Date: 15 July 2016

Environmental and Social Considerations in Detailed Planning Survey

（Technical Cooperation for Development Planning）

1. Full title of the Project

The Project for Power Development Master Plan

2. Type of the study (e.g. Master Plan, Feasibility Study, Detailed Design, etc.)

Master Plan

3. Categorization and its reason

The Study is classified as a “Category B” because the Project is not considered to be a large-scale thermal power, hydro power, power transmission and distribution lines project, is not located in a sensitive characteristics under the JICA Guidelines for Environmental and Social Considerations (April, 2010), it is not likely to have significant impact on the environment.

4. Agency or institution responsible for the implementation of the project

National Directorate of Electric Energy

5. Outline of the Project (objectives, justification, location, proposed activities, and scope of the study)

(1) Expected Goals which will be attained after the Project Completion

To develop a comprehensive master plan targeting the year 2040 for the power generation and transmission development for the whole country

(2) Outputs

The major outputs of the Project are;

A comprehensive master plan which includes:

a. Demand Forecast;

b. Generation Development Plan and Transmission Development Plan;

c. Strategic Environmental Assessment Report; and,

d. Power Sector Investment Plans

(3) 3. Activities

The Project will carry out the following 11(eleven) tasks jointly by the Angola side and members of the JICA missions.

Task 1: Review of the current situation in the power sector

i. Review the current situation in the power sector (policy and strategy, legal and regulatory framework, government structure and national development plans)

ii. Review the recent power sector development

iii. Review the current power demand and supply

iv. Review cooperation by development partners, investment by private sector partners

Task 2: Power demand forecast

i. Formulate the power demand forecast toward the year 2040 with sensitivity analysis, including the followings

a. demand forecast at the national (and regional level if data available)

b. sector-wise forecast and impacts by major development projects/plans

c. examine the daily load curves and load profiles

Task 3: Analysis on primary energy sources for generation development

i. Analyze the potential of primary energy sources in Angola such as hydro, renewable, natural gas and oil

ii. Assess the availability of the primary energy sources for generation development

Task 4: Formulation of generation development plan

i. Analyze the current generation facilities

ii. Analyze the existing power development projects

iii. Formulate a long-term optimal generation development plan toward the year 2040 with sensitivity analysis

a. Analyze the generation planning data base including technical and cost data

b. Prepare several development scenarios such as base case, high demand case, etc.

c. Conduct sensitivity analysis

d. Estimate the amount of the GHG (Green House Gas) emission for respective development scenarios

Task 5: Formulation of transmission system development plan

i. Analyze the current facilities

ii. Analyze the latest system development strategies and plans prepared by MINEA including the existing system model validation

a. Analyze the existing development strategies and projects

b. Analyze the updated cost and technical data for existing facilities

c. Analyze the transmission interconnection corridors with neighboring countries in particular the North South to link to DRC and Namibia, and the Eastwards link to Zambia

iii. Conduct power flow analysis

iv. Examine appropriate software for power system analysis

v. Examine the reduction of transmission loss

vi. Formulate transmission development plan toward the year 2040

Task 6: Review Framework and Implementation of Private Investment

i. Review the policy/strategy, legal and regulatory framework, procedure of private investment in power sector

ii. Review current situation of private investment, and identify bottlenecks.

Task 7: Formulation of long-term investment plan

i. Undertake economic and financial analysis of the implementation of the proposed development plan

ii. Review and update the existing invest plan to the year 2025,

iii. And formulate long-term investment plan to the year 2040, at appropriate intermedial intervals, integrating generation development plan and transmission development plan

Task 8: Economic and Financial analysis

i. Analyze the financial aspects of RNT(Rede Nacional de Transporte de Electricidade), PRODEL(Produção de Electricidade) and ENDE(Empresa Nacional de Distribuição de Electricidade), including the present tariff level and cost structure and borrowing capacity of RNT, PRODEL and ENDE

ii. Formulate financial strategies

iii. Analysis on the financial sustainability of RNT, PRODEL and ENDE

iv. Recommend an optimal financial strategy

Task 9: Environmental and social considerations

i. Analyze the legal and regulatory frameworks for the environmental and social

considerations

ii. Identify the potential impacts associated with environmental and social issues in the updated plan, and propose the possible mitigation measures (Strategic Environmental Assessment)

Task 10: Drafting the Master Plan

i. Draft a comprehensive master plan toward the year 2040 integrating the above analysis

ii. Examine the action plans of MINEA, RNT, PRODEL,ENDE and IRSEA in the power sector development

Task 11: Capacity Building for MINEA, RNT, PRODEL, and ENDE

i. Conduct technical transfer in Angola using opportunities of workshop and on the job training

ii. Conduct relevant training in Japan

6. Description of the project site (maps, environmental and social condition, current issues, etc.)

The project site is entire Angola.

