

**Environmental and Social Considerations in Detailed Planning Survey
(Technical Cooperation for Developing Planning)**

DATE: 9 May 2017

1. Full title of the Project

Project on Power System Master Plan in Lao PDR (hereinafter referred to as "the Project")

2. Type of the Project

Formulation of a master plan

3. Categorization and Its Reason

The Project formulates a Power system master plan in Lao PDR.

The Project is categorized as a "Category B" project because of the following reason. The Project is not likely to have significant adverse impacts on the environment under the JICA Guidelines for Environmental and Social Considerations (2010) in terms of its sectors, characteristics and areas.

4. Agency or Institution Responsible for the Implementation of the Project

Ministry of Energy and Mines, and Electricite du Laos

5. Outline of the Project

(1) Expected Goals which will be attained after implementing the Proposed Plan

The Project aims to secure domestic power supply and enhance regional power exchange in a sustainable, reliable and efficient manner for realizing steady economic and social development in Lao PDR.

(2) Outputs

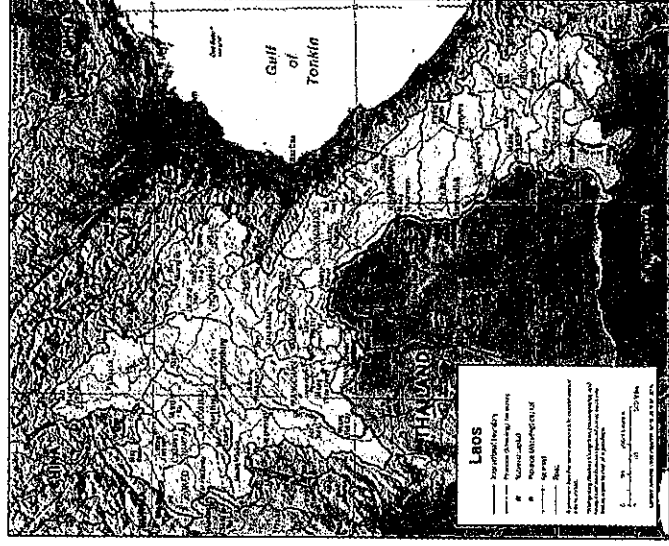
1) A long-term power network system development plan is formulated to meet both domestic power demand and regional power exchanges between neighboring countries and establish management mechanism for sustainable and efficient power system operation.

2) Codes and regulations are established to develop reliable, efficient and sustainable power system for domestic and international domains in accordance with national and international rules and standards.

6. Description of the Project Site

6.1 Target Area

The Project covers the entire land area of Lao PDR (Figure 1).



Source: University of Texas http://www.lib.utexas.edu/maps/middle_east_and_asia/laos_rel_2003.pdf

Figure 1: Map of Lao PDR

6.2 Description of the Environments

(1) Natural Environment

1) Physical Environment

Lao PDR is a land-locked country in South-East Asia bordering China, Vietnam, Cambodia, Thailand and Myanmar. Its land area is 236,800 km² (Figure 1). In the central and southern regions, there are plains formed by the Mekong River and its tributaries, and the regions are blessed with fertile soils. In the northern region, the land is rugged and valleys are developed. The land is with

acidic soil from which organic matters have flowed out¹.

The country belongs to the tropical climate. The southwest monsoon dominates, and the period from April to October is the rainy season with high humidity and high temperature. The period from October to April is the dry season. Differences in precipitation are noticeable by year, sometimes floods and droughts occur. The average temperature of the mountains and highlands is 20°C, and in plain areas it is 25°C–27°C².

2) Ecosystems and species

The country has rich biodiversity because of its diversified habitats³. Various direct threats to the ecosystems have been identified such as habitat destructions and degradation, expansion of agriculture and construction of infrastructures. Because of these threats, extinction of species is also a concern in the country⁴.

Conservation International, international nature conservation NGO, identifies the country as part of “Indo-Burma”⁵, which is one of the “Biodiversity Hotspots” in the world. It means that it is necessary to urgently take appropriate actions to conserve its ecosystems and species.

3) Conservation measures

The forests in the country are categorized into Protection Forest, Conservation Forest and Production Forest under the Forest Law (2007). National Conservation Forests are protected as National Biodiversity Conservation Area (24 sites) and Corridor (2 sites) covering 39,097.5 km². There are also Conservation Forests at provincial, district and village levels. Protection forests are managed and protected in similar ways as the conservation forests.

