate long term stabilisation.
- Compensate villagers for any lost land, assets and livelihood, associated with sediment deposition.
- Implementation of the above measures will minimise the potential for erosion and sediment transport. Progressive rehabilitation will ensure that cleared areas are stabilized prior to the onset of the wet season.

Noise

During the construction phase, there will be some nuisance noise impacts associated with the tower and sub-station construction, as well as the cutting of trees within the ROW. Noise emissions will result from earth moving equipment, graders and other heavy vehicles used in construction and chainsaws used in vegetation cutting. There are 19 villages located with 500 m of the ROW, which may be affected by nuisance noise during construction. Noise from construction activities may also result in migration of sensitive fauna species away from construction areas.

At the sub-stations, large-sized transformers may produce some moderate noise, though generally, this noise is less than 85 decibels. Project sub-stations are located at least 200 metres from the nearest settlement area, so nuisance noise impacts should be negligible.

Construction and vegetation cutting activities will be restricted to daytime, which will minimise the impact of nuisance noise at night.

Air quality

During the construction phase, air emissions include exhaust fumes from earthmoving equipment, as well as dust from construction activities and cleared areas. The population most likely to be exposed to this air pollution is the construction workforce, though some dust deposition may occur on adjacent agricultural land.

Potential air quality impacts can largely be mitigated with careful management of equipment operators and contractors and implementation of the above mitigation measures.

Climate and Energy

Greenhouse gases are believed to contribute towards global warming and climate change. The major greenhouse gases include carbon dioxide (CO2), nitrous oxide (N2O), methane (CH4), as well as perfluorocarbons (PFCs), hydrofluorocarbons (HFC), Chlorofluorocarbons (CFCs) and sulphur hexafluoride (SF6).

A major benefit of the project is that it will reduce greenhouse gas emissions compared to the baseline through the displacement of fossil fuel based electricity imports from Thailand in the Central 2 grid (see section 3.2)

However, the project is likely to have minor impact from the emission of greenhouse house gases. Of particular interest to the electric power sector is sulfur hexafluoride (SF_6). SF_6 is used as an insulator for circuit breakers, switch gear, and other electrical equipment. The electric power industry uses roughly 80% of all SF_6 produced worldwide. SF_6 is inadvertently emitted into the atmosphere during various stages of the equipment's life cycle and has a very high Global Warming Potential (GWP) – 23,900 times the warming effect of carbon dioxide per ton emitted. Therefore, even small amounts of SF_6 emissions can constitute a significant carbon-equivalent emission tonnage.

In the transmission and distribution system, some of the energy supplied by the generator is lost due to the resistance of the wires and equipment that the electricity passes through. Transformer loss is one of the significant components accounting for energy loss in transmission and distribution. Depending on anticipated load characteristics, poor system power factor may also increase the line resistive losses.

There is great potential for improving the energy efficiency of the transmission system. It is essential to that industry best practice management is practiced for the project to ensure that greenhouse gas emissions are met within Lao PDR and international guidelines. The implementation of technologies designed to boost efficiency in transmission and reduce greenhouse gas emissions can maximise economic and environmental benefits. Potential measures include the installation of energy efficient transformers, power factor correction equipment and the implementation of SF_6 recycling and leakage elimination programs. Some measures also have the possibility of generating carbon credits through the Kyoto Protocol's Clean Development Mechanism.

Surface and Ground Water

Oil leakage from machinery, oil products and other chemicals can penetrate to the groundwater or run off to surface waters. There is also the potential for the remains of concrete mixing to run-off into adjacent streams and rivers.

Concentration of suspended solids could increase in surface waters due to construction work nearby. There is also the potential for water contamination from the discharge of grey water and sewage from campsite facilities.

The Project may use herbicides to control ground vegetation, and if used, these are likely to run-off into adjacent water bodies.

These potential impacts can be mitigated by:

- Proper storage and handling of hydrocarbons, including the installation of bunding and appropriate drainage around storage and use facilities.
- Implementation of erosion and sediment control measures (see above).
- Use of herbicides will be prohibited, but if deemed necessary, use will be strictly in accordance with the instructions for use.

Waste

The generation of general waste materials at the Project will result from construction activities and general construction camp maintenance and operation.

The primary waste generated by the Project will be vegetation waste created by the clearance of the ROW. Burning of vegetation waste will not be permitted. Waste will be piled, and residents provided the opportunity to use the vegetation waste for firewood, making charcoal or other uses (e.g. making fences).

In total, approximately 6,000 m^3 of spoil will be generated by excavation for construction of the towers. Some of the spoil will be used to rehabilitate the tower bases, but a majority will have to be transported off site for disposal. The Project will identify spoil disposal sites in consultation with the District Authority. Spoil will be stacked, contoured and revegetated to minimise erosion and sediment transport. Spoil disposal areas will be located at least 100 m from surface water resources (streams, rivers, ponds).

In addition to the above waste streams, there could be an increase in the generation of litter due to the presence of the Project employees and contractors. Waste that is uncollected or improperly disposed of could have adverse effects on human and environmental health. Waste is likely to include:

- Packaging materials;
- Food waste; and
- Human and sanitary waste.

Solid waste remaining from construction activities will be collected on site, and transported off-site for disposal and / or reuse / recycling. Recycling and reuse of waste materials will be maximised where possible. The potential for litter will be minimised by the presence of waste bins at the site, as well as the regular clean-up of the terminal by maintenance staff.

Hazardous materials and waste present on site during construction will include oils and hydrocarbons. Any oils and hydrocarbons (including oily waste) that is stored at the construction site will be stored in a fully bunded area with appropriate drainage installed to prevent the runoff of oil-contaminated water. Oil and hydrocarbon storage areas and containers will also be clearly labelled. Hazardous waste will be removed from site following the completion of construction, and disposed of properly off-site or sold for reuse.

7.3 Socio-Economic Impacts and Mitigation Measures

The total area of the ROW for the length of the proposed transmission line is 5.5 km^2. The ROW travels through the land of 904 households within 81 villages. The level of impact will vary between villages depending on the proximity of the village settlement and land uses within the proposed ROW.

The key socio-economic impacts of the transmission line will be the resettlement of households within the ROW, the loss of productive land (forests and agricultural land) within the footprint of the sub-station and the towers and the loss of forests and commercial trees within the ROW. These impacts are discussed in detail in the sections below.

7.3.1 Resettlement and Land Acquisition

Issues and Findings

Initial surveying indicated that of the 81 villages with land within the ROW, 8 will have settlement land or other build assets affected, 27 will have village forest land impacted and 80 may have agriculture land affected.

Table 7-2 above provides information on estimated forest land that will be impacted by the transmission line.

Table 7-3 below provides information permanent impacts caused by towers and sub-station development by district.

Table 7-4 provides more detailed information on villages with settlement land impacted.

With information provided on the affects on settlement land, the developer has made adjustments to the proposed alignment so that no settlements are impacted. This realignment will need to be confirmed during the detailed measurement survey.

Specific potential impacts include:

- *Land acquisition* - Permanent structures including the transmission line towers and sub-station at Taothan in Lakhongpheng District will require the acquisition of land. At this stage it is estimated that 544 towers each with a footprint of 50.21 m^2 will require approximately 2.88 ha across the ROW. Land required for the sub-station totals approximately 1 ha.
- *Loss of settlement areas* - Any structures (houses, storage areas, shops, etc.) directly within the ROW will need to be relocated. Surveying has identified 8 villages which will require the relocation of some settlement assets as a result of the proposed transmission line (see Table 7-4).
- *Loss of forested areas* – Forest resources, either privately or communally owned such as village use and spirit forest will be removed and converted into other land uses. Surveying has identified 27 villages which will experience some loss of village forest assets as a result of the proposed transmission line.

Table 7-3 Land and assets impacted by tower and sub-stations in the ROW

Prov.	District	Number of villages	Line distance on village land (metres)	Estimated land loss to towers* (Ha)	Estimated land loss to towers# (Forest land) Ha		Estimated land loss to towers (Agricultural land)# Ha		Estimated land (residential)	Estimated land loss to sub-stations^	Number of Villages with Houses impacted^*	Established other structures
					Mixed deciduous forest	Unstocked forest (dry diptrocarp and unstocked)	Rice Paddy	Plantation	Residential			
SVK	Kaysone	8	25382	0.34	0.12	0.05	0.14	0.01	0.00	0.00	1	1
	Champhone	2	4654	0.06	0.00	0.05	0.01	0.00	0.00	0.00	0	0
	Xaiphoutho ng	6	23786	0.32	0.05	0.12	0.14	0.00	0.00	0.00	0	0
	Songkhone	19	54327	0.72	0.02	0.23	0.46	0.00	0.01	0.00	3	1
SRV	Lakhonpheng	21	52803	0.70	0.06	0.33	0.30	0.00	0.00	0.01	2	0
	Vapi	13	31952	0.42	0.03	0.09	0.33	0.00	0.00	0.00	0	0
	Salavan	12	24814	0.33	0.00	0.12	0.21	0.00	0.00	0.00	0	0
TOTAL	-	81	217718	2.88	0.29	1.00	1.59	0.01	0.01	0.01	6	2

* assumes average footprint of 52.99
* assumed tower spacing of 400m
# land use breakdown calculated by village using GoL FIDP data
^ Taothan sub-station is on government land and will not require compensation
^* After receiving this information EDL completed realignment of the transmission line to avoid these residential areas

Table 7-4 Villages with residential and / or commercial structures within the current TL ROW.

Province	District	Village No.	Village Name	No. HH and / or Assets Affected
Savannakhet	Kaysone	1	Dongnakham	1
		2	Dongmakyang	1
	Songkhonee	3	Nongnokkhien	4
		4	Thongsimeuang	1
		5	Khummouan	17
		6	Nakangom	1
Saravanh	Lakhonepheng	7	Puangsavanh	3
		8	Puangmalay	5

Source: ESL Surveying 2009

Avoidance, Mitigation and Management Measures

Measures to mitigate the potential impacts from the acquisition of land and land use change include:

- Fair compensation paid for acquired land based on current market rates, taking into account land capability
- Land used for settlement should be avoided. If unavoidable, fair compensation paid for acquired settlement assets in addition to a well supported resettlement program.
- Replace or re-install utilities and facilities (such as ground water pumps, fishing ponds, access tracks) disturbed by the Project.
- Village use and spirit forest land should be avoided. If unavoidable, commercial, livelihood and cultural value of these resources should be assessed in detail, villages consulted and suitable compensation / mitigation actions agreed to.

Impact Assessment

Most of the land required for the transmission towers is village or individually held agricultural land. Impacts will be minimal if land loss is properly compensated and crop options for underneath the towers are properly communicated and supported by the project. Impacts to those settlement areas and forests falling within the ROW will be greater and adequate compensation will be required.

EdL have already entered into an agreement with the Saravan Province to acquire 1 ha of land for the proposed sub-station at Taothan. More detailed information on land and assets affected within the ROW and the proposed compensation and mitigation measures is provided in the RAP.

7.3.2 Land Use Restrictions and Loss of Commercial Trees

Issues and Findings

Land use restrictions will be placed on all land within the ROW. Trees and vegetation in the ROW will be removed or restricted to a height of 3 m and no structures will be permitted within the easement.

Specific potential impacts include:

- *Loss of commercial tree species* – As mentioned in the previous section, tall trees within 12.5 m on both sides of the centre line will be cut to ground level or maintained below a hight of 3m to maintain the required clearance of 2.98m below the conductors will be maintained. This may lead to the loss of valuable commercial tree species such as eucalypt, teak plantations and rubber plantations. Within the ROW it is estimated that a total of 15,700 economically valuable trees.

- *Loss of land capability - tree species:* While rice and other crops will generally be able to grow in the ROW area, the 3 metre restriction will reduce the agricultural capability of land by denying the growing of most trees.
- *Loss of land capability - urban or industrial land:* The easement will reduce land use capability by restricting the type of structures that can be built.

Avoidance, Mitigation and Management Measures

Trees:

- Trees that can survive pruning to less than the 3 metres will be pruned, not cleared, to provide the required line of clearance;
- Vegetation and trees to be cleared shall be marked before clearance to ensure that minimal clearance occurs;
- Provide adequate compensation to local villagers for loss of access to timber and NTFPs within their village land.
- Felled trees and other cleared or pruned vegetation will be made available to the owner (individual or village), or will be removed if requested by the owner.
- Compensation for removed or pruned trees will be paid at fair market value based on tree type and age.

Land capability

- A one off payment shall be made to affected land owners to offset the devaluation of land within the ROW due to reduced land capability.

Impact Assessment

With proper implementation of the management and mitigation measures, the residual impact is likely to be minimal.

7.3.3 Crop and Land Disturbance

Issues and Findings

Disruption of farming activities and disturbance to crops, paddy bunds, canals, drains and other farming infrastructure will mainly occur during the construction period. The main cause of disturbance during construction will be the construction of the Taothan sub-station, establishment of temporary access roads to each tower site; construction of each tower; and conductor stringing.

A key issue of tower construction will be the spoil created from excavation of tower footings. Spoil disposal areas have not been identified.

Regular line and tower maintenance works during the operation period are likely to cause similar disturbances, however these works will be site specific and occur only

during the dry season months when agriculture activity along the ROW is at its minimal.

Avoidance, Mitigation and Management Measures

- Construction activities will be timed to avoid disturbance of field crops where possible. Where crop disturbance is unavoidable, compensation for loss of production will be paid prior to harvest based on market or agreed price.
- Access track construction will be minimised. Established roads will be used for construction and maintenance where possible. Where construction of access routes is required, they will be restricted to a single carriage way within the ROW unless more direct and lower impact access can be gained.
- Erosion and sediment issues associated with construction and maintenance activates will be mitigated as outlined in section 7.2.2
- Temporary concrete batching plants will be located on disturbed sites or areas of low production value (eg grass land where possible).
- Spoil disposal areas will be identified prior to beginning construction. Productive land areas and areas important for biodiversity will be avoided.

Impact Assessment

Disruption to crops is largely a temporary impact. With proper compensation and implementation of the mitigation measures, the residual impact is likely to be minimal.