Angola is located on the western Atlantic Coast of southern Africa between Namibia and the Republic of the Congo. It also is bordered by the Democratic Republic of the Congo and Zambia to the east. The land covers about 1,247,000 km^2.

Source: The World Factbook, Central Intelligence Agency

Figure 1.

(1) Socio Economic Conditions

According to the results of the census conducted in 2014, the population of Angola is about 26 million people in 2014. The Province of Luanda with the national capital city Luanda, has the largest population in the country with about 7 million people, whereas the Province of Bengo with the smallest population of about 360,000 people.

The same census reported that out of the national population over 15 years of age, about 44% engage in the primary industries (agriculture, stockbreeding, hunting, forestry and fishery), about 6% in the secondary industry and about 26% in the tertiary industries.

According to the World Bank, Angola experienced a rapid economic development due to the increase in oil exports after the end of the Civil War in 2002 until 2009. During this period, the GDP growth rate was averagely at 15%. However, since mid-2014, due to the fall in oil production and prices, GDP growth has dropped to 4.8% in 2014 and 2.8% in 2015. In the last decade, oil accounted for about 97% of total good export of the country and this trend continued in 2014 and 2015. Second to oil, diamonds are the next exported items, accounting for about 1.5% of total export.

After the independence in 1975 until the end of the civil war in 2002, about 5 million to 15 million land mines were believed to be laid. This hindered the country's socio-economic development even after the war (JICA Project Formulation Study Report for Angola (Peace Building Assistance), 2004). To date, UK based NGOs such as MAG (Mines Advisory Group) and HALO, and Japan based JMAS (Japan Mine Action Service) have been working on mine-clearance related activities, with supports by UN, Japan, U.S., the Netherland, EU, etc.

(2) Natural Conditions

Angola's climate varies from tropical savanna in the northern inland, humid subtropical and subtropical oceanic highland in the central to the southern inland areas, warm semi-arid along the coastal areas and the Namibian border, warm desert in the southern coastal area.

The topography of Angola is characterized as the plateau and highlands over 1,000m of altitude in the most part while the flat plain below 200m of altitude covers only the coastal areas. There are many rivers, such as Okavango, Cuanza, etc. flowing inland areas, forming the watersheds of the Congo River in the north and the Zambezi in the south. The highest point of the country is Mount Moco at 2,619m in the southwestern area.

Due to its vast territory and the diversity in topographic features, altitudes and climates, Angola is rich in different types of vegetation and ecosystems, such as broadleaf evergreen tropical forests, deciduous forest and grassland, savanna, coastal forest/woodland, desert and coastal marine.

According to National Biodiversity Strategy and Action Plan (2007-2012), Angola has 19 protected areas including 6 national parks, totaling about 82,200km^2 in covering approximately 6.6% of the territory. If forest reserves were to be included as protected areas, this figure would rise considerably as these reserves cover 250,000 km2 of the national territory.

In terms of fauna and flora, it is reported that Angola has over 5,000 plant species, out of which 1,260 are endemic. It is also reported that 275 mammal species and 872 bird species are recorded so far. In terms of endemic species, there are 13 mammal, 11 bird, 22 reptile, 23 amphibian and 72 fresh water fish species are reported to date.

According to the IUCN Red List (Version 2016-1), 108 animal species in Angola are listed as

endangered. Out of which, 10 species are CR (critically endangered), 32 are EN (endangered), and 66 are listed as VU (vulnerable). There are 34 endangered plant species, of which 3 are EN. The Red List also reported that among the more comprehensively assessed animal species groups, 6 species of birds and 3 of cone snails are endemic and endangered.