Lao PDR is a member state of the Convention Concerning the Protection of the World Cultural and Natural Heritage, and one protected area (Hin Nam No National Protected Area) is on the tentative list of World Natural Heritage site of the country. There are two (2) World Cultural Heritage sites⁶

¹ National Biodiversity Strategy and Action Plan for Lao PDR 2016-2025 (Ministry of Natural Resources and the Environment)

² Climate Change Country Profile, WHO Western Pacific Region, 2007

³ National Biodiversity Strategy and Action Plan for Lao PDR 2016-2025 (Ministry of Natural Resources and the Environment)

⁴ <https://www.cbi.int/countries/profile/default.shtm?country=6#facts>

⁵ Conservation International

⁶ http://www.conservation.org/global/japan/priority_areas/hotspots/asia-pacific/Pages/Indo-Burma.aspx

⁷ They are “Town of Luang Prabang” and “Vat Phou and Associated Ancient Settlements within the Champasak Cultural Landscape”.

and two (2) sites are on the tentative list⁷. There are two (2) Ramsar wetlands namely Beung Kiat Nong Wetlands and Xe Champhone Wetlands⁸.

BirdLife International, international nature conservation NGO, identifies internationally important habitats as Important Bird and Biodiversity Areas (IBAs) and promotes their conservation with local government and NGOs. There are 27 IBAs and eight (8) of them are not under protection of the government⁹.

(2) Social Environment

1) Legal framework

Under the Constitution, the country is a people’s democratic State with the Lao People’s Revolutionary Party as the lead component. The National Assembly and all other state organizations are established and function in accordance with the principle of democratic centralism¹⁰.

The central government is consisted with 18 ministries such as Prime Minister’s Office, Ministry of Defense and Bank of Lao PDR. Management of the local governments is regulated by the Law on Local Administration (2003), and there are 18 provinces including Vientiane and 148 districts.

2) Population

The total population in 2015 is 6,492,228 (male: 3,254,770, female: 3,237,458)¹¹.

3) Languages and ethnic groups

The country has four broad ethno-linguistic families: the Lao-Tai, the Mon-Khmer, Hmong-Lu Mien, and the Chinese-Tibetan. The Lao-Tai has the biggest proportion of the population; about 70%. These categories are further divided into 49 distinct ethnicities and some 200 ethnic subgroups¹².

4) Poverty¹³

The country has achieved the Millennium Development Goal target of halving its national poverty rate over the past decade. The poor on average have become less poor. The poverty gap has come down from 11.2% in 1992/93 to 5.5% of the national poverty line in 2012-13, while the poverty

⁷ They are “Sites Mégalithiques de la province de Xieng Khouang” and “That Luang de Vientiane”.

⁸ <http://www.ramsar.org/sites/default/files/documents/library/siteist.pdf>

⁹ Important Bird Areas in Asia: Key sites for conservation (BirdLife International, 2004) and National Biodiversity Strategy and Action Plan for Lao PDR 2016-2025 (MONRE)

¹⁰ Lao People’s Democratic Republic: Public Administration Country Profile (United Nations, 2005)

¹¹ Results of Population and Housing Census 2015 (Lao Statistics Bureau)

¹² Indigenous Peoples, Poverty and Development, “Chapter 7: Laos Ethno-linguistic Diversity and Disadvantage” (World Bank, 2010)

¹³ MDG Country Analysis Report: Lao PDR (The United Nations in Lao PDR, 2015)

severity index has declined from 3.9 to 1.9 over the same period. However, poverty reduction and consumption growth lag behind the country's GDP growth.

The poverty rate in rural areas is 2.9 times that of the urban areas. One-third of the population in upland areas is still below the poverty line, while in lowland areas, about one-fifth of the population is poor (18.8%), and the poverty rate in midland areas is 22%.

Ethnicity and education also play determinant roles. The employment of the household head and the prices of agricultural products appear to be important determinants. In 2012-3, poverty was significantly lower among female-headed than male headed households.

5) Gender¹⁴

In education, the gender equality gap has narrowed in all three levels of education enrolment, with gender equity nearly achieved for primary education. However, girls still encounter challenges in continuing with secondary education. Among young people, the gender equality gap in literacy rate has not narrowed much. Early marriage is one of the many factors for girls not continuing in school.

In employment, women generally occupy the lower rungs of the labour market and predominate in the more vulnerable sectors of employment. Violence against women is a common phenomenon but the statistics are unreliable.

6) Infectious diseases

The country has an estimated 0.29% HIV prevalence in 2014, among adults aged 15-49 years. In the recent years, it has opened its corridors to its neighboring countries with relatively higher HIV prevalence. The increased mobility across borders has provided a venue for HIV vulnerability and the emergence of groups at high-risk continuously makes Lao PDR vulnerable to new HIV threat¹⁵.

