

PROJECT INFORMATION DOCUMENT (PID) CONCEPT STAGE

Report No.: PIDC15574

Project Name	Power Grid Improvement Project (P149599)
Region	EAST ASIA AND PACIFIC
Country	Lao People's Democratic Republic
Sector(s)	Transmission and Distribution of Electricity (50%), Energy efficiency in Heat and Power (50%)
Theme(s)	Other environment and natural resources management (100%)
Lending Instrument	Investment Project Financing
Project ID	P149599
Borrower(s)	Ministry of Finance
Implementing Agency	ELECTRICITE DU LAOS
Environmental Category	B-Partial Assessment
Date PID Prepared/ Updated	04-Dec-2014
Date PID Approved/ Disclosed	04-Dec-2014
Estimated Date of Appraisal Completion	20-Apr-2015
Estimated Date of Board Approval	30-Jul-2015
Concept Review Decision	Track II - The review did authorize the preparation to continue

I. Introduction and Context

Country Context

With a current GDP per capita of US\$1,646 in 2013 and a population of 6.7 million, Lao PDR, though still one of the poorest countries in Southeast Asia, is currently undergoing a rapid economic expansion. The country is endowed with natural resources—especially land (population density is about 34 people per sq. km), forestry, water resources, minerals—and, it is in the midst of a fast growing region. This combination of comparative advantages, along with policy steps to exploit them, has yielded an average real GDP growth rate officially estimated at close to 7.5 percent per year for the past 15 years.

The country has made significant strides to becoming more integrated internally, and with the regional and international trading system. Besides the hydro-power sector, continued public investment in basic infrastructure, especially roads, has fostered internal and regional integration, supporting growth in agriculture, transport and tourism. The country has also become more open to

its region and to global trade. Underlining the policy shift towards establishing a rules-based system for governing trade and private sector development, Lao PDR completed its accession to the World Trade Organization (WTO) in February 2013. As a Least Developed Country, Lao PDR was granted "special and differential treatment", with a number of WTO-related commitments to be phased in over a five year transitional period. The country is also preparing for ASEAN's planned establishment of a single market, the ASEAN Economic Community (AEC), in 2015.

Recent Economic Developments

Economic growth has continued to be rapid in recent years, boosted by the resource sector. With the coming on-stream of major FDI-funded hydro-power projects and the development of new power projects driving domestic activities like construction and transport, Lao PDR's GDP grew on average at a reported 8 percent per year in the period 2008 to 2013, and at 7.5 percent in 2014 with some moderation.

Poverty halved in two decades, from 46 percent in 1992/93 to 23 percent in 2012/13. During the past five years, poverty continued to decline in Laos, but at a slower rate than before.

Sectoral and Institutional Context

Demand for electricity in Laos has grown significantly in recent years along with rising electrification rate in the country. The electricity peak load demand within Laos rose from about 209 MW in 2003 to 649 MW in 2013, growing on average 12 percent annually. This demand increase has been driven by the commercial and the industrial sectors and by rising rate of electrification in the country, which grew from 39 percent of the total number of households in 2002 to around 87 percent in 2013.

The rising demand was met by dedicated domestic hydropower stations wholly owned by the state-owned power utility Electricite du Laos (EDL) and its subsidiary EDL-Generation (EDL-Gen), totaling 392 MW, Laos' share in and purchases from export-oriented IPPs (independent power producers), and electric interconnections with Thailand, China, and Vietnam. To supplement domestic power generation, in 2012 Laos imported about one-third of required electric energy (1,127 GWh), of which 87 percent came from Thailand, 10 percent from China and 3 percent from Vietnam. The cost of import reached US\$ 57.2 million, or about 0.6 percent of estimated 2012 GDP.

By 2013, the total electric energy sales through the national power grid reached 3,381 GWh with residential customers accounted for 38 percent, followed by the industrial sector at 33 percent and the commercial sector at 22 percent.