7. Legal Framework of Environmental and Social Considerations

(1) Laws, regulations and standards related to environmental and social issues including requirements and procedures of Environmental Impact Assessment (EIA), stakeholder participation, and information disclosure.

Table 1 is a list of policies, laws and regulations related to environmental and social issues in Angola

Table 1 Laws, Regulations and Standards Related to Environmental and Social Issues

Category	Name
Policy/Plan /Program	National Environmental Management Programme 2009
	Resolution on the National Biodiversity Strategy and Action Plan (NBSAP) (Resolution No. 42/06, 26 July 2006)
Law/Act	General Environmental Law (Law No. 5/98, 19 June 1998)
	Law of the Environmental Protection Associations (Law No.3/06, 18 January 2006);
	Land Law (Law No.9/04, 9 November 2004);
	Territory and Urbanism System Law (Law No. 3/04)
	Water Law (Law No. 6/02, 21 June 2011)
	Cultural Assets Law (Law No.14/05)
Decree	Decree on Environmental Impact Assessment (Decree No.51/04, 23 July 2004);
	Decree on Environmental Licensing (Decree No. 59/07, 13 July 2007)
	Executive Decree on Public Consultation for Projects Subject to Environmental Impact Assessment (Executive Decree No. 87/12, 24 February 2012);
	Executive Decree on the Terms of Reference for Environmental Impact Studies (Decree No. 92/12, 1 March 2012).
	Decree on Environmental Audits (Decree No. 1/10, 13 January 2010);
	Decree on the Establishment of the Principles to Promote Health, Safety and Workplace Conditions (Decree No. 31/94, 5 August 1994)
	Executive Decree on Regulation on Safety and Health for Workplace Signaling (Executive Decree No.128/04 , 23 November 2004)
	Presidential Decree on Liability on Environmental Damage (Presidential Decree No. 194/11, 07 July 2011)
	Presidential Decree on Water Quality (Presidential Decree No. 261/11, 06 October 2011)
	Decree No. 40.040 on Protection of Terrestrial Fauna (20/01/1955)
	Presidential decree No. 190/12, approves the Regulation on Waste Management (Presidential decree No. 190/12, 24 August 2012)

Source: JICA Study Team

In Angola, there is no legal framework or guidelines concerning involuntarily resettlement.

Application of EIA for projects is stipulated by Article 16 of General Environmental Law (Law No. 5/98, 19 June 1998). Details of certain process are stipulated in the following decrees. However, there is no integrated guideline on the EIA procedure.