7.3.4 Other Issues

Health and safety

There are a number of health and safety impacts associated with the transmission line.

a) Labour force

A temporary influx of migrant labour during the construction period increases the risk of sexual transmitted diseases incidents in the project area. Secondary issues include sanitation, water supply and waste.

Mitigation:

- The use of local labour can reduce these issues. The head contractor shall commit to the use of local labour where feasible.
- Construction contractor will prepare an Occupation Health and Safety Plan and provide related training and instructions to staff and sub contractors during induction.

- Construction workforce facilities will include proper sanitation, water and waste facilities.
- Public health information will be provided to the construction workforce and community before commencement of works – including information on STIs.
- Support existing provincial STD HIV/AIDS awareness and prevention programmes and apply them specifically to the TL construction.

b) Construction hazards

Health hazards from construction activities are associated with the use of heavy machinery, handling of hazardous materials and general practice of workers on the construction site.

Mitigation:

- Construction sites will be well marked and access well controlled. Warning signs will be presented where necessary

c) Unexploded Ordinance

While villages reported low incidence of UXOs in the project area they may still exist, particularly in Saravan Province, and therefore pose a safety hazard.

Mitigation:

- Areas of high likelihood of UXO contamination will be surveyed prior to commencing construction activities. Surveyed and cleared areas will be clearly marked.

d) Electrocution

Electrocution can occur from contact with the live conductors, flashover from the conductor to a tower or person and through conductor breakage.

Mitigation:

- EDL standards for safe clearance to live conductor for a 115 kV transmission line will be adhered to.
- *Danger* and *Warning* Signs will be erected on every tower as well as on conductors where the line is crossing a road or river.
- Appropriate conductor materials will be used to minimise health and safety risks.
- An exclusion perimeter around the Taothan sub-station of at least 12 metres will be maintained with a fence.

e) Electromagnetic fields

Electromagnetic fields from transmission lines can pose health issues to people living and working in close proximity to the line.

Mitigation:

- EDL standards for safe clearance to live conductor for a 115 kV transmission line will be adhered to.

- Appropriate conductor materials will be used to minimise health and safety risks.
- An exclusion perimeter around the Taothan sub-station of at least 12 metres will be maintained with a fence.

Cultural heritage and archaeology

No sites of archaeological sites or cultural significance were identified during the surveying. As a majority of the residents in the Project Area are Buddhists (who practice cremation), it is not likely that there will be any cemeteries or gravesites affected. There is the potential for chance finds to occur during construction activities.

Mitigation:

A ‘Chance Find’ procedure will be prepared and implemented during the construction phase. In the case that a site or article of historical, cultural and religious importance is encountered by chance during excavation activities, work will be stopped and the Provincial Cultural Office will be notified. Construction will be resumed after inspection and approval by the authorities.

Local infrastructure - roads

The major impact on local infrastructure will be the use of existing roads during construction and maintenance activities. Roads may be blocked by line stringing or damaged by heavy loads and safety issues may increase during peak construction times.

Mitigation:

- When roads are blocked, alternative access routes will be identified.
- Head contractor will adopt road safety practices including posting warning signs and appropriate management of traffic.

8 ENVIRONMENTAL PLAN (EMP)

8.1 Institutional Structure for Management

There are three (3) key organisations involved in the implementation of environmental and social mitigation measures. These three (3) organisations, and a brief description of the responsibilities of each organisation, include:

1. **Project Environmental Management Committee (PEMC)** – This committee consists of officials from relevant Government agencies at the Provincial and District levels. The PEMC will be responsible for deciding compensation conditions, and monitoring the social and environmental aspects for the Project. The PEMC will consist of at least 10 representatives from the different concerned agencies from Savannakhet and Saravan including Provincial EdL Branches, Provincial WREA, Provincial Energy and Mines Department, Provincial Land Office, Provincial Agriculture and Forestry Department (Provincial Forestry Section), Provincial and District Cabinets and other related officials. The PEMC will form subcommittees to focus on particular aspects of the Project such as Environmental management, Forest Clearing, Grievance management and Compensation, etc.
2. **EDL Environment Office** – EDL Environmental Management Office (EO) will be the primary organisation responsible for the planning, implementation and monitoring of all environmental management and compensation measures. EDL EO will ensure that the Project complies with best environmental practices and meets the mitigation and monitoring requirements described in the IEE report. EDL will also set up two Provincial level Environmental Managemnet Units (EMU) – one based in Saravan Province and the other to be based in Savannakhet Province. This report will be submitted to Department of Electricity. The loan should provide funding for institutional support to strengthen EDL's environmental capacity, particularly at the Provincial and District levels.

   The main duties of the EDL EO and EMU are to:

   - Implement relevant Lao PDR policies, laws and regulations.
   - Prepare and revise rules and regulations of environmental management and to carry out supervision.
   - Check the operational condition of the environmental protection equipment and safety equipment.
   - Set up and perform the environmental protection program and to upgrade the environmental protection equipment when appropriate.
   - Be responsible for the environmental monitoring and management, and assisting the superior authorities in the inspection of environmental management measures.

- Promote and apply advanced environmental technologies.
- Arrange environmental training for employees.
- Provide advice on waste treatment and report accidents.

3. **Environmental Management Office of the Construction Contractor** – The Environmental Management Office of the construction contractor will be responsible for implementation of environmental measures to avoid or minimise environmental impacts during construction. Environmental management reports will be prepared by the construction contractor on a monthly basis as part of the Project's monthly reports for submission to EDL.

   The specific responsibilities of the Environment Department of the Construction Contractor include:

   - Ensuring compliance is achieved with relevant legislation and company policy by establishing and maintaining appropriate management and monitoring systems.
   - Ensuring the management practices described in this EMP are implemented effectively.
   - Monitoring the performance of ESMMP strategies.
   - Regular liaison with EDL, government, community and other stakeholders.
   - Reporting.

In addition to the above groups, the **Environment and Social Management Division (ESD), Department of Electricity (DOE), Ministry of Energy and Mines** and the **Environmental and Social Impact Assessment Division (ESIAD), WREA** will be involved in monitoring the implementation of environmental and social management and mitigation measures, and coordinating activities between different groups. The primary involvement will be through their representatives in the PEMC.

8.2 Management and Mitigation Program

The Environmental Management Plan for the Project is summarised in Table 9-1. This plan is based on the result of the impact assessment (Chapter 8) and the Environmental Checklist provided in Appendix 4.

Table 8-1 Environmental Management Plan

Potential impact area	Project issue / impact	Significance	Mitigation and management measures	Responsibility
DESIGN AND CONSTRUCTION				
Terrestrial Biodiversity	Impact on terrestrial vegetation, terrestrial fauna, forest resources and protected areas	Minor - Moderate	Management clearing of the ROW:	
			Avoid clearance of mixed deciduous forest wherever possible.	EDL Project Management Office
			Minimise the amount of land cleared for the Project.	EDL Project Management Office
			Use of herbicides will be prohibited.	Contractor
			Burning will be prohibited.	Contractor
			Identify sensitive habitats and important NTFP areas close to construction areas and designate these as 'no go' areas.	Contractor
			Maintain forest cover as close as possible to the edge of all Project components.	Contractor
			Only use local, non-invasive plant species in revegetation work.	Contractor
			Carefully monitor land clearance activities throughout the construction phase to ensure that vegetation is not cleared beyond pre-defined project boundaries.	EDL EO/EMUs
			Ensure that ground vegetation and shrubs are not disturbed in the ROW below the required clearance height	Contractor
			Ensure that the alignment of the transmission line is sited as far as possible from NPAs and other designated environmentally sensitive areas.	EDL Project Management Office

Potential impact area	Project issue / impact	Significance	Mitigation and management measures	Responsibility
			Consider the implementation of measures to minimise impacts on birds and mammals due to electrocution and wire strikes, particularly where the transmission line alignment passes in the vicinity of the NPAs.	EDL Project Management Office
			Prohibit staff and contractors from hunting or trading of wildlife as well as the collection of timber and NTFPs in the vicinity of the NPAs..	Contractor
			Selling of logs by the Contractor and by EdL will be prohibited. Logging and logs selling process will be based on the Forestry Law No.6 (24/Dec/2007) Article 49 and conducted by the Forest and Forestland Management Organizaions.	Contractor EDL EMUs
			Forestry Clearing Committee, District Forestry Unit and land owners to list and mark big trees or commercial tree species and cut before ROW clearing.	PEMC District Forestry Unit
Land use	Impact on land use	Moderate	Provide compensation for productive land and residential land lost as a result of the Project.	PEMC EDL EO / EMUs
			Replace or re-install utilities and facilities (such as ground water pumps, fishing ponds, access tracks) disturbed by the Project.	PEMC EDL EO / EMUs
			Construction activities will be timed to avoid disturbance of field crops where possible.	Contractor
			Where crop disturbance is unavoidable, compensation will be paid.	PEMC EDL EO / EMUs

Potential impact area	Project issue / impact	Significance	Mitigation and management measures	Responsibility
			Access track construction will be minimised. Established roads will be used for construction and maintenance where possible. Where construction of access routes is required, they will be restricted to a single carriage way within the ROW.	Contractor
			Temporary concrete batching plants will be located on disturbed sites or areas of low production value (eg grass land where possible).	Contractor
			Spoil disposal areas will be identified prior to beginning construction. Productive land areas and areas important for biodiversity will be avoided.	EDL Project Managmenet Offcie
			Felled trees and other cleared or pruned vegetation will be made available to the owner (individual or village), or will be removed if requested by the owner.	EDL EO / EMUs
			Compensation for removed or pruned trees will be paid at fair market value based on tree type and age.	PEMC/EDL EO/EMUs
Aquatic Biodiversity	Impact on local aquatic flora and fauna	Negligible	Prohibit hunting and fishing, and species introduction by employee of contractor and Project staff	Contractor EDL EO / EMUs
			Control erosion and sedimentation from Project activities. (See below).	Contractor
Erosion and Sediment Transport	Erosion and sediment transport during project construction	Minor	Where possible, schedule construction activities during the dry season (low rainfall).	Contractor
			Towers will be located on flat to gently sloping terrain (i.e. slopes of less than30o).	EDL Project Management Office

Potential impact area	Project issue / impact	Significance	Mitigation and management measures	Responsibility
			Minimise the area of land cleared for project construction work, and retain vegetation in suitable locations (e.g. riparian) to maximise filtration of sediment from turbid runoff, during and post construction.	Contractor EDL EO / EMUs
			Progressively revegetate disturbed land surfaces at the Project site as soon as practicable, to facilitate long term stabilization.	Contractor
			Compensate villagers for any lost land, assets and livelihood, associated with increased sediment transport rates downstream of project areas.	PEMC EDL EO / EMUs
Water Quality	Increased total suspended solids (TSS) and turbidity downstream of construction areas.	Minor	See above measures for 'Erosion and sediment transport'	EDL EO/ EMUs
	Changes to pH downstream of project areas.	Negligible	Install sedimentation ponds to collect runoff from concrete preparation and construction sites.	Contractor
			Treat (neutralise) runoff from concrete preparation and construction sites, if necessary, prior to off site discharge.	Contractor
			Prevent washing of excess concrete/ cement from vehicles or equipment adjacent to or in streams.	Contractor
	Accidental release of oil or hydrocarbons	Minor	Store liquid hydrocarbons (fuels, oils and lubricants) in leak-proof containers within suitably designed bunded areas.	Contractor
			Provide temporary shelters to prevent rainfall entering bunded areas.	Contractor
			Store absorbent material in hydrocarbon storage areas.	Contractor

Potential impact area	Project issue / impact	Significance	Mitigation and management measures	Responsibility
			Store spill response kits at suitable locations, in case of spills outside bunded areas.	Contractor
			Conduct regular maintenance of vehicles and equipment to prevent hydrocarbon leaks.	Contractor
			Conduct vehicle / equipment maintenance in designated areas where contaminated runoff can be contained.	Contractor
			Park vehicles and equipment on sealed surfaces where contaminated runoff can be contained.	Contractor
Air quality	Dust emissions	Minor	Disturb only the minimum area necessary. Leave ground vegetation, such as grasses and shrubs, under the line within the ROW	Contractor
			Water roads and / or construction areas to minimise generation of wind-blown dust.	Contractor
	Vehicle exhaust	Negligible	Use low emission trucks and mechanical equipment	Contractor
Noise	Nuisance noise impacts	Minor	Limit the hours of operation to daylight hours. Local residents will be consulted if some evening work is required.	Contractor
Climate and Energy	Greenhouse gas emissions and energy loss	Minor	Implement measures designed to reduce greenhouse gas emissions and energy loss in transmission systems (including energy efficient transformers, power factor correction and SF6 recycling and elimination strategies)	EDL Project Management Office
General Waste and Hazardous Material	Potential health and safety impacts	Minor	Minimise the production of waste.	Contractor
			Site worker camps at least 1 km from NPAs and other areas of conservation significance, 50 m from surface water bodies and 1 km from villages and sites of cultural significance.	Contractor

Potential impact area	Project issue / impact	Significance	Mitigation and management measures	Responsibility
			Sewage and solid waste will be stored in septic tanks or treatment ponds.	Contractor
			Maximise waste recycling and reuse.	Contractor
			Waste will be properly disposed and buried on a daily basis.	Contractor
			Clearly label hazardous materials and waste storage sites with appropriate signage in both English and Lao.	Contractor
			Maintain an inventory of all hazardous materials on site and update regularly.	Contractor
Construction Waste	Health, safety and nuisance impacts of improperly disposed waste.	Minor	Vegetation debris from the ROW will be stacked outside the ROW. Burning is not permitted.	Contractor
			Packaging waste will be recycled or disposed of in the local landfill.	Contractor
Archaeology	Loss of physical cultural resources	Minor	Suspend excavation and take appropriate counter-measure according to the instruction or guidance of the Provincial Culture and Tourism Directorate (PCTD) when historical, cultural or archeological property or heritage is discovered or identified at construction site for authorities' inspection.	Contractor
			Compensate for the loss of community's cultural properties such as village cemeteries.	PEMC EDL EO / EMUs
Health and Safety	Increased spread of diseases, including sexually transmitted infections	Minor	Where possible, local labour will be used.	Contractor
			Public health information will be provided to the construction workforce and community before commencement of works – including information on STIs.	EDL Environment Office