In parallel, export-oriented power projects continue to expand. By end 2013 the installed capacity of export-oriented hydropower projects reached 2,580 MW, including the IDA-supported Nam Theun 2 hydropower project (NT2) that was approved in 2005 and commissioned in 2010. Another 2,400 MW plus of export-oriented power projects are currently under construction, such as the 1,653 MW Hongsa thermal power project, the 410 MW Xepian-Xenamnoy hydropower project, the 280 MW Nam Ngiep1 hydropower project, and the 180 MW Nam Ngiep 2 hydropower project. The drivers of development in the hydropower sector in the country have remained fundamentally unchanged in the past decade. A number of export-oriented projects include dedicated power generation capacity for Lao PDR to help meet the domestic demand for electricity, such as the 75 MW under NT2, 60 MW under Theun Hinboun hydropower project, 175 MW under Hongsa thermal power project, and

40 MW under Xepian-Xenamnoy hydropower project.

The energy sector institutional framework is well defined. The Ministry of Energy and Mines (MEM) is the focal point for overall energy policy. Under MEM, the state-owned utility EDL is responsible for the electricity transmission and distribution network and acts as a single-buyer of electricity for the domestic market. EDL's majority-owned subsidiary EDL-Gen is responsible for hydropower generation, with an installed capacity of 387 MW by 2013. In addition, the Lao Holding State Enterprise (LHSE) is the government's investment vehicle in export-oriented power projects where it holds government's equity stakes in projects such as NT2 and the Hongsa thermal power project.

The main challenges facing the Lao electricity sector include: (i) inadequate available power generation capacity for domestic consumption especially in the dry season months (November–April); (ii) inadequate transmission/distribution margin causing financial losses ; (iii) end-user tariffs averaged around 9 US cents per kWh in 2012, providing limited room for further increase due to affordability constraints. Specifically the highest residential tariff is already at 12 US cents per kWh (for more than 150 kWh consumption per month); (iv) costlier electricity imports. In 2012 the cost of imported electricity averaged about 5.1 US cents per kWh; however, this included costlier sources exceeding 6 and 11 cents per kWh.

The power sector development in Lao PDR has entered a new “post-electrification” phase which brings new challenges and requires sustained improvements in the sector. The development of Lao power sector has achieved a major success by increasing the electrification rate from about 15 percent in mid 1990s to around 90 percent in 2014. While the electrification program nears its completion, the power grid is increasingly facing new challenges related to the fast growth of electricity demand. The main challenges are persistently high distribution losses (averaging about 16 percent in 2012, with some areas experiencing losses of over 20 percent) and sub-standard electricity services, including low reliability of electricity supply due to overloading of the distribution grid particularly in major load centers such as Vientiane, Savannakhet, Takek, and Pakse. By focusing on these new challenges in the power distribution sector, the proposed Power Grid Improvement (PGI) Project will complement the Bank's on-going assistance and help support sustainable development of the power sector in Lao PDR.

Building on the achievement of electricity access projects of the past years, the proposed project thus shifts the focus of WBG engagement towards efficiency and reliability of electricity supply, which are crucial for the Lao power sector in the years to come. In addition to providing support for the power infrastructure, the proposed project also targets building institutional capacity in EDL, including upgrading the corporate financial management, billing and collection systems. Furthermore, the proposed project is closely linked to the implementation of the Financial Viability Action Plan (FVAP) developed by EDL with support from the Bank and IFC, and was endorsed by the MEM under REP II. Also, the PGI Project has a strong synergy with the Additional Financing for HMTA project which will help create power market and regulatory conditions favorable for the financial recovery of EDL and its future strengthening as a major power market operator in the GMS region. Finally, improvements in the power sector under the proposed project will help create a favorable environment for scaling-up private sector participation which the Bank and IFC jointly promote in Lao PDR.

Relationship to CAS

The CPS FY12-16 for Lao PDR focuses on three themes: (1) competitiveness and connectivity, (2) sustainable natural resource management, and (3) inclusive development with a crosscutting theme of stronger public sector management.

The proposed project would support Theme 3 by improving the quality of electricity supply in the project area. The project also supports the cross-cutting theme of stronger public sector management by improving the financial management system for the state-owned electric utility EDL.

The project is also aligned with the WBG's Energy Sector Directions Paper, approved in 2013, which pledges to support clients in delivering the affordable, reliable, and sustainable energy needed to help achieve the Bank Group's twin goals of eliminating extreme poverty and promoting shared prosperity. This will be achieved through supply side efficiency gains and improving sector financial performance through improved management information systems.