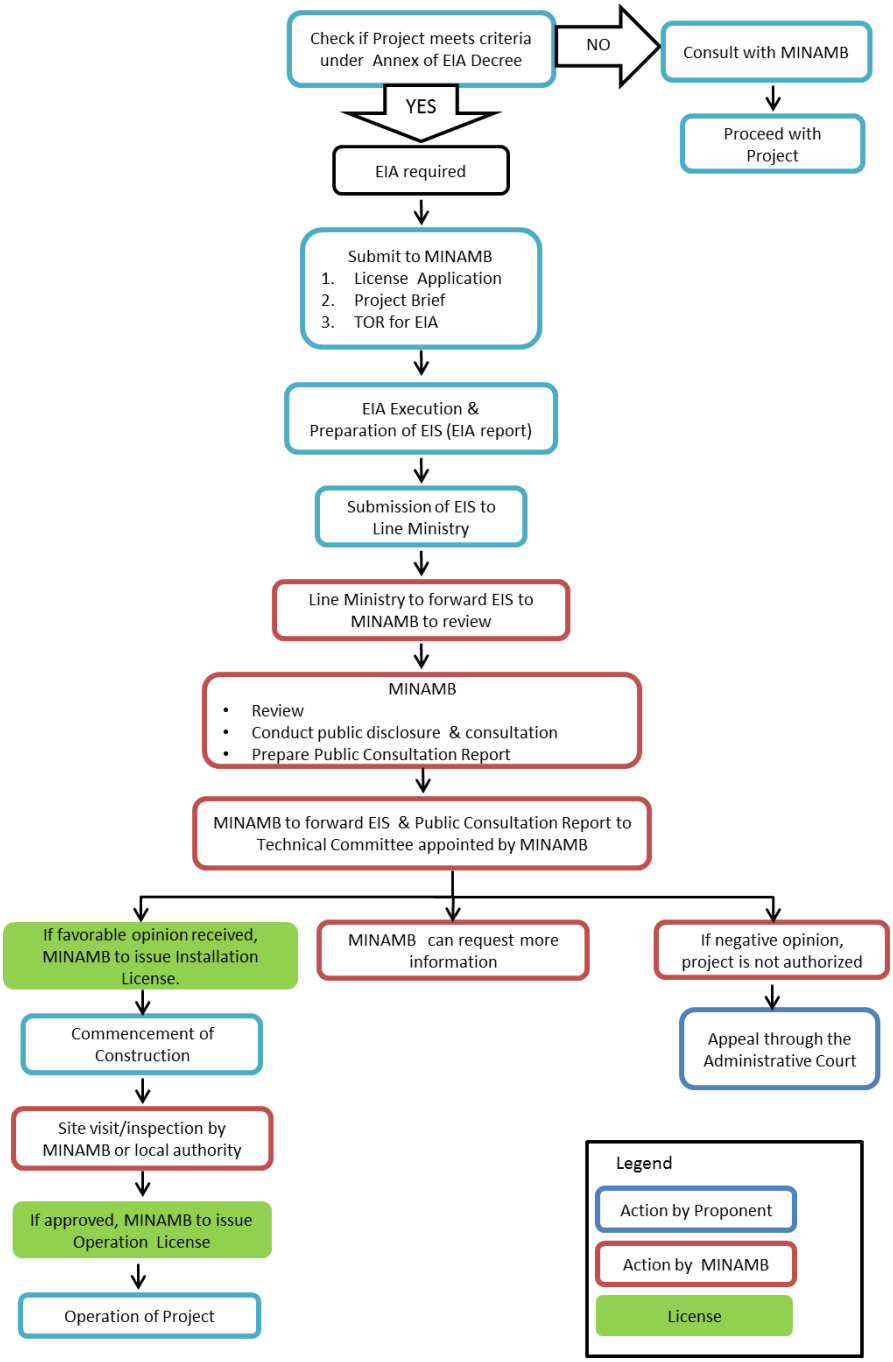
- Decree on Environmental Impact Assessment (Decree No.51/04, 23 July 2004)
- Executive Decree on the Terms of Reference for Environmental Impact Studies (Decree No. 92/12, 1 March 2012)
- Decree on Environmental Licensing (Decree No. 59/07, 13 July 2007)
- Executive Decree on Public Consultation for Projects Subject to Environmental Impact Assessment (Executive Decree No. 87/12, 24 February 2012)
- Decree on Environmental Audits (Decree No. 1/10, 13 January 2010)

In terms of environmental standards, water quality standards are established under Presidential Decree on Water Quality (Presidential Decree No. 261/11, 06 October 2011). According to MINAMB, standards for air quality are presently in preparation and for other items, such as soil, noise and vibration, waste management and so on, in absence of national standards, international standards, like WHO, ISO, OHAS (Occupational Health and Safety Assessment Series) etc., should be referred. If there is discrepancy between national and international standards, National Institution of Norms & Quality (IANORQ) should be consulted for decision.

In Angola, it requires environmental assessments to be conducted and relevant documents to be prepared only by experts or firms whose names and qualifications are registered by Ministry of Environment (MINAMB).

There is no law or/and regulations concerning Strategic Environmental Assessments (SEA) in force.

Figure 2 is the flowchart of the EIA procedure of Angola. The first step is that a proponent checks if the project meets the criteria of project types and scale requiring EIA listed under the Annex of the Decree on Environmental Impact Assessment (Decree No.51/04, 23 July 2004). Even if the project is not meeting the criteria under the Annex, EIA may be required by decision made by MINAMB.



Source: Prepared by JICA Study Team based on Handbook on Environmental Assessment Legislation in the SADC Region

Figure 2 Flowchart of EIA Procedure

In terms of land acquisition and resettlement, the land law ((Law No.9/04, 9 November 2004) is the only relevant legislation. Under Article 12 of the law, it stipulates exploitation of land for public purposes. There is no guideline for resettlement; however, in order to obtain

environmental licenses, it is required to attach written agreements on land acquisition and resettlement to a final draft of EIA report to be submitted to MINAMBI. Land acquisition process varies depending on its land use and surface areas.