Potential impact area	Project issue / impact	Significance	Mitigation and management measures	Responsibility
			Support existing provincial STD HIV/AIDS awareness and prevention programmes and apply them specifically to the TL construction.	EDL Environment Office
	Sanitation and waste	Minor	Construction contractor to prepare an Occupation Health and Safety Plan and provide related training and instructions to staff and sub contractors during induction.	Contractor
			Construction workforce facilities will include proper sanitation, water and waste facilities.	Contractor
	UXO	Minor	Areas of high likelihood of UXO contamination will be surveyed prior to engaging in construction activities. Surveyed and cleared areas will be marked.	EDL Project Management Office
	Electrocution risk and effects of electro-magnetic radiation	Minor	EDL standards for safe clearance to live conductor for a 115 kV transmission line will be adhered to.	EDL Project Management Office
			Danger and Warning Signs will be erected on every tower as well as on conductors where the line is crossing a road or river.	EDL EMO / EMUs
			Appropriate conductor materials will be used to minimise health and safety risks.	EDL Project Management Office
	Occupational health and safety	Minor	Construction contractor to prepare an Occupation Health and Safety Plan and provide related training and instructions to staff and sub contractors during induction.	Contractor
			Employees will be provided with training and appropriate PPE (personal protection equipment)	Contractor
Roads and Access	Temporary loss of road use and access routes	Minor	Post warning signs to indicate slowing traffic, merging lanes and change of route.	Contractor

Potential impact area	Project issue / impact	Significance	Mitigation and management measures	Responsibility
			Identify alternative access routes when roads are blocked.	Contractor
OPERATIONS				
Terrestrial Biodiversity	Impact on terrestrial vegetation, terrestrial fauna, forest resources and protected areas	Moderate	Maintenance of the ROW:	
			Maintain forest cover as close as possible to the edge of all Project components.	EDL Branch Office (Saravan and Savanakhet) EDL Branch Office
			Plantation trees and crops with higher than 3 m will not be allowed.	EDL Branch Office (Saravan and Savanakeht Branch Office)
			ROW checking and maintenance of ROW should be conducted at least once or twice a year.	EDL Branch Office (Saravan and Savanakhet) EDL Branch Office
			Use of herbicides, burning to clear and control vegetation will be prohibited.	EDL Branch Office (Saravan and Savanakhet) EDL Branch Office
			The boundary of the NPA will be regularly patrolled to ensure that local residents are not utilising protected area forests.	EDL Branch Offcie in cooperation with PAFO
Water Quality	Contamination from leakage of oils from transformers	Minor	Transformers will be constructed within a concrete bunded area to contain any spills or leaks.	EDL Branch Office (Saravan and Savanakhet) EDL Branch Office
			Transformers will be periodically inspected.	EDL Branch Office (Saravan and Savanakhet) EDL Branch Office
	Contamination from use of herbicides	Minor	Use of herbicides will not be permitted.	EDL Branch Office (Saravan and

Potential impact area	Project issue / impact	Significance	Mitigation and management measures	Responsibility
				Savanakhet) EDL Branch Office
Health and Safety	Electrocution risk	Minor	EDL standards for safe clearance to live conductor for a 115 kV transmission line will be adhered to.	EDL Branch Office (Saravan and Savanakhet) EDL Branch Office
			Danger and Warning Signs will be maintained on every tower as well as on conductors where the line is crossing a road or river.	EDL Branch Office (Saravan and Savanakhet) EDL Branch Office
			An exclusion perimeter around the Nongsano sub-station of at least 12 metres will be maintained with a fence.	EDL Branch Office (Saravan and Savanakhet) EDL Branch Office
	Effects of electro-magnetic field	Minor	25 m ROW will be maintained through period inspection.	EDL Branch Office (Saravan and Savanakhet) EDL Branch Office

9 CONCLUSIONS

Overall, the assessment of magnitude of the potential impacts indicates that the environmental impacts are expected to be minor. The transmission line route has been selected to minimize impact on environmental and social resources. For the most part, biodiversity in the areas through which the transmission lines will pass has been degraded due to intensive human use for agriculture, hunting, and collection of NTFPs and TFPs.

The total area of the ROW for the length of the proposed transmission line is 5.5 km2. The ROW travels through the land of 904 households within 81 villages. The level of impact will vary between villages depending on the proximity of the village settlement and land uses within the proposed ROW.

The key socio-economic impacts of the transmission line will be the resettlement of households within the ROW, the loss of productive land (forests and agricultural land) within the footprint of the sub-station and the towers and the loss of forests and commercial trees within the ROW.

Other Project impacts are likely to include temporary nuisance impacts related to construction activities.

With adequate compensation and implementation of management and mitigation measures the residual environmental and social impacts are likely to be minor.

The findings of this IEE indicate that the IEE, supported by the EMP and RAP, provide sufficient assessment of environmental and social issues and identification of management and mitigation measures. Therefore, further assessment (i.e. an EIA) is not required. This recommendation is based on the findings of this IEE, the current design of the Project and GOL legislation. The recommendation, however, will need to be reconsidered if the design or location of project infrastructure changes.

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Environment – Water - Sustainability

Appendix 1 – Stakeholder Consultation Information Brochure (English and Lao)

TRANSMISSION LINES INTERCONNECTION PROJECT IN THE CENTRAL AND SOUTHERN PROVINCES OF LAO PDR

1. NAME AND STATUS OF THE PROJECT

Project Name: The Transmission Lines Interconnection Project in the Central and Southern Provinces of Lao PDR.

Project Status: *Feasibility*

2. NAME AND ADDRESS OF DEVELOPER

Name of Developer: Electricite du Lao (EDL)
Funded by: Japan International Cooperation Agency (JICA)
Head Contractor: Tokyo Electric Power Company, INC. (TEPCO)

Contact Address:

Electricite du Laos (EDL)/ JICA Study Team, Lao PDR
JICA Laos Project Office
PO.Box 309, Nongbone Road,
Vientiane, Lao PDR

3. PROJECT OBJECTIVES, CHARACTERISTICS AND DEVELOPMENT PLAN

Project Objectives:

In Lao PDR, there are four electric power networks; the Northern network, the Central 1 network, the Central 2 network and the Southern network, which are independently operated and not interconnected. The Government of Lao PDR with support from the Government of Japan is planning to connect the four power networks. The objectives of network interconnection include:

- To improve the National power network
- To increase the efficient management of the power sector,
- To enhance economic activities
- To contribute to fulfilling the Basic Human Needs of Lao PDR.

This project focuses on the interconnection of the Central 2 and the South power networks.


Figure 1: Project Location
TransmissionLine
Buffer 500m
VillagePoint
Household density
18 - 35
36 - 65
66 - 110
111 - 150
Road
River
District boundary
Province boundary
Protected / Conservation Area
Pakbo Sub-Station
Phou Xang He
Conservation
Savannakhet
XOKVANG TAI
M. Champhon
M. Kaysone Phomvihane
Jica Transmission line
Dong Phou Vieng
M. Xaiphouthong
NAKE
NONESOMPHOU
NONESOMBOUN
Xebanghieng
M. Songkhon
NAVANGKHENE
HOUAYPIAN
PHOUANGMALAY
Xe Nouan
Xe Bang Nouan
O KAO
HOUAYKAPHO
SORK PHENG
NADOU KAO
THAILAND
M. Vapi
M. Saravan
Saravan Sub-Station
PHONPHENG
M. Lakhonpheng
Xe Done
Saravan
NONEKHO
MOUANG
PONKHAMM
SAPHAT
TONGNOI
MAI SI VI LAI
Nongnou Sub-Station
NONGNGONG
Phou Xieng Thong
20 10 0 20 km
Scale: 1:850,000
DRAFT

Project Characteristics and Development Plan:

It is proposed that the Central 2 and South Power networks will be connected via a 115kV transmission line route which runs for approximately 220km, from Pakbo substation in Savannakhet Province through a switching station at Nongnou to a planned substation in Saravan Province. The transmission line route passes through seven districts across the two provinces. The 115kV right of way clearance is 25m resulting in a total area of 5.5km^2 that will be required for the line.

The transmission line corridor is adjacent to existing roads (Route 13 and Route 15) and passes within 500m of the Phou Xieng Tong National Protected Area (NPA) and 5km of the Xe Bang Nuan NPA and crosses three major rivers (Xe Banghiang, Xe Bang Nuan Xe Done (Figure 1).

4. THE ENVIRONMENTAL AND SOCIAL ASSESSMENT PROCESS

Company conducting the environmental and social assessment

Earth Systems Lao

015, Ave. Kaysone Phomvihane

P.O. Box 2582, Vientiane, Lao PDR

Tel: (+ 856) 021 413 723

Fax: (+ 856) 021 416 563

Web: www.earthsystemslao.com

The environmental and social assessment requirements of this project

Earth Systems Lao has been commissioned by TEPCO (funded by JICA) to conduct an independent Initial Environment Examination (IEE) and prepare an Environmental Management Plan (EMP) and a Resettlement Action Plan (RAP) for the project.

These documents need to be prepared to obtain approval from Department of Electricity (DOE), Ministry of Energy and Mines (MEM), and the Water Resources and Environment Administration (WREA) prior to an Environmental Compliance Certificate (ECC) being issued as stipulated in the Regulation on Environment Assessment, Regulation No. 1770/STEA.

No decision has been taken as to whether or not this project will be developed. The reason for this study is to assess the impact of the transmission line on the environment and the livelihoods of communities living close to the project area.

Key potential environmental and social impacts

The primary impact of the project is likely to be loss of agricultural, forest and other land and structural assets along the transmission line corridor and within the footprint of the switching station and the Saravane sub-station.

Construction of the transmission line in close proximity to two NPAs and within the corridor between the two NPAs may also impact biodiversity in the area.

Other impacts, primarily associated with construction, are likely to include:

- Nuisance noise and air quality (dust and vehicle exhaust) impacts;
- Erosion and sediment transport from construction sites;
- Water quality impacts associated with sediment transport and the potential release of hazardous materials, such as oils and hydrocarbons;
- Waste management (spoil and solid waste).

All potential environmental and social impacts will be investigated during the IEE, and management measures will be identified to prevent or minimise identified impacts.

Consultation

Effective community consultation is a central aspect of contemporary development projects in Lao PDR. For this assessment, the following stakeholder groups will be consulted:

- Affected households;
- Village authorities of villages within the Project Area;
- Diverse social groups within the Project Area including (but not limited to): women, ethnic minority groups, youth and elderly;
- Provincial and District Authorities of the two provinces and seven districts affected;
- Central Government of Lao PDR (DOE, MEM; WREA);
- Non-governmental organisations and development agencies operating in the project area.

The following consultation methodologies will be used:

- Formal interviews / meetings;
- Focus group meetings;
- Consultation workshops.

An open consultation session to report the findings of the IEE, the next steps in the environmental approvals process and to obtain feedback from stakeholders will be held in Savannakhet in August 2009. Persons and groups consulted during the IEE process (as listed above) will be officially invited to this session, and an open invitation to the meeting will be published in the Vientiane Times.

5. NEXT STEP AFTER THE CONSULTATIONS

Comments from the consultation meetings will be incorporated into the draft IEE, EMP and RAP documents. Final documents will then be submitted to DOE, MEM and WREA for final consideration.

The final IEE, EMP, RAP and related Management Plans will be submitted to JICA and EDL for review then submitted to EDL and DOE. These documents will be stored at the EDL and WREA offices. A copy of these documents can be obtained by contacting the ESIA Division of WREA and the EDL Environment Office during business hours (contact details below).

6. WHERE TO ADDRESS COMMENTS

When there are comments or concerns regarding to the Project, the people, particularly in the Project Area can send their comments to the following address.

Water Resources and Environment Administration (WREA) ESIA Unit Office Prime Minister's Office P.O.Box 2279, Sidamdaoun Road Vientiane, Lao PDR Business Hours: 8:30 am – 4:30 pm	Electricite du Lao (EDL) JICA Laos Project Office PO.Box 309, Nongbone Road, Vientiane, Lao PDR Business Hours: 8:30 am – 4:30 pm

ໂຄງການເຊື່ອມຕໍ່ສາຍສົ່ງສາຍໄຟຟ້າແຮງສູງຢູ່ພາກກາງ ແລະ ແຂວງພາກໃຕ້ທີ່ ສປປ ລາວ

1. ຊື່ ແລະ ສະຖານະຂອງໂຄງການ

ຊື່ໂຄງການ: ໂຄງການເຊື່ອມຕໍ່ສາຍສົ່ງສາຍໄຟຟ້າແຮງສູງຢູ່ພາກກາງ ແລະ ແຂວງພາກໃຕ້ທີ່ສປປ ລາວ
ສະຖານະຂອງຂອງໂຄງການ: ຂັ້ນຕອນການສຶກສາຄວາມເປັນໄປໄດ້

2. ຊື່ ແລະ ທີ່ຢູ່ຂອງຜູ້ພັດທະນາໂຄງການ

ຊື່ຜູ້ພັດທະນາໂຄງການ: ລັດວິສາຫະກິດໄຟຟ້າລາວ (ຟຟລ)
ຊື່ຜູ້ໃຫ້ທຶນຊ່ວຍເຫລືອ: ອົງການຍີ່ປຸ່ນ ຮ່ວມມືສາກົນ (ອົງການ ໄຈກ້າ)
(Japan International Cooeperation Agency (JICA))
ຊື່ຜູ້ຮັບເໝົາຫລັກ: ບໍລິສັດ ໂຕກ້ຽວພະລັງງານໄຟຟ້າ ຈຳກັດ (ເທັບໂກ)
(Tokyo Electric Power Company, INC. (TEPCO))
ທີ່ຢູ່ຕິດຕໍ່:
ລັດວິສາຫະກິດໄຟຟ້າລາວ(ຟຟລ)/ທີມງານສຶກສາຂອງ ອົງການໄຈກ້າ, ສປປ ລາວ
ຫ້ອງການໂຄງການ ອົງການການໄຈກ້າປະຈຳລາວ
ຕູ້ ປ.ນ. 309, ຖະນົນໜອງບອນ
ວຽງຈັນ, ສປປລາວ