The first-ever national tuberculosis (TB) prevalence survey (2010-11) revealed that Lao PDR had more than halved the prevalence of all forms of TB since 1990 and that the TB treatment success rate was high. However, the survey also found that only a third of all TB cases were detected and the remaining two-thirds undiagnosed and untreated, indicating weaknesses in the TB detection and control services¹⁶.

¹⁴ MDG Country Analysis Report: Lao PDR (The United Nations in Lao PDR, 2015)

¹⁵ Lao PDR Country Progress Report, Global AIDS Response Progress Country Report (Ministry of Health, 2015).

¹⁶ MDG Country Analysis Report: Lao PDR (The United Nations in Lao PDR, 2015)

7) Unexploded ordnance¹⁷

With an estimate of 8.7 million hectares contaminated by unexploded ordnance (UXO), resources are among the constraints to clearing the land. Despite the challenges, the past few years have seen a number of achievements. The number of UXO casualties has been reduced by 85% over the last decade. Risk awareness has been integrated into school curricula. The government has adopted a new results-oriented methodology for finding and clearing bombs, which is expected to enhance the effectiveness of UXO clearance operations and is already showing a dramatic increase in the land area being cleared.

8) Natural disasters¹⁸

Floods occur from August to September in the central and southern provinces of the country, following the southwest monsoon season. Flooding occurs regularly and often affects not only the main stream of the Mekong River but also many of its smaller tributaries.

9) Climate change

Lao PDR ratified the Paris Agreement in September 2016 and the government will take appropriate mitigation and adaptation measures as stated in its Intended Nationally Determined Contribution (2015). The mitigation measures are the followings:

- Implementation of "Forestry Strategy to the year 2020" of the Lao PDR
- Implementation of Renewable Energy Development Strategy
- Implementation of Rural Electrification Programme
- Implementation of transport focused NAMAs¹⁹
- Expansion of the use of large scale hydroelectricity; and,
- Implementation of climate change action plans

The adaptation measures are implemented in the fields of Agriculture, Forestry and Land Use Change, Water Resources, Transport and Urban Development and Public Health.

7. Legal framework of the Environmental and Social Considerations in Lao PDR

7.1 Relevant Laws

- (1) Environmental Impact Assessment
- 1) Constitution

¹⁷ MDG Country Analysis Report: Lao PDR (The United Nations in Lao PDR, 2015)

¹⁸ Lao PDR Disaster Management Reference Handbook (Center for Excellence in Disaster Management and Humanitarian Assistance, 2014)

¹⁹ NAMA: Nationally Appropriate Mitigation Action

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The Constitution (amended, 2003) states "All organisations and citizens must protect the environment and natural resources: land surfaces, underground [resources], forests, animals, water sources and the atmosphere" in Article 19 and "To issue decrees and resolutions on State administration, socio-economic management, [and] management in the fields of science and technology, national resources, environment, national defence and security, and foreign affairs" as the government's rights and duties in Article 70.

2) Law on Electricity

The Law on Electricity (amended, 2011) states "Protection of environment, society and nature (community, forest and water source)" as one of the four (4) principles of electricity activities (Article 6), and describes a framework of the social, environmental and natural assessment in Article 31. There are also the following policies and guidelines related to environmental considerations in the electricity activities;

- Policy on Sustainable Hydropower Development in Lao PDR, 2015
- Policy Guidelines for the Implementation of Policy on Sustainable Hydropower Development in Lao PDR, 2016
- Regulation on Small Hydropower Project Development 1180/Ministry of Energy and Mines, 2016
- Cumulative Impact Assessment Guidelines for Hydropower Projects in the Lao People's Democratic Republic, 2016

3) Environmental Protection Law

The Environmental Protection Law (amended, 2012) sets up the framework of the environmental protection in the country, and defines the implementation of Environmental Impact Assessment and Strategic Environment Assessment (SEA).

The details of the Environmental and Social Impact Assessment (ESIA) and Initial Environmental Examination are defined in the following two (2) ministerial instructions;

- Ministerial Instruction on the Process of Initial Environmental Examination of the Investment Projects and Activities, No.8029/MONRE
- Ministerial Instruction on the Process of Environmental and Social Impact Assessment of the Investment Projects and Activities, No.8030/MONRE

Regarding SEA, the Environmental Protection Law (amended, 2012) defines its implementation.

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However, there are neither regulations nor guidelines on SEA, and Ministry of Environment and Natural Resources (MONRE) is preparing a decree on SEA and related guidelines.