The following table shows the major differences between the JICA Guidelines for Environmental and Social Considerations (April, 2010) and relevant legislation in Angola.

Table 2. Comparison of the JICA Guidelines and relevant legislation in Angola

Item	JICA Guidelines	Legislation in Angola
Information disclosure	・EIA report is disclosed to all stakeholders and locals and on JICA's website.	・Draft EIA report must be disclosed before public consultation during review. There is no mention of disclosure of the final version of EIA report.
Public participation	・Project proponents are encouraged to disclose information about their projects and consult with local communities and stakeholders (especially those directly affected). ・In the case of Category A projects, JICA encourages project proponents to consult with local stakeholders about their understanding of development needs, the likely adverse impacts on the environment and society, and the analysis of alternatives at an early stage of the project. ・In case of Category A projects, public consultations must be held twice; during scoping process and during preparation of EIA report. In case of Category B projects, consultations should be held when necessary.	・For projects subject to EIA, public consultation on draft final EIA report are stipulated in details including information disclosure prior to consultations, methodology for implementation of consultations etc. ・Public consultation during scoping process is not regulated.
Resettlement	・For projects that will result in large-scale involuntary resettlement, a Resettlement Action Plan (RAP) also must be prepared and disclosed. ・It is desirable that the resettlement action plan include elements laid out in the World Bank Safeguard Policy, OP 4.12, Annex A.	・There is no regulations or requirements concerning preparation of resettlement action plan.

Item	JICA Guidelines	Legislation in Angola
Mitigation measures	・Multiple alternatives must be examined in order to avoid or minimize adverse impacts and to choose better project options. ・In the examination of measures, priority is to be given to avoidance of environmental impacts; when this is not possible, minimization and reduction of impacts must be considered next. ・Compensation measures must be examined only when impacts cannot be avoided by any of the aforementioned measures. ・Appropriate follow-up plans and systems, such as monitoring plans and environmental management plans, must be prepared including the implementation costs and the financial methods to fund such costs. Plans for projects with particularly large potential adverse impacts must be accompanied by detailed environmental management plans.	・Analysis of alternatives is required as part of EIA study. ・There is no specific policy on examination of mitigation measures. ・Preparation of environmental management plan during EIA study and inclusion of the plan in EIA report are required.

(2) Relative agencies and institutions

Divisions of Quality, Safety, Health and Environment of PRODEL, RNT and ENDE

There is no department/division responsible for environmental and social considerations under DNEE, however, there is a Division of Quality, Safety, Health and Environment in PRODEL (generation company), RNT (transmission company) and ENDE (distribution company). These divisions are created in 2015 when the previous power company was unbundled in three. The divisions are responsible for overseeing EIA and RAP related activities conducted by consultants and ensuring environmental and safety compliance of projects.

National Directorate of Environmental Impact Prevention and Assessment, Ministry Environment (MINAMB)

National Directorate of Environmental Impact Prevention and Assessment is responsible for overseeing the environmental assessment procedure and reviewing documents/reports relevant to environmental assessment.

Minister of Environment

The Minister is responsible for issuing environmental licenses.

There is no agency or institution concerning SEA procedure in Angola.

8. Provisional Scoping (types and magnitudes of possible adverse impacts and mitigation

measures)

Provisional scoping was carried out based on possible project types, e.g. thermal power generation, hydro power generation, generation by renewable energy (”RE”), and transmission line, as result of implementation of the Power Development Master Plan. Impacted items, selected based on the JICA Guidelines for Environmental and Social Considerations (2010), are examined against impact factors. Each impact is evaluated whether it is positive or adverse and also examined its possible extents and severities. Table 3 is the result of the scoping. However, since actual projects and their descriptions are not formulated at this stage, many impacts are evaluated as unknown.