II. Proposed Development Objective(s)

Proposed Development Objective(s) (From PCN)

The project development objective is to help improve efficiency and reliability of power distribution in the selected load areas served by EDL.

Key Results (From PCN)

The PDO indicators include: (i) electricity losses per year in the project area; and (ii) average interruption frequency per year in the project area and average duration of outages in the project area.

The intermediate result indicators will include: (i) new electric meters installed in project area (ii) new optical fiber communication links in the project area; (iii) methodology to estimate/measure power interruption frequency and duration; (iv) new corporate financial management system; and (v) number of EDL staff trained under the project.

III. Preliminary Description

Concept Description

The main proposed project components include:

a. Smart metering and reduction of distribution losses [US\$ 18 million]: This component will introduce advanced metering technology in the project area to help reduce distribution losses and improve metering, billing and collection system. In addition, this component will help improve reliability of power supply and reduce losses in selected parts of the distribution network through strengthening of power distribution infrastructure (upgrading of conductors, increasing transformer capacity, placement of capacitors for reactive power and voltage control, installing load break switches and reclosers, etc.). The upgrading of conductors involves the rehabilitation of an estimated 366 km of power lines, including 127 km of medium voltage (22kV) power lines.

b. Management Information System [US\$ 7 million]. There are three subcomponents: (i) Supply and installation of optical fiber communication links in the project area; (ii) Extension of Geographic Information System (GIS) to support power distribution operation and maintenance; and (iii) Supply and installation of an updated corporate financial management information system (FMIS). This sub-component will focus on the modernization of financial management in EDL,

including through the improvement of billing and collection system and its integration with other functions in a modern corporate-wide financial management system

c. Institutional capacity building and technical assistance (TA) [US\$ 5 million], including: (i) expand testing and certification facility of distribution materials and equipment, (ii) applications of advanced metering infrastructure, (iii) applications of energy balancing and power flow software, and (iv) project implementation support.

d. Contingent emergency response [US\$ 0 million]. The objective of this “zero component” is to allow a rapid reallocation of IDA proceeds from other components to provide emergency recovery and reconstruction support following an adverse natural disaster event. This component would finance public and private sector expenditures on a positive list of goods and/or specific works, goods, services and emergency operation costs required for emergency recovery. A Contingency Emergency Response Component (CERC) Operational Manual will apply to this component, detailing financial management, procurement, safeguard and any other necessary implementation arrangements.

The intended project area is located in Xaythany district of Vientiane capital, about 10 kilometers north of Vientiane city center, with a distribution loss of almost 25 percent at present. The Vientiane capital area accounts for about 40 percent of the country’s demand for electricity. The Xaythany district comprises low- and high-income residential customers, commercial, and industrial customers. There are currently about 46,000 residential and 1,100 non-residential customers in Xaythany. The experience to be gained from the project can be subsequently scaled up to other load areas with high losses. No relocation of existing residences is expected as construction work will be done on the existing power distribution infrastructure. However, a due diligence work is required to review in situ the power lines identified for rehabilitation, including access routes to associated facilities such as sub-stations, as relevant, for encroachments or other types of land use or informal land occupation which may hinder access to a safe working space or pose a safety risk to people living or working in the right-of-way. EDL will notify affected customers for any power cut requirements during project implementation in accordance with its established procedure.

IV. Safeguard Policies that might apply

Safeguard Policies Triggered by the Project	Yes	No	TBD
Environmental Assessment OP/BP 4.01	x		
Natural Habitats OP/BP 4.04		x	
Forests OP/BP 4.36		x	
Pest Management OP 4.09		x	
Physical Cultural Resources OP/BP 4.11	x		
Indigenous Peoples OP/BP 4.10		x	
Involuntary Resettlement OP/BP 4.12			x
Safety of Dams OP/BP 4.37		x	
Projects on International Waterways OP/BP 7.50		x	
Projects in Disputed Areas OP/BP 7.60		x	

V. Financing (in USD Million)

Total Project Cost:	30.00	Total Bank Financing:	30.00
Financing Gap:	0.00		
Financing Source			Amount
BORROWER/RECIPIENT			0.00
IDA Grant			15.00
IDA recommitted as a Credit			15.00
Total			30.00

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