4) Relevant governmental organizations

The competent authority is Department of Environment and Social Impact Assessment, MONRE. Environmental Engineering Division under Department of Energy Policy and Planning, MEM, and Environment Office under Transmission and Substation Development Department, EDL, are in charge of environmental and social considerations in the electricity activities.

(2) Land acquisition and resettlement

The following laws and decree are relevant to land acquisition and resettlement for development projects and activities.

- Decree on Compensation and Resettlement Management in Development Projects (No.84, 2016)
- Land Law (amended 2003)

MONRE is the competent authority for the implementation of land acquisition and resettlement for development projects and activities.

(3) Other relevant legislations and international conventions

Table 1 shows other relevant legislations, and Table 2 shows international conventions.

Table 1 Other relevant legislations on environmental and social considerations

| No. | Filed | Law |
|-----|-------------------------|--|
| | Forest | Forest Law, No.6, 2007 |
| | Ecosystem | Decree on Protection Forest, No. 333/PM, 2010 |
| | Environmental standards | Wildlife and Aquatic Animals Law, No.7, 2007 Agreement on the National Environmental Standards, No.2734 /PMO.WREA, 2009 |
| 1 | Agriculture | Law on Agriculture, No. 1/NA, 1998 |
| 2 | Fishery | Fisheries Law, No. 3/NA, 2009 |
| 3 | Gender | Law on the Development and Protection of Women, No. 8/NA, 2004 |
| 4 | Children | Law on the Protection of the Rights and Interests of Children, No. 5/NA |
| 5 | Water Resources | Water and Water Resource Law, No. 106, 1996 |
| 6 | Health, hygiene | Law on Hygiene, Disease, Prevention and Health Promotion, No. 1/NA, 2001 |
| 7 | Culture, landscape | Law on National Heritage, No. 08/NA, 2005 Decree on the Preservation on the Cultural and Natural Heritage, No. 3/PR, 1997 |
| 9 | Labor | Labor Law, No. 43/NA, 2013 |

Source: Prepared by the Detailed Planning Survey Team

Table 2 International conventions related to environmental issues

| No. | Convention | Year |
|-----|---|------|
| 1 | Convention on Wetlands of International Importance especially as Waterfowl Habitat) | 2010 |
| 2 | Convention Concerning the Protection of the World Cultural and Natural Heritage | 1987 |
| 3 | Convention on International Trade in Endangered Species of Wild Fauna and Flora | 2004 |
| 4 | Convention on Biological Diversity | 1996 |
| 5 | United Nations Framework Convention on Climate Change | 1995 |
| 6 | Convention on the Elimination of All Forms of Discrimination against Women | 1981 |
| 7 | Convention on Rights of the Child | 1991 |
| 8 | Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal | 2010 |

Source: Web site from each convention or UN

7.2 Environmental and Social Impact Assessment

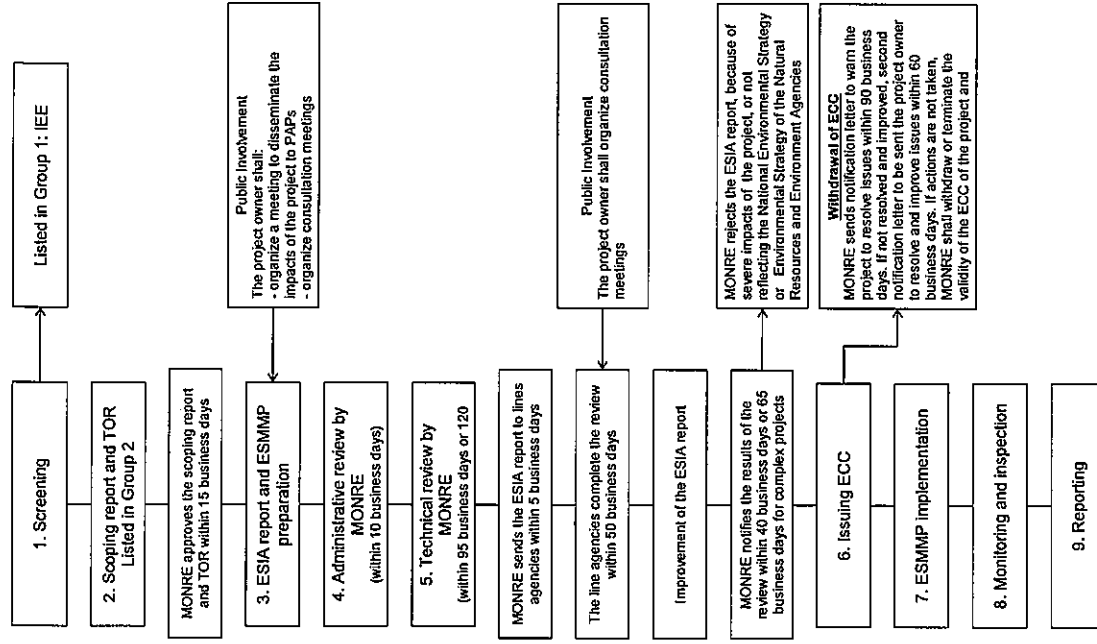
(1) Legislations

The following law and ministerial instructions are relevant to Initial Environmental Examination (IEE) and Environmental and Social Impact Assessment (ESIA).