Table 3: Provisional Scoping and Possible Impacts

Category	Environmental Item	Evaluation		Explanation on impacts	Individual evaluation (Before and during construction / Operation and maintenance)			
		Before and during construction	Operation and maintenance		Thermal power	Hydro power	RE	Transmission line
Pollution Control	Air quality	B-	B-	**During construction:** Some adverse impacts are expected due to emission of air pollutants by heavy machinery and vehicles. **Operation and maintenance (O/M):** From	B-/B-	B-/D	B-/D	B-/D
	Water quality	A-	B-	**During construction:** Water contamination is expected during the construction of offshore gas and oil terminal. Construction works near water bodies may affect water quality in the area if proper measures are not in place. **O/M:** Ash dumping sites and coal stock yards of coal-fired thermal power plants need to be appropriately managed. Hydro power generation by dam and other types of generation may affect water quality, if proper measures are not in place. Impacts induced by the operation of offshore	A-/B-	B-/B-	B-/C	B-/D
	Wastes	B-	B-	**During construction:** Some adverse impacts are expected. **O/M:** Ashes from coal-fired thermal power plants need to be appropriately managed.	B-/B-	B-/D	B-/D	B-/D

Category	Environmental Item	Evaluation		Explanation on impacts	Individual evaluation (Before and during construction / Operation and maintenance)			
		Before and during construction	Operation and maintenance		Thermal power	Hydro power	RE	Transmission line
Pollution Control	Soil contamination	B-	B-	**During construction**: Some adverse impacts are expected. **O/M**: Ash dumping sites of coal fired thermal power plants need to be appropriately managed. Use of insulating oils at substations and power plants may cause soil contamination, if proper measures are not in place.	B-/B-	B-/B-	B-/D	B-/D
	Noise and vibration	B-	B-	**During construction:** Some adverse impacts are expected. **O/M:** Noise from generation plants and substations, and low-frequency noise from wind turbines are expected.	B-/B-	B-/B-	B-/B-	B-/D
	Subsidence	C	C	Impacts are unknown. If projects require a large amount of ground water, it may trigger subsidence.	C/C	C/C	C/C	D/D
	Odor	B-	B-	**During construction:** Some adverse impacts are expected. **O/M**: Thermal generation plants may cause some odor.	B-/B-	B-/D	B-/D	B-/D

Category	Environmental Item	Evaluation		Explanation on impacts	Individual evaluation (Before and during construction / Operation and maintenance)			
		Before and during construction	Operation and maintenance		Thermal power	Hydro power	RE	Transmission line
Pollution control	Sediment	A-	A-	**During construction:** Impacts to the sediments are expected during the construction of offshore gas and oil terminal, LNG terminal and hydro generation plant Some adverse impacts are expected during the construction of thermal power plants and hydro power plants. **O/M**: Hydro power generation plants may affect sediment	A-/D	A-/A-	C/D	D/D
Natural Environment	Protected areas	C	C	Impacts are unknown as location of each project is unknown at this stage.	C/C	C/C	C/C	C/C
	Ecosystem	A-	A-	**During construction and O/M:** Hydro power generation projects with dam may affect ecosystem around the project site. Other project types may affect depending on their locations.	C/C	A-/A-	C/C	C/C
	Hydrology	A-	A-	**During construction:** Some adverse impacts are expected during the construction of hydro power plants. Impacts by other modes of generation are unknown. **O/M:** Reservoir of hydro power plant could give some adverse impacts to nearby water system. Impacts by geothermal plants are possible.	C/D	A-/A-	B-/ B-or A-	D/D

Category	Environmental Item	Evaluation		Explanation on impacts	Individual evaluation (Before and during construction / Operation and maintenance)			
		Before and during construction	Operation and maintenance		Thermal power	Hydro power	RE	Transmission line
Natural Environment	Ground water	A-	A-	**During construction and O/M:** Hydro power generation projects and geothermal generation projects may affect ground water. Other generation projects that require use of ground water may affect the ground water, although impacts are	C/C	A-/A-	B-/ B-orA	C/D
	Topography and geology	C	D	**During construction:** Impacts are unknown at this stage.	C/D	C/C	C/D	C/D
	Land erosion	C	D	Impacts may occur depending on location and design of projects, although it is unknown at this stage.	C/D	C/C	C/D	C/D
	Climate	C	C	Impacts are unknown.	C/C	C/C	C/D	C/D
Social Environment	Involuntary resettlement	B- or A-	D	**Before construction:** Projects may require resettlement of people within project site, e.g. the Right of Way. Severity of the impacts will depend on the density of structures within proposed project sites.	B-or A-/D	B-or A-/D	B-or A-/D	B-or A-/D
	Poor and indigenous peoples, gender, children's rights	C	C	Impacts are unknown at this stage.	C/C	C/C	C/C	C/C