3. ຈຸດປະສົງ, ຈຸດພິເສດ ແລະ ແຜນການພັດທະນາຂອງໂຄງການ

ຈຸດປະສົງຂອງໂຄງການ:

ໃນ ສປປ ລາວ, ແມ່ນມີເຄືອຄ່າຍພະລັງງານໄຟຟ້າຢູ່ 4ເຄືອຄ່າຍ: ເຄືອຄ່າຍພາກເໜືອ, ເຄືອຄ່າຍພາກກາງ ທີ່ 1, ເຄືອຄ່າຍພາກກາງ ທີ່ 2 ແລະ ເຄືອຄ່າຍພາກໃຕ້ ເຊິ່ງມີການຄວບຄຸ້ມປະຕິບັດວຽກບໍ່ຂຶ້ນນຳກັນ ແລະ ບໍ່ມີ ການເຊືອມຕໍ່ກັນ. ລັດຖະບານ ສປປລາວ ໂດຍການໃຫ້ການສະໜັບສະໜູນຈາກລັດຖະບານ ຍີ່ປຸ່ນໄດ້ມີ ແຜນການທີ່ຈະເຊືອມຕໍ່ 4 ເຄືອຄ່າຍພະລັງງານໄຟຟ້າເລົ່ານີ້. ເປົ້າໝາຍໃນການເຊື່ອມຕໍ່ສາຍສົ່ງແມ່ນ

- ເພື່ອປັບປຸງເຄືອຄ່າຍພະລັງງານໄຟຟ້າແຫ່ງຊາດ
- ເພື່ອເພີ່ມສະມັດຕະພາບໃນການຄຸ່ມຄອງຂອງພາກສ່ວນພະລັງງານໄຟຟ້າ
- ເພື່ອສົ່ງເສີມກິດຈະກຳທາງດ້ານເສດຖະກິດ
- ເພື່ອເປັນພາກສ່ວນໜຶ່ງໃນການຕອບສະໜອງຄວາມຈຳເປັນຂັ້ນພື້ນຖານຂອງປະຊາຊົນໃນ ສປປ ລາວ

ໂຄງການນີ້ແມ່ນເໜັ້ນໃສ່ ການເຊື່ອມຕໍ່ເຄືອຍຄ່າຍພະລັງງານໄຟຟ້າພາກກາງ ທີ່ 2 ແລະ ເຄືອຄ່າຍພາກໃຕ້.

ໂຄງການເຊື່ອມຕໍ່ສາຍສົ່ງສາຍໄຟຟ້າແຮງສູງຢູ່ພາກກາງ ແລະ ແຂວງພາກໃຕ້ທີ່ ສປປ ລາວ

ຈຸດພິເສດ ແລະ ແຜນການພັດທະນາຂອງໂຄງການ:

ໄດ້ມີການສະເໜີໃຫ້ມີການເຊື່ອມຕໍ່ເຄືອຂ່າຍພະລັງງານໄຟຟ້າພາກກາງ ທີ່ 2 ແລະ ເຄືອຂ່າຍພາກໃຕ້ ໂດຍນຳໃຊ້ສາຍສົ່ງໄຟຟ້າແຮງສູງ 115 ກິໂລໂວນ ເຊິ່ງມີຄວາມຍາວປະມານ 220 ກມ, ຈາກສະຖານີຍ່ອຍປາກໂບ ທີ່ແຂວງສະຫວັນນະເຂດ ໄປຜ່ານສະຖານີເປີດປິດ ຢູ່ບ້ານ ນອງນູ ໄປຫາສະຖານີຍ່ອຍທີ່ມີການວ່າງແຜນທີ່ ແຂວງ ສາລະວັນ. ເສັ້ນທາງຂອງສາຍສົ່ງໄຟຟ້າແຮງສູງແມ່ນຜ່ານ 7 ເມືອງ ຂອງ 2 ແຂວງ. ສາຍສົ່ງໄຟຟ້າ ແຮງ ສູງຂະໜາດ 115 ກໍໂລໂວນ ນີ້ ແມ່ນຈຳເປັນຕ້ອງມີການຖ່າງປ່າ ຫລື ບໍ່ໃຫ້ມີສິ່ງກີດຂວ້າງໃນຂອບເຂດ 25 ແມັດ ໄປທັງສອງຂ້າງຂອງສາຍສົ່ງ ເຊິ່ງລວມເນື້ອທີ່ທັງໝົດທີ່ຕ້ອງຖ່າງໃນການສ້າງສາຍສົ່ງແມ່ນ 5.5 ກິໂລແມັດກາເລ້.

ຈຸດເຊື່ອມຕໍ່ ຂອງສາຍສົ່ງໄຟຟ້າແຮງສູງ ແມ່ນຈະຢູ່ໃກ້ຄຽງ ກັບເສັ້ນທາງ (ເລກທີ່ 13 ແລະ 15) ແລະ ຜ່ານພາຍໃນຂອບເຂດ 500 ແມັດ ຂອງປ່າສະຫວນແຫ່ງຊາດພູຊຽງທອງ ແລະ 5 ກິໂລແມັດ ຂອງປ່າສະຫວນແຫ່ງຊາດ ເຊບັ້ງນອນ ຜ່ານ 3 ສາຍແມ່ນ້ຳໃຫ່ຍເຊັ່ນ: (ເຊບັ້ງຮຽງ, ເຊບັ້ງນອນ ແລະ ເຊໂດນ) (ແຜນທີ່ 1).

4. ຂະບວນການຂັ້ນຕອນໃນການປະເມີນຜົນທາງດ້ານສິ່ງແວດລ້ອມ ແລະ ສັງຄົມ

ບໍລິສັດທີ່ ດຳເນີນການປະເມີນສິ່ງແວດລ້ອມ ແລະ ສັງຄົມ

ບໍລິສັດ ເອີດຊີສະແຕມລາວ
015, ສະຖຶນໄກສອນ ພົມວິຫານ
ຕູ້ ປ.ນ 2582, ວຽງຈັນ, ສປປ ລາວ
ໂທ: 856-21-413723
ແຟກ: 856-21-416563
ແວບ: www.earthsystemslao.com

ການປະເມີນຜົນທາງດ້ານ ສິ່ງແວດລ້ອມ ແລະ ສັງຄົມທີ່ຕ້ອງການສຳຫລັບໂຄງການ

ບໍລິສັດ ເອີດຊີສະແຕມລາວ ໄດ້ຖືກມອບໝາຍໜ້າທີ່ ໃຫ້ສຶກສາການປະເມີນຜົນກະທົບດ້ານສິ່ງແວດລ້ອມຂັ້ນຕົ້ນ ແລະ ກະກຽມແຜນການຄຸ້ມຄອງທາງດ້ານສິ່ງແວດລ້ອມ (EMP) ແລະ ແຜນການຍົກຍ້າຍຈັດສັນ (RAP) ສຳຫຼັບໂຄງການນີ້.

ເອກະສານບົດລາຍງານດັ່ງກ່າວມາຂ້າງເທິງນັ້ນ ແມ່ນຕ້ອງໄດ້ກະກຽມ ເພື່ອໃຫ້ໄດ້ຮັບອະນຸຍາດຈາກ ກົມໄຟຟ້າ, ກະຊວງພະລັງງານ ແລະ ບໍ່ແຮ່, ແລະ ອົງການຊັບພະຍາກອນນ້ຳ ແລະ ສິ່ງເວດລ້ອມກ່ອນ, ກ່ອນທີ່ຈະໄດ້ຮັບໃບຢັ້ງຢືນທາງດ້ານສິ່ງແວດລ້ອມ ຕາມເງື່ອນໄຂ ຂອງກົດລະບຽບການປະເມີນຜົນກະທົບທາງດ້ານສິ່ງແວດລ້ອມ, ກົດລະບຽບນຳເບີ 1770/ອວຕສ.

ແນວໃດກໍ່ຕາມ ຍັງບໍ່ທັນໄດ້ມີການຕັດສິນໃຈ ວ່າໂຄງການນີ້ຈະມີການພັດທະນາ ຫຼື ບໍ່. ເຊິ່ງເຫດຜົນຂອງການສຶກສານີ້ແມ່ນເພື່ອປະເມີນຜົນກະທົບຈາກສາຍສົ່ງທີ່ຈະມີຕໍ່ສິ່ງແວດລ້ອມ ແລະ ຊີວິດການເປັນຢູ່ຂອງຊຸມຊົນທີ່ອາໃສຢູ່ໃກ້ກັບຂອບເຂດໂຄງການ.

ຈຸດທີ່ອາດ ຈະຖືກຜົນກະທົບ ທາງດ້ານ ສິ່ງແວດລ້ອມ ແລະ ສັງຄົມ

ຜົນກະທົບເບື້ອງຕົ້ນ ຈາກໂຄງການ ອາດຈະແມ່ນ ການເສຍພື້ນທີ່ ການທຳການຜະລິດ, ພື້ນທີ່ປ່າຈຳນວນ ໜຶ່ງ ແລະ ດິນນຳໃຊ້ ຕ່າງໆ ແລະ ອາດຈະມີ ຊັບສິນສ່ວນບຸກຄົນ ບາງຈຳນວນ ທີ່ຢູ່ລຽບຕາມຂອບເຂດ ເຊື່ອມຕໍ່ຂອງ ສາຍສົ່ງໄຟຟ້າ ແລະ ໃນບໍລິເວນພື້ນທີ່ເປົ້າໝາຍ ຂອງສະຖານີ ປິດເປີດ ແລະ ສະຖານີ ຍ່ອຍໃນແຂວງ ສາລະວັນ.

ການກໍ່ສ້າງ ສາຍສົ່ງໄຟຟ້ານີ້ ແມ່ນໃກ້ກັບ ສອງເຂດປ່າ ສະຫວງນແຫ່ງຊາດ ແລະ ໃນເຂດເຊື່ອມ ຕໍ່ຂອງສອງ ປ່າສະຫວງນ ແຫ່ງຊາດນີ້ ກໍ່ອາດຈະຖືກຜົນກະທົບທາງດ້ານ ຊີວະນານາພັນ ເປັນຕົ້ນ.

ຜົນກະທົບອື່ນໆ, ເຊິ່ງເນື່ອງຈາກການທຳການກໍ່ສ້າງ ເບື້ອງຕົ້ນ ອາດຈະຖືກຜົນກະທົບເຊັ່ນ:

- ຜົນກະທົບຈາກ ສຽງລົບກວນຕ່າງໆ ແລະ ຄຸນນະພາບອາກາດ (ຂີ້ຝຸ່ນ ແລະ ຂວັນລົດ)
- ການເຊາະເຈື່ອນ ແລະ ການເຄື່ອນຍ້າຍ ຂອງຂີ້ຕະກອນ ຈາກບໍລິເວນທຳການກໍ່ສ້າງ
- ຜົນກະທົບ ເລື່ອງຄຸນນະພາບນ້ຳ ເນື່ອງຈາກ ການເຄື່ອນຍ້າຍຂອງ ຂີ້ຕະກອນ ແລະ ອາດມາຈາກ ການວັດສະດຸແຂງ ຕ່າງໆ ເຊັ່ນ: ນ້ຳມັນ ແລະ ທາດໄຮໂດຼກາກບອນ.
- ການຈັດສັນຂີ້ເຫຍື້ອຕ່າງໆ (ສິ່ງເສດເຫຼືອ ແລະ ຂີ້ເຫຍື້ອ ຊະນິດແຂງ ຕ່າງໆ)

ທຸກໆຜົນກະທົບ ທາງດ້ານສິ່ງແວດລ້ອມ ແລະ ສັງຄົມ ຈະໄດ້ຮັບການສຶກສາ ແລະ ສຳຫຼວດ ໃນຊ່ວງການ ສຶກສາ ດ້ານສິ່ງແວດລ້ອມເບື້ອງຕົ້ນ ແລະ ວິທີປ້ອງກັນ ຫຼື ການລຸດຜ່ອນ ຜົນກະທົບຈະມີການການວາງອອກເພື່ອໃຫ້ຜົນ ກະທົບມີໜ້ອຍສຸດ.

ການປຶກສາຫາລື

ການປຶກສາຫາລືຊັ້ນຊຸມຊົນທີ່ມີປະສິດທິຜົນ ແມ່ນເປັນຈຸດໃຈກາງທີ່ສຳຄັນຂອງການພັດທະນາໂຄງການທີ່ທັນ ສະໄໝ ໃນປັດຈຸບັນທີ່ ສປປ ລາວ. ສຳຫລັບການປະເມີນຜົນຄັ້ງນີ້, ແມ່ນຈະໄດ້ມີການປຶກສາຫາລືກັບຜູ້ທີ່ມີສ່ວນ ຮ່ວມໂດຍກົງ ແລະ ທາງອ້ອມກໍ່ຄືກຸ່ມຄົນຈາກພາກສ່ວນດັ່ງຕໍ່ໄປນີ້

- ຄົວເຮືອນທີ່ໄດ້ຮັບຜົນກະທົບຕໍ່;
- ຄະນະ ຫລືອົງການຈັດຕັ້ງບ້ານ ຂອງບັນດາບ້ານທີ່ຂອບເຂດໂຄງການ;
- ລວມເຖິງບັນດາກຸ່ມຄົນ ທີ່ມີຄວາມແຕກຕ່າງກັນໃນສັງຄົມ ຢູ່ໃນຂອບເຂດໂຄງການ (ແຕ່ວ່າ ບໍ່ໄດ້ຈຳກັດ) ລວມເຖິງ: ກຸ່ມແມ່ຫຍິງ, ກຸ່ມຊົນຊາດຊົນເຜົ່າສ່ວນໜ້ອຍ, ກຸ່ມຊາວໜຸ່ມ ແລະ ຜູ້ ອາວຸໂສ;
- ອຳນາດການປົກຄອງແຂວງ ແລະ ເມືອງໃນສອງ ແຂວງ ແລະ ເຈ້ົາເມືອງທີ່ຖືກຜົນກະທົບ

- ພາກສ່ວນລັດຖະບານຈາກສູນກາງຂອງ ສປປ ລາວ (ກົມໄຟຟ້າ, ກະຊວງພະລັງງານ ແລະ ບໍ່ແຮ່, ແລະ ອົງການຊັບພະຍາກອນນ້ຳ ແລະ ສິ່ງແວດລ້ອມ)
- ອົງການສາກົນ ຕ່າງໆ ແລະ ອົງການພັດທະນາຕ່າງໆ ທີ່ໄດ້ມີການເຄື່ອນໄຫວ ໃນຂົງເຂດ ຂອງໂຄງການ.