- Environmental Protection Law (amended, 2012)
- Ministerial Instruction on the Process of Initial Environmental Examination of the Investment Projects and Activities (No.8029/MONRE)
- Ministerial Instruction on the Process of Environmental and Social Impact Assessment of the Investment Projects and Activities (No.8030/MONRE)

(2) Procedure of the implementation of ESIA

Figure 2 shows a flow of the procedure of the implementation of ESIA.



Source: Ministerial Instruction on the Process of Environmental and Social Impact Assessment of the Investment Projects and Activities (No.8030/MONRE)

Figure 2 Procedure of ESIA

Screening of development projects and activities is conducted based on "Ministerial Agreement on the Endorsement and Promulgation of List of Investment Projects and Activities Requiring for Conducting the Initial Environmental Examination or Environmental and Social Impact Assessment (No.8056/MONRE)". Projects and activities categorized as "Group 1" need IEE, and those as "Group 2" need ESIA.

Project owner should prepare Social Impact Assessment Report and Environmental Impact Assessment Report as ESIA Report for projects and activities which require compensation and resettlement according to "Decree on Compensation and Resettlement Management in Development Projects (No.84, 2016)".

7.3 Strategic Environmental Assessment (SEA)

The Environmental Protection Law (amended, 2012) defines the implementation of SEA for development projects. However, there are neither regulations nor guidelines on SEA, and Ministry of Environment and Natural Resources (MONRE) is preparing a decree on SEA and related guidelines.

7.4 Land acquisition and resettlement

(1) Legislations

The following decree and law are relevant to land acquisition and resettlement for development projects and activities.

- Decree on Compensation and Resettlement Management in Development Projects (No.84, 2016)
- Land Law (amended 2003)

(2) Procedure of land acquisition, compensation and resettlement

Table 3 shows the contents of the decree (No.84, 2016).

Table 3 Contents of the decree (No.84/2016)

| Chapter and article | Title |
|---------------------|---|
| Chapter 1 | General provisions |
| Article 1 | Purpose |
| Article 2 | Compensation |
| Article 3 | Resettlement |
| Article 4 | Explanatory notes |
| Article 5 | Basic principles of compensation and resettlement |
| Article 6 | Scope of application |
| Chapter 2 | Compensation |
| Article 7 | Preparation of compensation plans |
| Article 8 | Implementation of compensation plans |

| Chapter and article | Title |
|---------------------|---|
| Article 9 | Valuation and estimation of compensation value |
| Chapter 3 | Resettlement |
| Article 10 | Preparation of resettlement plans |
| Article 11 | Implementation of resettlement plans |
| Article 12 | Resettlement site development |
| Chapter 4 | Livelihood rehabilitation |
| Article 13 | Establishment of livelihood rehabilitation plans |
| Article 14 | Assessment of livelihood situation |
| Article 15 | Implementation of livelihood rehabilitation plans |
| Article 16 | Assistance during the transitional period |
| Chapter 5 | Rights and obligations of the project owner and the affected |
| Article 17 | Rights and obligations of the project owner |
| Article 18 | Rights and obligations of the affected |
| Chapter 6 | Committee for compensation and resettlement |
| Article 19 | Committee for compensation and resettlement |
| Article 20 | Rights and duties of provisional, city committee for compensation and resettlement |
| Article 21 | Rights and duties of management unit of compensation and resettlement |
| Article 22 | Rights and duties of operation unit of compensation and resettlement |
| Chapter 7 | Settlement of requests on the compensation and resettlement |
| Article 23 | Requests made by the affected |
| Article 24 | Procedures of the settlement of requests of the affected or the project owner |
| Article 25 | Obligations of the project owner in settling the request of the affected |
| Chapter 8 | Monitoring and examination |
| Article 26 | Monitoring and examination |
| Article 27 | Monitoring and examination by the project owner |
| Article 28 | Monitoring and examination by the committee for compensation and resettlement |
| Article 29 | Monitoring and examination by the Ministry of Natural Resources and Environment |
| Article 30 | Monitoring and examination by the National Assembly, the State Audit Organization, the Government Inspection and Anti-Corruption Organization |
| Chapter 9 | Final provisions |
| Article 31 | Implementation |
| Article 32 | Effectiveness |

8. Provisional Scoping

A provisional scoping is conducted for the Project. The results are shown in Table 4.