Category	Environmental Item	Evaluation		Explanation on impacts	Individual evaluation (Before and during construction / Operation and maintenance)			
		Before and during construction	Operation and maintenance		Thermal power	Hydro power	RE	Transmission line
Social Environment	Living and livelihood	B-	B+	**During construction:** Due to the interruption of the power supply that may occur during construction and traffic control around project sites, accesses to public and commercial facilities may be limited and living and economic activities may be hampered, although temporarily. **O/M:** Improvement of power system will lead to stable and extended power supply which is expected to contribute largely to improvement of living conditions and livelihood in general.	B-/B+	B-/B+	B-/B+	B-/B+
	Utilization of land and local resources	B-	C	**Before and during construction:** Where land is acquired for projects, type of land utilization may be changed, although impacts are unknown. **O/M:** Impacts are unknown.	B-/C	B-/C	B-/C	B-/C
	Water Right/Common	B-	B-	**During construction:** General construction works require use of water and it may affect water right temporarily. Construction of hydro power generation projects, they may affect water right/common. **O/M:** Although necessary considerations are given to water utilization, impacts from thermal and hydro power plants are	B-/B-	B-/B-	B-/C	B-/D

Category	Environmental Item	Evaluation		Explanation on impacts	Individual evaluation (Before and during construction / Operation and maintenance)			
		Before and during construction	Operation and maintenance		Thermal power	Hydro power	RE	Transmission line
Social Environment	Existing social infrastructures and services	B-	B+	**During construction:** Temporal power failures are expected during the construction work. Traffic congestions, limited access to existing infrastructures and services are also expected due to the traffic control during the work. **O/M:** Improvement of power system will lead to stable and extended power supply which is expected to contribute largely to improvement of social infrastructures and services.	B-/B+	B-/B+	B-/B+	B-/B+
	Social institutions such as social infrastructure and local decision-making institutions	C	C	Impacts are unknown at this stage; however they are less likely to occur.	C/C	C/C	C/C	C/C
	Misdistribution of benefits and damages	B-	C	**During construction:** Employment opportunity for hiring locals for construction work may not be equal. Benefit and losses for business and economic activities around the construction site may not be equal	B-/C	B-/C	B-/C	B-/C
	Local conflicts of interest	C	C	Impacts are unknown.	C/C	C/C	C/C	C/D

Category	Environmental Item	Evaluation		Explanation on impacts	Individual evaluation (Before and during construction / Operation and maintenance)			
		Before and during construction	Operation and maintenance		Thermal power	Hydro power	RE	Transmission line
Social Environment	Cultural heritages	C	C	Impacts are unknown at this stage. If heritage or culturally/historically important sites are present within projects sites, they may be affected.	C/C	C/C	C/C	C/C
	Landscape	A-	A-	**During construction:** Some adverse impacts are expected. **O/M:** Presence of constructed structures may affect surrounding landscape	B-/B-	A-/A-	A-/A-	B-/B-
	Infectious diseases such as HIV/AIDS	B-	D	**During construction:** Although unknown, impacts may occur due to the influx of construction workers from the outside of communities.	B-/D	B-/D	B-/D	B-/D
	Labor conditions	B-	B-	**During construction and O/M:** Without a proper management, labor conditions and safety of workers may not be ensured.	B-/B-	B-/B-	B-/B-	B-/B-
Others	Accidents	B-	B-	**During construction and O/M:** There are risks of accidents related to construction works as well as operation and maintenance	B-/B-	B-/B-	B-/B-	B-/B-

Category	Environmental Item	Evaluation		Explanation on impacts	Individual evaluation (Before and during construction / Operation and maintenance)			
		Before and during construction	Operation and maintenance		Thermal power	Hydro power	RE	Transmission line
Others	Global warming	B-	B-	**During construction:** During construction, emission of GHG by heavy machinery and vehicles is expected. **O/M:** Power generation plants (thermal, coal, natural gas) may emit GHG if proper mitigation measures are not in place.	B-/B-	B-/B-	B-/D	B-/D

+: Positive impact. -: Adverse impact.
A: Significant impact is expected. B: Some impact is expected. C: Impact is unknown. Further study is needed. D: No impact is expected.
Evaluation such as “C/B-” means “either C or B-.”