ວິທີການ ຕ່າງໆທີ່ຈະນຳໃຊ້ເຂົ້າ ໃນການປຶກສາຫາລື ມີຄື:

- ການສອບຖາມ/ການປະຊຸມຢ່າງເປັນທາງການ
- ການປຶກສາຫາລື ກັບກຸ່ມເປົ້າໝາຍ
- ການປະຊຸມປຶກສາຫາລືແບບປະຕິບັດເປັນກຸ່ມໃຫຍ່

ການຈັດກອງປະຊຸມປຶກສາຫາລືຢ່າງເປີດເຜີຍ ແລະ ເປັນທາງການ ເພື່ອລາຍງານຜົນໄດ້ຮັບຈາກການ ສຶກສາ ການປະເມີນຜົນກະທົບດ້ານສິ່ງແວດ ລ້ອມຂັ້ນຕົ້ນ, ແມ່ນຂັ້ນຕອນຕໍ່ໄປໃນຂະບວນການ ເພື່ອຂໍອະນຸມັດທາງ ດ້ານສິ່ງແວດລ້ອມ ແລະ ເພື່ອຈະໄດ້ຮັບຄຳແນະນຳເພີ່ມເຕີມຈາກຜູ້ທີ່ມີສ່ວນຮ່ວມໂດຍກົງ ແລະ ທາງອ້ອມ ທີ່ແຂວງສະຫວັນນະເຂດໃນເດືອນ ສິ່ງຫາ 2009. ບັນດາບຸກຄົນ ແລະ ກຸ່ມຄົນຕ່າງໆ (ດັ່ງທີ່ໄດ້ກ່າວໄວ້ທີ່ຜ່ານ ມາຂ້າງເທິ່ງ) ຈະໄດ້ຖືກຮັບເຊີນເຂົ້າຮ່ວມກອງປະຊຸມມປຶກສາຫາລືຢ່າງເປັນທາງການ ແລະ ເນື້ອໃນຂອງການ ປະຊຸມຄັ້ງນີ້ແມ່ນຈະຖືກຈັດພິມອອກທາງໜັງສືພິມ ວຽງຈັນທາມສ.

5. ຂັ້ນຕອນຕໍ່ໄປຫລັງຈາກການປຶກສາຫາລື

ຄຳສະເໜີຈາກກອງປະຊຸມປຶກສາຫາລືຈະຖືກປະກອບເຂົ້າໃນຮ່າງບົດລາຍງານການສຶກສາ ການປະເມີນຜົນ ກະທົບດ້ານສິ່ງແວດລ້ອມຂັ້ນຕົ້ນ, ແຜນການຄຸ້ມຄອງທາງດ້ານສິ່ງແວດລ້ອມ, ແລະ ແຜນການຍົກຍ້າຍຈັດ ຊັນ. ບົດລາຍງານເລ່ານີ້ ພາຍຫລັງມີການກວດແກ້ຄັ້ງສຸດທ້າຍແລ້ວຈະຖືກສົ່ງໄປໃຫ້, ກົມໄຟຟ້າ, ກະຊວງພະລັງງານ ແລະ ບໍ່ແຮ່, ແລະ ອົງການຊັບພະຍາກອນນ້ຳ ແລະ ສິ່ງແວດລ້ອມເພື່ອຮັບການພິຈາລະນາຂັ້ນສຸດ ທ້າຍ.

ບົດລາຍງານການສຶກສາການປະເມີນຜົນກະທົບດ້ານສິ່ງແວດລ້ອມຂັ້ນຕົ້ນ, ແຜນການຄຸ້ມຄອງທາງດ້ານສິ່ງແວດ ລ້ອມ, ແຜນການຍົກຍ້າຍຈັດຊັນ ແລະ ແຜນການຄຸ້ມຄອງທີ່ກ່ຽວຂ້ອງຕ່າງໆສະບັບກວດແກ້ຄັ້ງສຸດທ້າຍຈະມີ ການເກັບມ້ຽນທີ່ຫ້ອງການລັດວິສາຫະກິດໄຟຟ້າລາວ ແລະ ອົງການຊັບພະຍາກອນນ້ຳ ແລະ ສິ່ງແວດລ້ອມ. ສຳເນົາຂອງບົດລາຍງານເລ່ານີ້ແມ່ນສາມາດເອົາໄດ້ ໂດຍການຕິດຕໍ່ກັບຫ້ອງການກອງປະເມີນຜົນກະທົບທາງ ດ້ານສິ່ງແວດລ້ອມ ແລະ ສັງຄົມ ທີ່ອົງການຊັບພະຍາກອນນ້ຳ ແລະ ສິ່ງແວດລ້ອມ ແລະ ຫ້ອງການສິ່ງແວດລ້ອມ ລັດວິສາຫະກິດ ໄຟຟ້າລາວ ໃນໂມງລັດຖະການ (ທີ່ຢູ່ແມ່ນຄືດັ່ງລຸ່ມນີ້).

6. ສະເໜີຄຳເຫັນໄດ້ທີ່

ເມື່ອມີຄຳສະເໜີ ຫລື ຂອດຂ້ອງໃຈ ຫລື ບໍ່ເຂົ້າໃຈອັນໃດກ່ຽວກັບໂຄງການ, ບັນດາປະຊາຊົນ ໂດຍສະເພາະ ປະຊາຊົນຢູ່ໃນບໍລິເວນຂອບເຂດເນື້ອທີ່ໂຄງການແມ່ນສາມາດສົ່ງຄຳສະເໜີຕ່າງໆມາໄດ້ດັ່ງທີ່ຢູ່ລຸ່ມນີ້.

ອົງການຊັບພະຍາກອນນ້ຳ ແລະ ສິ່ງແວດລ້ອມ (WREA) ຫ້ອງການກອງປະເມີນຜົນກະທົບທາງດ້ານສິ່ງແວດລ້ອມ ແລະ ສັງຄົມ ສຳນັກງານນາຍຍົກ ຕູ້ ປ.ນ. 2279, ຖະນົນ ສີດຳດວນ ວຽງຈັນ, ສປປ ລາວ ໂມງລັດຖະການ: 8:30 - 16:30
ລັດວິສາຫະກິດໄຟຟ້າລາວ(ຟຟລ) ຫ້ອງການໂຄງການ ອົງການໄຈກ້ຳປະຈຳລາວ ຕູ້ ປ.ນ. 309, ຖະນົນໜອງບອນ ວຽງຈັນ, ສປປລາວ ໂມງລັດຖະການ: 8:30 - 16:30

EARTH SYSTEMS LAO
Environment – Water - Sustainability

Appendix 2 – List of Stakeholders Consulted

Table 1: List of Stakeholders Consulted: Field Mission 1, June 2009

Central Government			
1	Water Resources and Environment Adm	Mr Phouvong Luangsaysan	Deputy Director, ESIA Department
2	Land Management Authority	Mr. Nouphanh Mahaphonh	Director General, Land Policy and Inspection Division
3	Ministry of Agriculture and Forestry	Mr. Khamma Homsysavath	GIS Unit, Department of Forestry
4	Ministry of Energy and Mines	Mr Chanto Milattanapheng	Head of Environment and Social Division
Saravanh Provincial Level			
5	Provincial Administrative Office	Mr. Bounthavy Lasasimma	General Manager
6	Provincial Agriculture and Forestry Deparment	Mr. Viengkeo chanthaboun	Deputy Director of Planning
7	Land Authority provincial Department	Mr. Symon Simmavong	Director of information section
8	Energy and Mine Department	Mr. Sangthong Inthapavy	General Manager
Saravanh District			
9	District Administrative Office	Mr. Bounlan Khammexay	Technical staff
10	District Agriculture and Forestry Deparment	Mr. Oulot	Technical staff
11	Land Management Authority	Mr. Thavyxay	Technical staff
Vapi District			
12	District Administrative Office	Mr. Keooudon	Technical staff
13	District Agriculture and Forestry Deparment	Mr. Souk	Technical staff
14	Land Management Authority	Mr. Bouangun	Technical staff
Lakhonepheng District			
15	District Administrative Office	Mr. Veha Keobounlay	Technical staff
16	District Agriculture and Forestry Deparment	Mr. Vaisanit	Technical staff
17	Land Management Authority	Mr. Xayxana	Technical staff
Savannakhet Provincial Level			
18	Provincial Administrative Office	Mr. Inthavongsin Sithivorada	Deputy Director
19	Provincial Agriculture and Forestry Deparment		
20	Land Authority provincial Department	Mr. Kongsy Prasysombat	Deputy Director
21	Energy and Mine Department	Mr. Phoukhong Nammachack	Deputy Director
Khaisone District			
22	District Administrative Office	Mr. Phoxay	Technical staff
23	District Agriculture and Forestry Deparment	Mr. Somphan	Technical staff

24	Land Management Authority	Mr. Chindavong	Technical staff
Champhone District			
25	District Administrative Office		Technical staff
26	District Agriculture and Forestry Deparment		Technical staff
27	Land Management Authority	Mr. Thongsa	Technical staff
Xayphothong District			
28	District Administrative Office	Mr. Thitdoung	Technical staff
29	District Agriculture and Forestry Deparment	Mr. Sengsavanh	Technical staff
30	Land Management Authority	Mr. Phetsomphone	Technical staff
Songkhone District			
31	District Administrative Office	Mr. Bounlang	Technical staff
32	District Agriculture and Forestry Deparment	Mr. Souksavat	Technical staff
33	Land Management Authority	Mr. Patchan	Technical staff
Villages			
Village representatives x 19 (See table 4 below)			

Table 2: List of Stakeholders Consulted: Field Mission 2, July 2009

No.	Sector	Name	Position
Saravanh Provincial Level			
1	Energy and Mine Department	Mr. Khammany	Technical staff
Saravanh District			
2	District Administrative Office	Mr. Xaiyasith	Technical staff
3	Land Management Authority	Mr. Souksakhone	Technical staff
4	District WREA	Mr. Keovongkot	Technical staff
Vapi District			
5	District Administrative Office	Mr. Keooudon	Technical staff
6	Land Management Authority	Mr. Bouangun	Technical staff
Lakhonepheng District			
7	District Administrative Office	Mr. Veha Keobounlay	Technical staff
8	Land Management Authority	Mr. Sonegthong	Technical staff
Savannakhet Provincial Level			
10	Energy and Mine Department	Mr. Phoukhong Nammachack	Deputy Director
Khaisone District			
11	District Administrative Office	Mr. Phoxay	Technical staff
Champhone District			
12	District Administrative Office	Mr Lamthoun	Technical staff
Xayphothong District			
13	District Administrative Office	Mr. Khanxay	Technical staff
Songkhone District			
14	District Administrative Office	Mr. Kham-anh	Technical staff
Villages			
15	Village representatives x 63 (See table 4 below)		

Table 3: List of Stakeholders, Workshop, August 2009

No.	Sector	Name	Position
Central Level			
1	Land Management Authority	Mr. Nouphanh Mahaphonh	Director General, Land Policy and Inspection Division
2	Ministry of Agriculture and Forestry	Mr.Sukan Bounthapandith	GIS Unit, Department of Forestry
3	Electricity du Laos	Mr. Bounjieng Keovilayvanh	Director of system planning
4	Electricity du Laos	Mr. Anongsith Philavong	Technical official of Environmental Division
5	Ministry of Energy and Mines, DOM	Mr.Southan Nanthaparaya	Environment and Social Division
Saravan Provincial Level			
6	Provincial Administrative Office	Mr. Bounthavy Lasasimma	General Manager
7	Provincial Agriculture and Forestry Department	Mr. Sengdan Khonbuhan	Deputy Director of Planning
8	Land Authority provincial Department	Mr. Symon Simmavong	Director of information section
9	Energy and Mine Department	Mr. Sangthong Inthapavy	General Manager
10	Electricity du Lao of saravan	Mr. Lerthsamay	Deputy Director
11	Electricity du Lao	Mr. Bounsom	Head of substation
12	District WREA	Mr. Vithaya sinavong	Chief unit
Saravan District			
13	District Administrative Office	Mr. Phoumi Orsathai	Deputy Governor
14	District Agriculture and Forestry Department	Mr. Oulot	Technical staff
15	Land Management Authority	Mr. Thavyxay	Technical staff
Vapi District			
16	District Administrative Office	Mr. Bounthavi	Governor
17	District Agriculture and Forestry Department	Mr. Souk	Technical staff
18	Land Management Authority	Mr. Bouangun	Technical staff
Lakhonepheng District			
19	District Administrative Office	Mr. Langsi	Governor
20	District Agriculture and Forestry Department	Mr. Vaisanit	Technical staff
21	Land Management Authority	Mr. Xayxana	Technical staff
Savannakhet Provincial Level			
22	Provincial Administrative Office	Mr.Phonevilay Keobounsone	Deputy Officer
23	Provincial Agriculture and Forestry Department	Mr. Bounyod Namsena	
24	Land Authority provincial Department	Mr. Kongsy Prasysombat	Deputy Director
25	Energy and Mine Department	Mr. Phoukhong Nammachack	Deputy Director
26	District WREA	Mrs. Vaiyuveth sixaisonboun	Chief environmental division