Table 4 Provisional Scoping of the Project

| Category | No. | Environmental Item | Evaluation | | Explanation on impacts |
|-------------------|-----|--------------------|----------------------------------|------------------------------|---|
| | | | Planning and construction stages | Operation & monitoring stage | |
| Pollution Control | 1 | Air quality | C | D | <p>[Construction Stage]</p> <p>Details of impacts (including their existences) are not known because specific plans are not available, but the following points should be noted.</p> <ul style="list-style-type: none"> > Air pollution caused by heavy machines and vehicles <p>[Operation and monitoring stage (O&M stage)]</p> <p>No activities which give negative impacts are planned.</p> |
| | 2 | Water quality | C | C | <p>Details of impacts (including their existences) are not known because specific plans are not available, but the following points should be noted.</p> <p>[Construction Stage]</p> <ul style="list-style-type: none"> > Water pollution caused by heavy machines and vehicles > Water pollution caused by herbicides for right-of-way maintenance when they are applied <p>[O&M stage]</p> <ul style="list-style-type: none"> > Water pollution caused by herbicides for right-of-way maintenance when they are applied |
| | 3 | Wastes | C | D | <p>Details of impacts (including their existences) are not known because specific plans are not available, but the following points should be noted.</p> <ul style="list-style-type: none"> > Wastes from construction sites <p>[Construction Stage]</p> <p>[O&M stage]</p> |

| Category | No. | Environmental Item | Evaluation | | Explanation on impacts |
|----------|-----|---------------------|----------------------------------|------------------------------|--|
| | | | Planning and construction stages | Operation & monitoring stage | |
| | 4 | Soil contamination | C | C | <p>Details of impacts (including their existences) are not known because specific plans are not available, but the following points should be noted.</p> <p>[Construction Stage]</p> <ul style="list-style-type: none"> > Soil contamination by oil and others from heavy machines and vehicles <p>[O&M stage]</p> <ul style="list-style-type: none"> > Soil contamination caused by herbicides for right-of-way maintenance when they are applied |
| | 5 | Noise and Vibration | C | D | <p>Details of impacts (including their existences) are not known because specific plans are not available, but the following points should be noted.</p> <p>[Construction Stage]</p> <ul style="list-style-type: none"> > Noise and vibration from heavy machines and vehicles > Noise and vibration during road works <p>[O&M stage]</p> <p>No activities which give negative impacts are planned.</p> |
| | 6 | Subsidence | D | D | <p>No activities which give negative impacts are planned.</p> |
| | 7 | Odor | C | D | <p>Details of impacts (including their existences) are not known because specific plans are not available, but the following points should be noted.</p> <ul style="list-style-type: none"> > Odor from construction sites |
| | | | | | <p>No activities which give negative impacts are planned.</p> |
| | | | | | <p>Explanation on impacts</p> |
| | | | | | <p>[Construction Stage]</p> <p>Details of impacts (including their existences) are not known because specific plans are not available, but the following points should be noted.</p> |

| Category | No. | Environmental Item | Evaluation | | Explanation on impacts |
|---------------------|-----|--------------------|----------------------------------|------------------------------|--|
| | | | Planning and construction stages | Operation & monitoring stage | |
| Natural Environment | 8 | Sediment | D | D | No activities which give negative impacts are planned. |
| | 9 | Protected areas | C | C | Details of impacts (including their existences) are not known because specific plans are not available, but the following points should be noted. [Planning stage] > There are protected areas (National Biodiversity Conservation Areas and Corridors). > There are also Conservation Forests under provincial and district management. [O&M stage] > If project sites are close to the protected areas, it may need to conduct appropriate monitoring. |
| | 10 | Ecosystem | C | C | Details of impacts (including their existences) are not known because specific plans are not available, but the following points should be noted. [Planning stage] > There are important ecosystems which are not under any official protection (e.g. some of IBAs). > It may be necessary to consider avian and bat collisions and electrocutions. [O&M stage] > If project sites are close to unprotected important ecosystems such as IBAs, it may need to conduct appropriate monitoring. |
| | | | | | |