9. Alternatives to the project activities including ‘without project’ option.

Since the study is to formulate Power Development Master Plan in Angola, at this stage, there is no alternative plan except “without master plan formulation project” option. Alternative scenarios will be analyzed during the process of Master Plan formulation.

In comparison to the “without master plan formulation project” option, implementing this project is highly beneficial, especially in terms of positive impacts on both natural and social environments. By implementing the master plan formulation project, a power development master plan targeting the year 2040 and SEA will be conducted to assess environmental impacts of each case scenario in terms of environmental, social and financial aspects, so that development in the power sector could be more strategic, rational and sustainable. The information of existing master plan targeting the year 2025 which was based on the data in 2013 will be updated, where required, to accommodate the present situations and reflected to the new master plan. The new master plan will be more comprehensive, including proper power demand forecast and long term marginal cost analysis.

10. Result of the consultation with Angolan government on environmental and social consideration including roles and responsibilities.

Through the discussions with the representatives from DNEE, PRODEL, RNT and ENDE which are responsible for overseeing environmental and social considerations of this master plan formulation Project, they understood that JICA Guidelines for Environmental and Social Considerations (2010) requires application of SEA to the Project. They also understood their roles and responsibilities and will appoint personnel as counterpart to work with the JICA Mission.

11. Terms of Reference for Environmental and Social Considerations

During the process of formulating Power Development Master Plan, Strategic Environmental Assessment should be carried out in accordance with JICA Guidelines as well as the legislations of the country. Since, presently there is no legislation concerning SEA in Angola, it is advisable to communicate closely with Ministry of Environment for their guidance on SEA procedure. Reports on SEA conducted in power sector in other countries, guidelines and procedures of SEA in other countries and international organizations should be also consulted.

It is also necessary to provide some capacity development activities relating SEA for Ministry of Environment and authorities involved in the Power Development Master Plan activities so that the experience will be applied to other master planning activities in future.

Terms of Reference for the Study include, but not limited to, the followings.
Supporting and collaborating with SEA team, composed with RNT, PRODEL and ENDE to carry out SEA in accordance with JICA Guidelines and the relevant legislations of the country. For examples;

- Establishing SEA team with RNT, PRODEL, ENDE, DNEE, MINAMB, SEA consultant and JICA Mission member in charge of environmental and social considerations.
- Providing SEA team members with guidance on SEA so that this activity is properly embedded in the process of master plan formulation.
- Preparing a TOR by reviewing SEA cases in power sector in other countries and SEA guidelines and procedures of other countries and international organizations and by consulting with MINAMB.
- Selecting SEA consultant based on, not only the experience of conducting EIAs for previous projects in energy sector of Angola, but also the experience of conducting SEAs. In the process of procurement, communicate with PRODEL, RNT, ENDE and MINAMB for their advices.
- Confirming the latest legislations relevant to environmental and social considerations in Angola.
- Collecting and organizing basic information/data necessary to carry out a SEA
- Confirming the relevance and consistency of the master plan formulation project with other relevant policies, plans, legislations (both national and international).
- Conducting stakeholder analysis. Based on the result, planning and implementing stakeholder meetings. Meetings should be held at least two occasions, 1) at the time of alternative analysis and 2) at the time of preparation of a SEA draft final report. When planning stakeholder meetings, consider the effectiveness and validity of methodology and timing of meetings in order to collect information from and build consensus with various stake holders.
- Comparing and examining alternative scenarios in terms of environmental, social and financial aspects. .
- Carrying out scoping exercise
- Conducting impact evaluation, examining impact mitigation measures and monitoring plan on the selected scenario.

- In SEA report, indicating how the results of SEA are reflected to the formulation of the master plan.
- Circulating draft SEA report to relevant institutions/authorities for their comments
- Finalizing SEA report by incorporating the comments

12. Other relevant information

None

END