Khaisone District			
27	District Administrative Office	Mr. Chanthalay Sitthinalongsin	Deputy Governor
28	District Agriculture and Forestry Department	Mr. Saysavanh Ounoutha	Chief Office
29	Land Management Authority	Mr. Chindavong	Technical staff
Champhone District			
30	District Administrative Office	Mr. Lamngeun Thongsiakson	Governor
31	District Agriculture and Forestry Department	Mr. Banlang	Chief Office
32	Land Management Authority	Mr. Thongsa	Technical staff
Xayphothong District			
33	District Administrative Office	Mr. Soukkaserm Senavong	Governor
34	District Agriculture and Forestry Department	Mr. Sengsavanh	Chief Office
35	Land Management Authority	Mr. Phetsomphone	Chief Office
Songkhone District			
36	District Administrative Office	Mr. Keo oudone	Governor
37	District Agriculture and Forestry Department	Mr. Kiengsack	Chief Office
38	Land Management Authority	Mr. Patchan	Technical staff

(See also, Annex 3: Workshop Report)

Table 4: Villages Consulted

Consulted Field Mission 1, June 2009. All other villages consulted during Field Mission 2, July 2009

Province	District	Village Name	Village Chief
SVK	Kaysone	Ban Pakbor	Mr. Boualai Saiyalat
		Ban Nongduern	Mr. Khamwan Thongsamlit
		Ban Dongnakham	Mr. Thongphoun Bounmixay
		Ban Phonsim	Mr Panya Keovilayvong
		Ban Dongmakyang	Mr Nouphone Saykosi
		Ban Houay	Mr Bounthieng Yothmalakham
		Ban Somsa-at	Mr. Bouavanh
		Ban Xokvang-Tai	Mr. Khanha
	Champhone	Ban Lak 35	Mr. Khamphan Thepkaisone
		Ban Nateuy	Mr. Nounsin
	Xaiphouthong	Bna Khamxan	Mr BounthiengSibouaphan
		Ban Khasavang+Khoua	Mr.Kham Phanthavong
		Ban Sisavang	Mr Khounxay Khammixay
		Ban Dongmakfai	Mr.Phoukeo Duangdy
		Ban Phonsikeo	Mr. Daosadeth Sonesuvamasee
		Ban Nakae+++	Mr. Chantha
	Songkhone	Ban Oumnamkhong	Mr. Bounlurn
		Ban Nongnokkhian	Mr.Thong
		Ban Nonesomphou	Mr. Jonh
		Ban Nonesomboune	Mr. Khamdee
		Ban Lattana	Mr.Vongphachan(keaung)
		Ban Thongsymouang	Mr Bounthomsiphoxay
		Ban Malaythong	Mr Sathien Thongsob
		Ban Khummouan	Mr Somchai Somsit
		Ban Hintek	Mr. Ampha
		Ban Nonesavang	Mr. Keokhamphat
		Ban Salaleio	Mr Laothong
		Ban Nongkhangou	Mr Khamphai
		Ban Nontaothanh	Mr vaen
		Ban Kengtanganh	Mr. Soutthavi

		Ban Naoudom	Mr Phu kam
		Ban Houaypian	Mr. Loun
		Ban Nakhanhom	Mr Suli keoboun heung
		Ban Donxat	Mr. Loun
		Ban Senouan Nuea	Mr Kammone
SRV	Lakhonpgeng	Ban Phouangsavanh	Mr. Hong
		Ban Phouangmalay	Mr. Noum
		Ban Okart	Mr. Ko
		Ban Nonsavang	Mr Boun Leun
		Ban Nongkhitom	Mr. Kham
		Ban Donvay	Mr kian ketsone
		Ban Nathom	Mr Sam Lan
		Ban Lakhonsy-Tai	Mr. Somesack
		Ban Houaykaphoxay	Mr. Phomsalit
		Ban Xokpheng	Mr. Khamsen
		Ban Nadoukao	Mr. Chit
		Ban Nonedinsai	Mr. Lern
		Ban Lak 94	Mr. Amkha savilai
		Ban Lak 90	Mr. Ngan lasikeo
		Ban Phoudaochang	Mr. Boun
		Ban Nongsano	Mr. Bounhom
		Ban Tangbeng	Mr Thong Vanh
		Ban Phonepheng	Mr. Khamsen
		Ban Nanglao	Mr. Nika Chanthalansi
		Ban Lakhonsy-Kang	Mr NaLong shi
		Ban Donelay	Mr Vanta
	Vapi	Ban Vapi	Mr. Pany
		Ban Phaylom	Mr.Somlay
		Ban Nonkho	Mr. Nokhone
		Ban Nakoktan	Mr BounKham
		Ban Nongngong	Mr. Somchai
		Ban Bangkhanam	Mr somphone
		Ban Phakha	Mr Bounhueng
		Ban Sapath	Mr. Khamla
		Ban Mouang	Mr. Phommee
		Ban Kengsouthi	Mr somlith

		Ban Lao	Mr Boudsa
		Ban Kengkou	Mr Khamta
		Ban Mai oudomxai	Mr Sida
	Salavan	Ban Bungkham	Mr. Bounta Khanthasenghong
		Ban Nongsai	Mr. Sounthone
		Ban Bungxai	Mr. Chanthone
		Ban Donekeo	Mr. Bounmee
		Ban Thongnakham	Mr. Bounmee
		Ban Nonbouhin	Mr. Khamla
		Ban Phakphaewthong	Mr Vansy
		Ban Nadonkoua	Mr. Khamphong
		Ban Tong-noi	Mr. Sounthone
		Ban Maisivilay	Mr. Khanthaly
		Ban Nathon	Mr. Samlan
		Ban Tong-Ngai	Mr. Dam

EARTH SYSTEMS LAO
Environment – Water - Sustainability

Appendix 3 – Workshop Report

Agenda

Minutes

Photos

Attendance

Stakeholders Workshop Agenda

Presenting the Draft Initial Environmental Examination (IEE) and Draft Preliminary Resettlement Action Plan (RAP)

For the

Transmission Lines Interconnection Project in the Central and Southern Provinces of Lao PDR

Workshop conducted by

EARTH SYSTEMS LAO
Environment – Water - Sustainability

13.30 Wednesday 5th August – Savannakhet

&

13.30 Thursday 6th August – Saravanh

Workshop Agenda

Wednesday, 5th August 09 (Savannakhet) And Thursday, 6th August 09 (Saravanh)	**WORKSHOP**			
	Time	**Session**	**Description of session**	**Presenter**
	13.30–13.40	Opening address	Opening speech	Mr. Phoukong Nammachack (Savannakhet) Mr. Bounthavy Lasasimma (Saravanh)
	13.40-13.50	Opening	Introduce the development goals of Lao PDR and the importance of this interconnection transmission line project	EDL Manager Mr. Souli Vongsengkeo (SNK) EDL Manager Mr. Dethsouvanh Vongsengkeo (SRV)
	13.50 – 14.05	Overview of the proposed project	Provide details of the proposed project.	Ms Mayumi Goto (JICA) & Mr Vilaphorn Visounnarath (EDL)
	14.05-14.15	Welcome	Introduction the role of ESL, importance of the IEE and RAP and the workshop agenda - objectives and anticipated outputs	Mr Nanong Khotphathoum (ESL)
	14.15-15.00	Initial Environmental Examination	Present findings from the Initial Environment Examination	Mr Nanong Khotphathoum (ESL) and Mr Bouavong Luangkhot (ESL)
	15.00–15.10	Coffee break		
	15.10-15.40	Questions and Answers	Participants present questions regarding IEE presentation	Lead: Nanong Khotphathoum (ESL)
	15.40-	Resettlement	Presentation of Draft Preliminary	John Pilgrim (ESL

	16.05	Action Plan	Resettlement Action Plan	Associate) Translation: Vongvilay Khotphathoum (ESL)
	16.05–16.35	Questions and Answers	Participants present questions regarding RAP presentation	John Pilgrim (ESL Associate) Translation: Vongvilay Khotphathoum (ESL)
	16.35–16.45	Next steps: IEE & RAP	Provide overview of next steps in the IEE process	Mr Nanong Khotphathoum (ESL)
	16.45	Close	Meeting close	Mr. Phoukong Nammachack (Savannakhet) Mr. Bounthavy Lasasimma (Saravanh)

Initial Environmental Examination (IEE) and Draft Preliminary Resettlement Action Plan (RAP)

for

Transmission Lines Interconnection Project in the Central and Southern Provinces of Lao PDR

Workshop, 5th – 6th August, 2009

Objectives:

1. To open the meeting session and report the findings of the IEE and the RAP
2. To obtain feedback from the stakeholders for incorporation into the draft IEE and RAP.

Proceedings:

- **Workshop at Savannakhet, 5th August 2009**

1. <u>Opening of the workshop:</u>

<u>13.45pm</u>

The ceremony was opened by the Deputy Director of Energy and Mine, Mr. Phoukong Nammachack, who outlined the objectives of the meeting and gave a general overview of the importance of electricity in Lao PDR and of the 115kv transmission line interconnection, from Pakbo substation in Savannakhet Province to a planned substation in Saravan Province. He also asked for the participants' opinion of the project.

<u>14.00pm</u>

Mr. Souli Vongsenkeo, from EDL Savannakhet introduced the hydropower electricity development plan project for Lao PDR and gave a brief overview of hydropower projects in the country such as Nam Theun 2, Theun HinBoun, Xeset 2, and Xe Khaman 3. He outlined the objectives of the transmission line interconnection project and discussed the problems faced by Lao PDR in the power sector, with the main one being that the country still imports electricity from both Thailand and Vietnam. Approximately 90% of the southern region of Lao PDR (from

Savannakhet to Saravan) still imports electricity from Thailand. He also mentioned the environmental and social development for this project and the villages that will be impacted by the project.

2. Overview of the proposed project:

2.15pm

Mrs. Phouthone Phalangok (Deputy Manager of the EDL Environment Office), briefly introduced herself, roles and responsibilities of Environmental Office and the transmission line interconnection project.

Ms. Mayumi Goto, the environmental specialist from the JICA study team gave an overview of the study on the Power Network System Plan in Lao PDR. Lao PDR currently has four electric power networks - the northern network, the central 1 network, the central 2 network, and the southern network - which are independently operated and not interconnected. Due to this, Lao PDR is facing problems related to technical inconvenience, financial inefficiency and dependency on power imports from Thailand.

The Government of Lao PDR is being supported by the Government of Japan for the interconnection of the four electric power networks. Currently, the interconnection between the central 2 and southern networks is at the feasibility stage.

Lastly, Ms. Mayumi discussed the project goals and JICA's overview on environment and society. She also highlighted the importance of this meeting for receiving opinions and inputs for the project.

3. Introduction to the role of Earth Systems Lao and the importance of the IEE:

2.30pm

The findings of the IEE were presented by Mr Nanong Khotpathoum on behalf of ESL, who began by outlining ESL's roles and responsibilities and explaining the importance of environmental and social impact studies for all projects (for example for hydropower or mining projects).

Mr Nanong then presented the findings of the draft IEE. Firstly, he introduced the project and the project owners then provided an overview of the environmental and social assessment

process including the main objectives of the IEE, the project background, the project description, the project design and the project alternatives.

Next he presented the biophysical and socio-economic impacts and mitigation measures that were identified for the project. These included the impacts and mitigation measures in relation to biodiversity and conservation, land use, aquatic biodiversity, erosion and sediment transport, water quality, air quality, waste, archaeology, health and safety, and UXO. The IEE concluded that the environmental and social impacts are likely to be minor and that the main impacts are likely to include the temporary impacts related to construction activities.

4. <u>Resettlement action plan:</u>

<u>4.10pm</u>

Mr. John Pilgrim, an ESL associate, presented the draft preliminary resettlement action plan. (RAP) Firstly, Mr. John discussed the impact of the transmission line (TL). There are 904 households along the TL and little adverse impact is expected on households and communities in the project area. The main impact is from the felling trees and this is the most expensive part of the compensation. Loss land is also caused by the footprints of 544 towers of the transmission line. This has a minor impact and households will be compensated for their paddy lands, gardens and swidden land at the market price. The main impact is on the land of 9 villages.

In addition, the construction of substation will require approximately 3ha. ESL proposed for the TL to be re-aligned to go around the impacted villages. Further discussion will need to be undertaken with EDL on how to realign the TL. The main task for EDL will be to conduct a full Inventory of Losses for all 904 households in both Savannakhet and Saravan provinces (which is likely to require between 2-3 months work with approximately 20 people to conduct the survey). Mr. John Pilgrim also mentioned that the compensation for the villages will need to be done at least 2 months before construction and that the compensation budget will be based on a full Detailed Measurement Survey (DMS).

The temporary losses from the construction of the project will be determined when the IOL and DMS are completed. Mr John mentioned that construction should be undertaken during the dry season and that the work be conducted according to a timetable (in consultation with the farmers) in order to minimize the impact on land. He also mentioned that in the past transmission line projects have had less financial support, and so the project will require assistance from the communities and other relevant sectors.

The estimated value of tree loss is approx. 30.000 and the price of compensation will require further discussion. However, the impact of the project will not push anyone into poverty (with the exception of a few groups). The RAP can add value to the communities in the project area and ESL proposes that financial support for village funds, Lao language learning for ethnic minorities, literacy, mother-child health care, agricultural learning, and financing of provincial HIV/AIDS programs (awareness and prevention) be undertaken. Mr. John also highlighted the risk of HIV/AIDS from the contractors that are brought in during construction.

5. <u>Questions and answers:</u>

- Mr. Sukan Bounthapandith, GIS unit from the Ministry of Agriculture and Forestry, raised the following points at the meeting. Firstly, he mentioned option 1 of the proposed transmission alignment and was concerned that the route would pass through productive forest in Laongam district. He raised a second concern regarding compensation, and mentioned that if the impacted households are not properly compensated for they may disturb the National Protected Areas (NPAs). Therefore, he requested that compensation be taken seriously and fairly by EDL and the other organizations involved.

    - Mr. John Pilgrim answered that regarding fair compensation, monitoring and evaluation will be provided by ESL through the Environmental Management Plan (EMP) and through an independent organisation appointed by EDL. This will ensure that the compensation process is carefully conducted.