| Category | No. | Environmental Item | Evaluation | | Explanation on impacts |
|--------------------|-----|---|----------------------------------|------------------------------|---|
| | | | Planning and construction stages | Operation & monitoring stage | |
| Social Environment | 11 | Hydrology | D | D | No activities which give negative impacts are planned. |
| | 12 | Topography and geology | B- | D | [Construction stage] Construction works in mountainous and/or hilly areas may cause soil erosions. [O&M stage] No activities which give negative impacts are planned. |
| | 13 | Involuntary resettlement | C | D | [Planning stage] Details of impacts (including their existences) are not known because specific plans are not available, but the following point should be noted. > It is necessary to avoid involuntary resettlement as much as possible especially in densely populated areas. [O&M stage] No activities which give negative impacts are planned. |
| | 14 | Poor people | C | C | Details of impacts (including their existences) are not known because specific plans are not available. |
| | 15 | Indigenous or ethnic minority | C | C | Details of impacts (including their existences) are not known because specific plans are not available. |
| | 16 | Local economies, such as employment, livelihood | C | C | Details of impacts (including their existences) are not known because specific plans are not available. |
| | | | | | |

| Category | No. | Environmental Item | Evaluation | | Explanation on impacts |
|----------|-----|--|----------------------------------|------------------------------|---|
| | | | Planning and construction stages | Operation & monitoring stage | |
| | 17 | Land use and utilization of local resources | C | C | Details of impacts (including their existences) are not known because specific plans are not available. |
| | 18 | Water usage | D | D | No activities which give negative impacts are planned. |
| | 19 | Existing social infrastructures and services | C | C | Details of impacts (including their existences) are not known because specific plans are not available. |
| | 20 | Social institutions such as social infrastructure and local decision-making institutions | C | C | Details of impacts (including their existences) are not known because specific plans are not available. |
| | 21 | Misdistribution of benefits and damages | C | C | Details of impacts (including their existences) are not known because specific plans are not available, but the following point should be noted. > It is important to pay attention not only to economic benefits and damages in communities but also to their traditional lifestyles affected by project. |
| | 22 | Local conflicts of interest | C | C | Details of impacts (including their existences) are not known because specific plans are not available, but the following point should be noted. |

| Category | No. | Environmental Item | Evaluation | | Explanation on impacts |
|----------|-----|--------------------|----------------------------------|------------------------------|--|
| | | | Planning and construction stages | Operation & monitoring stage | |
| | | | | | > It is important to pay attention not only to economic benefits and damages in communities but also to their traditional lifestyles affected by project. |
| | 23 | Cultural heritages | C | C | Details of impacts (including their existences) are not known because specific plans are not available, but the following points should be noted. > It is important to pay attention to conservation areas under Law on National Heritage (No.8/N/A) and landscapes associated with temples and other Buddhism heritages. [O&M stage] Details of impacts (including their existences) are not known because specific plans are not available. |
| | 24 | Landscape | C | C | Details of impacts (including their existences) are not known because specific plans are not available, but the following points should be noted. > It is important to pay attention to conservation areas under Law on National Heritage (No.8/N/A) and landscapes associated with temples and other Buddhism heritages. [O&M stage] Details of impacts (including their existences) are not known because specific plans are not available. |
| | 25 | Gender | C | C | Details of impacts (including their existences) are not known because specific plans are not available. |

| Category | No. | Environmental Item | Evaluation | | Explanation on impacts |
|----------|-----|--------------------------------------|----------------------------------|--------------------------------|---|
| | | | Planning and construction stages | Operation and monitoring stage | |
| 40 | 26 | Children's rights | C | C | Details of impacts (including their existences) are not known because specific plans are not available. |
| | 27 | Infectious diseases such as HIV/AIDS | C | C | Details of impacts (including their existences) are not known because specific plans are not available. |
| | 28 | Labor conditions | C | C | Details of impacts (including their existences) are not known because specific plans are not available. |
| | 29 | Accidents | B- | C | [Planning stage] Details of impacts (including their existences) are not known because specific plans are not available, but the following points should be noted. > It is important to collect information on UXO and to avoid areas with UXO. > [Construction stage] > It is necessary to prevent accidents to workers and neighboring residents as much as possible. [O&M stage] Details of impacts (including their existences) are not known because specific plans are not available, but the following points should be noted. > It is important to pay attention to accidents which may occur during maintenance activities. |
| | 30 | Trans-boundary | C | D | Details of impacts (including their existences) are not known because specific plans are not available. |
| | | | | | |

| Category | No. | Environmental Item | Evaluation | | Explanation on impacts |
|----------|-----|--------------------------|----------------------------------|--------------------------------|---|
| | | | Planning and construction stages | Operation and monitoring stage | |
| 41 | | Impacts / global warming | | | available, but the following points should be noted. [Construction stage] > Reduction of idling of heavy machines and vehicles > Introduction of low-fuel consumption machines and vehicles [O&M stage] No activities which give negative impacts are planned. |
| | | | | | |

A+/-: Significant positive/negative impact is expected. B+/-: Positive/negative impact is expected to some extent.
C: Extent of positive/negative impact is unknown. A further examination is needed, and the impact could be clarified as the study progress. D: No impact is expected.

9. Alternative to the Project Activities including “Zero (without project)” Option

Alternatives to the project activities will be studied in the Project.

10. Result of the Consultation with the Recipient Government on the Environmental and Social Considerations including Roles and Responsibilities

The Detailed Planning Survey Team explains to the counterparts of the Lao PDR that the Project shall comply with the national laws and guidelines and the “JICA Guidelines for Environmental and Social Considerations (2010)”. Both parties agree on the compliance to ensure that appropriate considerations shall be implemented for the environmental and social impacts expected by the Project. The Team also explains that a Strategic Environmental Assessment (SEA) shall be conducted in the Project as part of a master plan study, and it shall involve related stakeholders. The both parties agree on the implementation of the SEA for the Projects described in “11. Terms of Reference for Environmental and Social Considerations”.

11. Terms of Reference for the Environmental and Social Considerations

(1) Rationale

The Project formulates a power system master plan for Lao People’s Democratic Republic (hereinafter referred to as Lao PDR). It is required to conduct a Strategic Environmental Assessment (SEA) as the Environmental and Social Considerations for the Project. The SEA shall be implemented under the following Lao law and JICA’s Guidelines.

- Environment Protection Law (Amended) 2012; and,
- Guidelines for Environmental and Social Considerations (2010).

It should be noted that a decree on SEA and its related guidelines are planned to be enforced in Lao PDR by the middle of the Year 2017, and that the Project shall follow or refer to the decree and the guidelines for the implementation of the SEA.

(2) Description of the SEA

1) Objectives

The objectives are;

- (a) To identify and assess potential impacts induced by the power network system development plan under the Project;
- (b) To avoid, reduce and mitigate these impacts;
- (c) To collect comments from stakeholders and reflect them to options proposed by the Project;
- (d) To evaluate the options from technical, financial and environmental points of view; and,

(e) To select the optimal option for the Project.

**2) Study area of the SEA
Entire Lao PDR**

3) Methodology and the flow of the implementation of the SEA

- (a) Baseline surveys are conducted on the environmental and social conditions of the Study area. Secondary data are utilized for the surveys. The following items should be well surveyed.
 - Policies, laws and regulations of Lao PDR related to the environmental and social considerations (including Environmental Impact Assessment);
 - Natural conditions such as protected area system, internationally recognized important habitats and endangered species; and
 - Social conditions such cultural heritages and vulnerable people.
- (b) Planning the options with which potential negative impacts on the social and natural environments are avoided, reduced and mitigated as much as possible.
- (c) A scoping for each option is conducted.
- (d) Based on the results of the scoping, social and environmental surveys are conducted to collect more information if necessary.
- (e) Impacts of the options are analyzed and evaluated, and the evaluation is conducted from technical, financial and environmental points of view.
- (f) Mitigation measures and a monitoring system of the selected option are recommended.
- (g) Comments from stakeholders are collected and reflected in the process of developing the options and selecting the optimal option. It is therefore required to hold stakeholders meetings.

(h) Stakeholders Meetings are held during the course of the Project. Table 5 shows a proposed framework of the SEA, and two (2) stakeholders meeting are suggested (shaded steps in the Table 1). Stakeholders shall be identified in the early stage of the Project.

Table 5 Proposed flow of the SEA

| No. | Step | Note |
|-----|--------------------------------------|---|
| 1 | Information analysis | To evaluate and analyse data collected by MEM, EDL and the JICA Study Team. |
| 2 | Formulation of alternative scenarios | To formulate alternative scenarios by MEM, EDL and the JICA Study Team. |
| 3 | 1st SHM | To explain the alternative scenarios and collect opinions from related stakeholders. |
| 4 | Formulation of the optimal scenario | Based on the opinions, the alternative scenarios are further developed and evaluated from environmental/ social, economic and technical |

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|---|---------------------|---|
| | | points of view. The optimal scenario is formulated. |
| 5 | 2nd SHM | The optimal scenario is presented at the 2nd SHM. |
| 6 | Review and approval | The final report is reviewed and approved. |

(3) Implementation Organizations of the SEA

The SEA is conducted by the Ministry of Energy and Mines, Electricite du Laos and the JICA Study Team.

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