- Mr. Soukaserm Xayyavong, from the Xayphothong Dristrict Administration Office, requested for JICA and EDL to review the compensation price (at page 47 of RAP report) as there is some land that may be more expensive than others. He also inquired about what other projects do to derive the unit price. And other point is that at the table 8.2 ban Khamxan, most of the land is agriculture land then the impacted to agriculture should be “Yes”.

    - Mrs. Phouthone Phalangok, explained that the compensation prices are just an estimate for the moment and example from previous EDL project, it are not yet finalized. Further study will be undertaken and if the project is approved there will be more consultation with the relevant sectors.

- Mr. Lumgnern Thongsyarksone, from Chumphone district, mentioned that even though there are 2 villages in the Chumphone district that are impacted by the project, he still agrees with the project as the impacts are minor.

- Mr. Nouphane Mahaphon, from the Land Management Authority, stressed that EDL should carefully undertake the compensation for land loss.

- Mrs. Vaiyuleth Vixaysomboun from the provincial WREA commented that district level WREA should be involved with the project.

- Mrs. Phouthone Phalangok answered that WREA is usually involved with most projects, then thanked everyone for their comments.

6. Meeting close

17.25pm

Mr. Phouvong Nammachack closed the meeting.

Workshop at Savannakhet, 6th August 2009

1. Opening of the workshop:

13.45pm

The general manager of the Saravan Provincial Administrative Office, Mr. Bounthavy Lasasimma, opened the ceremony and gave a general overview on the importance of electricity in Lao PDR and of the transmission line interconnection project. He also asked for the participants' opinion and inputs.

1.55pm

Mr. Dethsuvanh from Saravan EDL, discussed the objectives of the project and the problems being faced by Lao PDR in the power sector. He gave examples of hydropower projects such as Nam Theun 2, Theun Hinboun and Xeset 2 that can also help reduce dependence on electricity imports from the neighbouring countries (Thailand and Vietnam). In addition, he briefly discussed the JICA transmission line interconnection project and the potential impacts of this project.

2. Overview of the proposed project:

2.05pm

Mrs. Phouthone Phalangok, briefly introduced herself, roles and responsibilities of Environmental Office and the project.

Ms. Mayumi Goto, the environmental specialist from the JICA study team gave an overview of the study on the Power Network System Plan in Lao PDR. Lao PDR currently has four electric power networks - the northern network, the central 1 network, the central 2 network, and the southern network - which are independently operated and not interconnected. Due to this, Lao PDR is facing problems in relation to technical inconvenience, financial inefficiency and dependency on power imports from Thailand.

The Government of Lao PDR is being supported by the Government of Japan for the interconnection of the four electric power networks. Currently, the interconnection between the central 2 and southern networks is at the feasibility stage.

Lastly, Ms. Mayumi discussed the project goals and JICA's overview on environment and society. She also highlighted the importance of this meeting for receiving opinions and inputs for the project.

3. Introduction the role of Earth Systems Laos and the importance of the IEE:

2.25pm

The findings of the IEE were presented by Mr Nanong Khotpathoum on behalf of ESL, who began by outlining ESL's roles and responsibilities and explaining the importance of environmental and social impact studies for all projects (for example hydropower or mining projects).

Mr Nanong then presented the findings of the draft IEE. Firstly, he introduced the project and the project owners then provided an overview of the environmental and social assessment process including the main objectives of the IEE, the project background, the project description, the project design and the project alternatives.

Next he presented the biophysical and socio-economic impacts and mitigation measures that were identified for the project. These included the impacts and mitigation measures in relation to biodiversity and conservation, land use, aquatic biodiversity, erosion and sediment transport, water quality, air quality, waste, archaeology, health and safety, and UXO. The IEE concluded that the environmental and social impacts are likely to be minor and that the main impacts are likely to include the temporary impacts related to construction activities.

4. Resettlement action plan:

Mr. John Pilgrim, the ESl associate presented the draft preliminary resettlement action plan (RAP). First, Mr. John mentioned that the project will affect about 46 villages (460 households) in Saravan but these will only loose a small amount of land. There is little severe social impact associated with the project and no relocation of houses is expected.

Around 1.5ha of land will be lost in Saravan due to the transmission line from the footprints of the towers (size 7m x 7m). The losses lands include village settlement, forestry and agriculture land (Table 8.2 in RAP handout). The biggest impact is the loss of valuable trees. All those who loose land and timber trees will be compensated for at the market price. Mr. John mentioned that the owners might even gain an income from tree loss as they will be able to keep or sell the timber that was cleared. He also highlighted that in this case, resettlement is about the restoration of the wealth and livelihoods of project affected people.

ESL proposed for the TL to be re-aligned to go around the impacted villages. Further discussion will need to be undertaken with EDL on how to realign the TL. The main task for EDL will be to conduct a full Inventory of Losses for all 904 households in both Savannakhet and Saravan provinces (which is likely to require between 2-3 months work with approximately 20

people to conduct the survey). Mr. John Pilgrim also mentioned that the compensation for the villages will need to be done at least 2 months before construction and that the compensation budget will be based on a full Detailed Measurement Survey (DMS).

The temporary losses from the construction of the project will be more accurately determined when the IOL and DMS are completed. Mr. John mentioned that construction should be undertaken during the dry season and that the work be conducted according to a timetable (in consultation with the farmers) in order to minimize the impact on land. He also mentioned that in the past transmission line projects have had less financial support, and so the project will require assistance from the communities and other relevant sectors. The impact of the project will not push anyone into poverty (with the exception of a few groups). The RAP can add value to the communities in the project area and ESL proposes that financial support for village funds, Lao language learning for ethnic minorities, literacy, mother-child health care, agricultural learning, and financing of provincial HIV/AIDS programs (awareness and prevention) be undertaken. Mr. John also highlighted the risk of HIV/AIDS from the contractors that are brought in during construction.

Mr John then discussed the methodology employed by ESL and explained that the study that was carried out in order to establish the social feasibility of the project and that the surveys were not conducted at 100%. This will later be necessary. ESL has studied the impact of TL on farmers' lands and conducted interviews with affected households. Although little adverse social impact is expected from the project, some people may not satisfied with the compensation received and may have grievances. Registration of complaints and grievances can be done at the district and provincial level, but where possible should be settled at the local level. A monitoring program will be implemented and EDL and WREA will be responsible for the monitoring and implementation of the RAP. An independent agency will also be appointed for monitoring.

5. Questions and answers:

- Mr. Thongxay Voutthisavath from Department of Energy and Mine Saravan Province, raised the following few points:
    - Table 8.2 requires clarification regarding the data on impacted households and explanation of "Settlement within ROW" Y/N
    - The differences in compensation rates.

- Mrs.Phouthone Phalagnok, said that there will be a full detailed survey in order to clarify all the impacts from the project.

- Mr. John Pilgrim mentioned that the rates will be derived through consultation, for example consultation with provincial authorities, before more precise rates are determined. He stressed that the rates in the report are estimates only and that the study conducted so far was aimed at finding out the general size of the impact. Further study will need to be undertaken to determine the compensation rates and obtain accurate figures (e.g for Table 8.2).

- Mr. Nouphanh Mahaphonh, the director general of the central Land Management Authority, gave a few comments for the project:

    - As there will be temporary impacts during the construction period (for example on agriculture lands, irrigation, fish ponds and access roads), EDL and other relevant organizations should either make improvements or at least ensure things are same or better as before.

    - There may be problems in regards to buying and selling new land in the TL alignment as this has happened in other projects before.

    - The selected TL routes should not be changed as there are already done for inventory detail survey.

- Mr. Dethsuvanh Malaythong, EDL Saravan, commented that this project is quite rushed, so it needs communities to cooperate with the Lao government and other relevant organisations in order for the project to be successfully completed. In addition, he mentioned that the substation has been changed the Nongsano switching station to Tao Tharn 2 sub-station. The total area is 3 ha.

6. Meeting closed

17.15 pm

Mr. Bounthavy Ladsasima closed the meeting.

Savannakhet Workshop: ESL Director Presents the Draft IEE

Savannakhet Workshop: Questions from the Audience

Savannakhet Workshop: Group Photo

Saravan Workshop: Welcome from Saravan Government

Saravan Workshop: ESL Resettlement Expert takes questions from the audience

Saravan Workshop: Group Photo

Savannakhet Workshop Attendance

(See Annex 2 for English list of participants)

ສະຫວັນນະເຂດ

ການປະເມີນຜົນກະທົບເບື້ອງຕົ້ນ ທາງດ້ານສິ່ງແວດລ້ອມ (IEE) ສຳຫຼັບ ໂຄງການເຊື່ອມຕໍ່ສາຍສົ່ງ ຢູ່ພາກກາງ ແລະ ພາກໃຕ້ ໃນ ສປປ ລາວ

ຈັດຂື້ນທີ່ ຫ້ອງປະຊຸມ EDL ແຂວງ ສະຫວັນນະເຂດ, ວັນທີ 05/8/ 2009

ລາຍຊື່ຜູ້ເຂົ້າຮ່ວມກອງປະຊຸມ

ລຳດັບ	ລາຍຊື່ ແລະນາມສະກຸນ	ຈາກພາກສ່ວນ (ກະຊວງ/ບອກລະອຽດ)	ໜ້າທີ່ຮັບຜິດຊອບ	ເບີໂທ	ໝາຍເຫດ
1	[illegible]	[illegible]	[illegible] GIS.	5448393 2081008	
2	[illegible]	[illegible]	[illegible]	2407009	
3	[illegible]	[illegible]	[illegible]	5706848	
4	[illegible]	[illegible]	[illegible]	2243184	
5	[illegible]	[illegible]	[illegible]	2316194	
6	[illegible]	[illegible]	[illegible]	5642754	
7	[illegible]	[illegible]	[illegible]	980563	
8	[illegible]	[illegible]	[illegible]	5864056	
9	[illegible]	[illegible]	[illegible]	2413318	
10	[illegible]	[illegible]	[illegible]	2455669	
11	[illegible]	[illegible]	[illegible]	2608589	
12	[illegible]	[illegible]	[illegible]	5440018	
13	[illegible]	[illegible]	[illegible]	5640469	
14	[illegible]	[illegible]	[illegible]	2317609	
15	[illegible]	[illegible]	[illegible]	5541719	
16	[illegible]	[illegible]	[illegible]	5642062	
17	[illegible]	[illegible]	[illegible]	5614236	
18	[illegible]	[illegible]	[illegible]	✓	
19	[illegible]	[illegible]		2633536	
20	[illegible]	[illegible]	[illegible]	3343406	

21	[illegible]	[illegible]	[illegible]	6156907	[illegible]
22	[illegible]	[illegible]	[illegible]	7622882	[illegible]
23	[illegible]	[illegible]	[illegible]	5863295	[illegible]
24	[illegible]	[illegible]	[illegible]	5966139	[illegible]
25	[illegible]	[illegible]	[illegible]	5861035	[illegible]
26	[illegible]	[illegible]	[illegible]	2049635	[illegible]
27	[illegible]	[illegible]	[illegible]	5231090	[illegible]
28	[illegible]	[illegible]	[illegible]	2614452	[illegible]
29	[illegible]	[illegible]	[illegible]	6733797	[illegible]
30	[illegible]	[illegible]	[illegible]	5634362	[illegible]
31	[illegible]	[illegible]	[illegible]	2600612	[illegible]
32	[illegible]	[illegible]	[illegible]	2206749	[illegible]
33	Ms. Mayumi GOTO	Environmental Spécialist	JICA Study Team	422-3097	[illegible]
34	Miss. Vongvilay	ESL	consultant	413723	[illegible]
35	Gwendoline Ntoumos	ESL	consultant	413723	[illegible]
36	BANDITH ChanThavong	ESL	Bandith	02078957200	Bandith
37	Boua Vong LUANGKHOT	ESL	Consultant	02077091911	[illegible]
38	Vansay Khotpathoumy	ESL	Director	02055776071	[illegible]
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42					
43					
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Initial Environmental Examination
Transmission lines Interconnection Project in the Central and Southern Provinces of LAO PDR

At EDL Savannakhet Office, date: 05/08/2009

No.	Name and Surname	Organization / Sector	Responsibility	Phone Number
1	Mr. Soukhan BOUNTHABUNDITH	Ministry of Agriculture and Forestry	Director of GIS Department	5448393
2	Mr. Bounthan NHANTHABHANYA	Ministry of Hydropower and mine	Academic matter	2407009
3	Mr. Phonevilay KEOBOUNSONE	Savannakhet province of office	Deputy Director	7706848
4	Mr. Kongsy PHASYSOMBATH	Land Managerment Agency of province	Deputy Director of Administration	2243184
5	Mis Vayouveth VIXAYSOMBOUN	Water Research and Environment Office	Director of Environmental Department	2316194
6	Mr. Xaysavhan OUTHOUTA	Agriculture and forestry office of kaysone District	Official Director	5642754
7	Mr. Bounphan MAHAPHON	National land management Agency	Director of policy Department	9801563
8	Mr. Buthjar	Land Management Agency of sonkone District	Academic matter	5864056
9	Mr. Boun jieng KEOVILAYVHAN	Lao hydropower office	Official Director of Planing	2413358
10	Mr. Arnosith PILAVHAN	Lao hydropower office	Staff of Environmental Office	2455669
11	Mr. Lumgnue thongsy ORSONE	Jumphone District	Governor	2608589
12	Mr. Chanthalay SITHTITANONGSY	kaysone District	Deputy Governor	5440018
13	Mr. Koeoukdone	sonekone District	Deputy Governor	5640469
14	Mr. Soukashan SANAVONG	xaypouthong District	Governor	2317609
15	Mr. Soulivong SENKOE	Lao hydropower	Deputy Director	5541719
16	Mr. Poukong MAMHACHACK	Hydropower and Mine	Staff	7642062
17	Mr. Bounyor MAZANA	Department of Agriculture and forestry	Deputy of forestry Department	5614236
18	Mr. Bounkarth	Thahuaoxang village	Deputy Chief	-
19	Mr. Chidravong	Land office of kaysone District	Staff	2633536
20	Mr. Poukham	Nasouti village	Chief of village	3343406
21	Mr. Lung	Donexath village	Chief of village	6156907
22	Mr. Bounzu	Donexath village	Deputy chief	2622887
23	Mr. Khamdy PIMHASONE	Nonesomboun village	Chief of village	5863295
24	Mr. John KHATIVONG	Nonzomboun village	Chief of village	5966139
25	Mr. Chantha	Khamsensay village	Chief of village	5861035
26	Mr. Thongza	Land office of Jumphone District	Deputy Director	2049635
27	Mr. Bounlung	Agriculture office of Jumphone District	Official Director	5231019
28	Mr. Sengsavan	Agriculture office of xaypouthong District	Official Director	2614152
29	Mr. Kiengscak	Agriculture office of songkone District	Official Director	6733797
30	Mr. Daikeo SENGPHACHANH	EMV of savannakhet Hydropower	Academic matter	5634362
31	Mr. Pethsomphone	Land office of xaypouthong District	Official Director	2606612
32	Mis Pouthone PASAYOG	Enviromental office	Deputy Director	2206749
33	Ms. Mayumi GOTO	Enviroment specialist	JICA study team	4223097
34	Miss vongvilay	Earth System Lao	Consultant	021 43723
35	Miss Gwendoline NTOMOS	Earth System Lao	Consultant	021 43723
36	Mr. Bandith CHANTHAVONG	Earth System Lao	GIS	78--99700
37	Mr. Bouavong LUANGKHOT	Earth System Lao	Consultant	770-919-1
38	Mr. Nanong KHOTPATHOUM	Earth System Lao	Director	5516071

Saravan Workshop Attendance

(see Annex 2 for English list of participants)

ສາລະວັນ

ທີ່ສາລະວັນ

ການປະເມີນຜົນກະທົບເບື້ອງຕົ້ນ ທາງດ້ານສິ່ງແວດລ້ອມ (IEE) ສຳຫຼັບ ໂຄງການເຊື່ອມຕໍ່ສາຍສົ່ງ ຢູ່ພາກກາງ ແລະ ພາກໃຕ້ ໃນ ສປປ ລາວ

ຈັດຂຶ້ນທີ່ ຫ້ອງປະຊຸມ EDL ແຂວງ ສາລະວັນ, ວັນທີ 06/08/ 2009

ລາຍຊື່ຜູ້ເຂົ້າຮ່ວມກອງປະຊຸມ

ລຳດັບ	ລາຍຊື່ ແລະນາມສະກຸນ	ຈາກພາກສ່ວນ (ກະລຸນາບອກລະອຽດ)	ໜ້າທີ່ຮັບຜິດຊອບ	ເບີຕິດຕໍ່	ໝາຍເຫດ
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ລຳດັບ	ລາຍຊື່ ແລະນາມສະກຸນ	ຈາກພາກສ່ວນ (ກະຊວງ/ບອກລະອຽດ)	ໜ້າທີ່ຮັບຜິດຊອບ	ເບີໂທ	ໝາຍເຫດ	
22	ທ. [illegible]	[illegible]	[illegible]	2455669	[signature]	
23	ທ. [illegible]	[illegible]	[illegible]	5548065	[signature]	
24	ທ. [illegible]	[illegible]	[illegible]	5949718	[signature]	
25	ທ. [illegible]	[illegible]	[illegible]	5759426	[signature]	
26	ທ. [illegible]	[illegible]	[illegible]	5948473	[signature]	
27	ທ. [illegible]	[illegible]	[illegible] GIS	5448393 / 2081008	[signature]	
28	ທ. [illegible]	[illegible]	[illegible]	2407009	[signature]	
29	ທ. [illegible]	[illegible]	[illegible]	5432617	[signature]	
30	ທ. [illegible]	[illegible]	[illegible]	2288090	[signature]	OK
31	[illegible]	[illegible]	[illegible]		[signature]	NO
32	[illegible]	[illegible]	[illegible]		[signature]	NO
33	ສ. [illegible]	ນາຍ ຕັ້ງ ນ້ອຍ	ຕັ້ງ ນ້ອຍ		[signature]	NO
34	ທ. [illegible]	[illegible]	ທ.ພ. [illegible]	2504838	[signature]	NO
35	ນ. [illegible]	TV . [illegible]				
36	ທ. [illegible]	[illegible]	[illegible]	5166198	[signature]	OK.
37	Gwendoline NTOUMOS	Earth Systems Lao	Consultant	413723	[signature]	
38	Vongvilay	ESL	Consultant	021 413723	[signature]	
39	Bandith	ESL	GIS.	0207899700	[signature]	
40	Bouavong LUANGKHOT	ESL	Consultant	0207709191	[signature]	
41	Nanong Khotpathum	ESL	Director	0205576071	[signature]	
42						
43						

Initial Environmental Examination
Transmission lines Interconnection Project in the Central and Southern Provinces of LAO PDR

At EDL Saravanh Office, date: 06/08/2009

No.	Name and Surname	Organization / Sector	Responsibility	Phone Number
1	Mr. Somjay	Nongkor vilage	Chief of village	2278942
2	Mr. Balamy	Network Department	Director	56390-98
3	Mr. Noudone	Donkor village	Chief of village	2278730
4	Mr. Poumy	Mouane village	Chief of village	5370448
5	Mr. Bouagnue	Land of vabeen district	Academic matter	5489-258
6	Mr. Keooukdone	Vapi district office	Academic matter	5077142
7	Mr. Sangvam	Environmental Hydropower	Director of Administration	2244348
8	Mr. Thongsoon	Environmental Hydropower	Director of Environmental center	5448280
9	Mr. Lungsy	Nakonepheg district of office	Deputy Director	54484-91
10	Mis Khamma	Land Managerment Agency of district	Deputy Agency	5731246
11	Mr. Khamparn	Environmental Hydropower	Academic matter	2281230
12	Mr. Llurnsamai	Saravanh Hydropower	Deputy Deparment	5718364
13	Mr. Poumy orlathai	Songkone District	Deputy District	2283335
14	Mr. Sengdarn	Agriculture	Deputy Office	9930075
15	Mr. Jonh	Earth System Lao	RAP Specialist	-
16	Mr. Bounsom	Hydropower	Director of Technicality Department	5648342
17	Mr. Bounthan MAHAPHON	Land Managenent Agency	Official Director	9801563
18	Mr. Bounjeing KEOVILAI	Lao Hydropower Office	Official Director of Planing	2413358
19	Mr. Tongxay BOUNTISAVATH	Department of Hydropower and Mine	Deputy Director	5748651
20	Mr .sangthong EINTHABADE	Department of Hydropower and Mine	Deputy of Promote Energy	2282225
21	Mr. pouthone PARAYARG	Lao hydropower	Deputy of Environmental office	2206749
22	Mr. Arnosith PILAVONG	Environmental Hydropower	Environmental staff	2455669
23	Mr. Dethsouvanh MALAITHONG	Environmental Hydropower	Deputy Director	5548065
24	Mr. Bounlep BORLISUTH	Land managenent Agency	Deputy Agency	5949718
25	Mr. Beging KONCHANHTHA	Land managenent Agency	water and Environment	575-9426
26	Mr. Nouxay LUNDAVONG	Agriculture and forestry of District	Official Director	5748473
27	Mr. Soukhanh BOUNTHABUNDITH	Department of forestry	Director of GIS Department	5448393
28	Mr. Bounthan NHANTHABUNYA	Department of mine	Academic matter	2407009
29	Mr. Bounthavee	Saravanh district of office	Director	5432617
30	Mr. Xayasith	Saravanh district of office	Deputy Director of Administration	2288090
31	Mr. Khamseng	Phonpeng	Chief of village	-
32	Mr. Khampoumy	Maisivilay	Deputy chief of village	-
33	Mr. Khamlay	Tongnoy	chief of tongnoi village	-
34	Mr. vithaya ZINDRAVONG	Water research and Environment office	Director of institute	2704838
35	Mr. sithtixay	Saravan TV	-	-
36	Mr. Symone SINTHAVONG	Land managerment Agency of province	Director of Information	-
37	Miss Gwendoline NTOMOS	Earth System Lao	Consultant	021 43723
38	Miss Vongvilay	Earth System Lao	Consultant	021 43723
39	Mr. Bandith CHANTHAVONG	Earth System Lao	GIS	78--99700
40	Mr. Bouavong LUANGKHOT	Earth System Lao	Consultant	770-919-1
41	Mr. Nanong KHOTPATHOUM	Earth System Lao	Director	5516071

EARTH SYSTEMS LAO
Environment – Water - Sustainability

Appendix 4 – Environmental Checklist

Environmental Check List

Project Name: _____
Date of Monitoring: _____/_____/_____

How many staff/workers: _____, Equipments: _____ (the contractor is required to submit lists of their staff/workers and equipments used for performance of construction activities)

Issues	Comments	Action to be taken
I. Forest and bushes clearing along the TL ROW		
1. Are trees and bushes clearing disposed to areas permitted by Authorities concerned?		
2. Is there herbicides used to control vegetation along ROW?		
3. Is there any burning to clear and control vegetation along ROW?		
4. Have high commercial tree species been marked and cut before ROW clearing? (this will be undertaken by Forest Clearing Committee, District Forestry Unit and land owners to list and mark big trees or commercial tree species).		
5. Is vegetation debris from ROW/Substation clearances stacked outside area of the ROW/Substation properly and burnt off?		

Issues	Comments	Action to be taken
II. Site worker camps and other facilities		
6. Are all site workers accommodated in the provided camps? (No other accommodation of workers will be permitted).		
7. Are temporary site worker camps located along the proposed road ROW?		
8. Is there any impact on watercourse or stream water quality (water pollution) caused by temporary site worker camps located along the proposed road ROW?		
9. Are the camp sites and surrounds kept in a tidy and clean manner?		
10. How many rubbish bins are there at the camp sites _____? Is it adequate number for general litters and rubbish?		
11. Are workers provided with portable water supply and/or water tank and secure?		
12. Is waste/rubbish collection done and taken to a managed waste disposal facility regularly?		
III. Construction of Access Road and steel Towers, including transportation of all materials		
13. Is construction carried out		

Issues	Comments	Action to be taken
during dry (non-farming) season? when was construction of access road started?		
14. Is there any disruption to assets and/or production activities caused by construction of access road? Yes or No. (what kind of disruption? How significant?)		
15. Has the compensation been made fairly to affected people?		
16. Does the contractor provide proper drainage system in harmony with natural drain?		
17. Disposed off sump oil properly? Yes or No. washed down of oil into water bodies?		
18. Is transportation of material done according to time allowed (from 7.00AM to 6.00PM)?		
19. Does the contractor post warning signs and managing traffic to protect the traveling public and its workers?		
IV. Dust emission		
20. Does the contractor spray water in dry and windy conditions on the local road where the trucks pass through?	No_____ Yes (_____times per day)	
V. Noise (civil works)		
21. Daytime working (from 7.00AM to 6.00PM), not exceeding the noise limit especially in		

Issues	Comments	Action to be taken
nighttime. Nighttime, in principle, means from 9.00PM to 6.00AM. Principally, working will not be allowed at nighttime: meet the standard?		
22. Daytime working (from 7.00AM to 6.00PM), not exceeding the noise limit especially in nighttime. Nighttime, in principle, means from 9.00PM to 6.00AM. Principally, working will not be allowed at nighttime: meet the standard?		
VI. Interference with other infrastructure during construction and transportation of material		
23. Does the contractor post warning signs and managing traffic to protect the traveling public and its workers?		
24. In the event that stringing conductor presents a possible risk to the houses, community center, and to traffic on public roads or rivers, are the bamboo scaffolds constructed across the roads and rivers to protect pedestrians, vehicles, boats (and the conductor itself) from potential injury/damage during conductor stringing?		
25. In the event that blasting for		

Issues	Comments	Action to be taken
access road and tower foundation construction presents a possible risk to the houses, community center, and to traffic on public roads or rivers, are warning signs and warning system posted to protect pedestrians, vehicles, boats (and the conductor itself) from potential injury/damage during conductor stringing?		
26. Is there any case of overweight material occurred during transportation that damages the weaker roads and/or bridges where necessary to temporarily reinforce?	Yes or No, how many ?_____, where?_____,	
VII. Health and safety; Injury and sickness of workers and members of the public		
27. Does the Contractor prepare a health and safety plan?	Yes or No (the contractor is required to submit the plan).	
28. Have the workers been screening of health and provided with health and safety training sessions?		
29. Necessary safety tools such as helmets, working shoes, ear protection, dust filter and others are provided for site workers adequately?		
VIII. Encroachment into farmland,		

Issues	Comments	Action to be taken
loss of agricultural land and productivities		
30. Are affected farmers/villagers properly compensated for loss of agricultural land and productivities?		
IX. Encroachment into industrial tree plantation areas, loss of planted trees		
31. Are affected farmers/investors properly compensated for loss of planted trees?		
X. Historical, cultural and archeological property		
32. Is there any historical, cultural or archeological asset found during excavation? If yes, how do the contractors take an action of informing agency concerned?		
33. Sitting the TL and Tower away from such areas. If unavoidable by way of alignment position, does the contractor site the tower outside i.e. at each end? Yes or No, how does the contractor take procedure?		
XI. Encroachment into Temple or village cemetery		
34. Is there any encroachment into the temple or village cemetery occurred? Yes or No. Is the compensation made to the village properly?		

Issues	Comments	Action to be taken
XII. Electro–magnetic field		
35. Does the contractor's work meet the Safety Clearance to Live Conductor for 230 kV and 500 kV; minimum clearance distance (meter)? Yes or No, (see annex 1&2 below for reference)		
XIII. Other issues		
36.		
37.		

EARTH SYSTEMS LAO
Environment – Water - Sustainability

Appendix 5 – Environment Management Plan

See standalone document

EARTH SYSTEMS LAO
Environment – Water - Sustainability

Appendix 6 – Resettlement Action Plan

See standalone document