

## PROJECT INFORMATION DOCUMENT (PID) CONCEPT STAGE

Report No.: PIDC14888

<b>Project Name</b>	National Electrification Project (P152936)
<b>Region</b>	EAST ASIA AND PACIFIC
<b>Country</b>	Myanmar
<b>Sector(s)</b>	Transmission and Distribution of Electricity (100%)
<b>Theme(s)</b>	Rural services and infrastructure (100%)
<b>Lending Instrument</b>	Investment Project Financing
<b>Project ID</b>	P152936
<b>Borrower(s)</b>	Republic of the Union of Myanmar
<b>Implementing Agency</b>	Ministry of Electric Power, Ministry of Livestock, Fisheries and Rural Development
<b>Environmental Category</b>	B-Partial Assessment
<b>Date PID Prepared/ Updated</b>	29-Dec-2014
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<b>Estimated Date of Appraisal Completion</b>	17-Apr-2015
<b>Estimated Date of Board Approval</b>	27-Jul-2015
<b>Concept Review Decision</b>	Track II - The review did authorize the preparation to continue

### I. Introduction and Context

#### Country Context

1. The Bank's first IDA operation in the energy sector after the Bank re-engagement in Myanmar was approved by the Board in September 2013 and focuses on alleviation of acute electricity shortages through the expansion of power generating capacity. This second operation aims to help scale-up access to electricity and support the implementation of the Government's National Electrification Plan (NEP) which calls for the universal access to electricity by 2030. The project is an essential element of the joint World Bank Group (WBG) engagement in the energy sector. The sector is one of key drivers of economic growth and poverty reduction in Myanmar, but also a source of public frustration due to lack of access and poor reliability of power supply. The joint WBG program includes on-going and future support for institutional development and capacity building, public and private sector investments in generation, transmission and distribution, hydropower and gas subsectors. Together these sequenced interventions support the WBG twin goals of reducing extreme poverty and increasing shared prosperity in an environmentally and

socially sustainable manner

2. Myanmar is the largest country in mainland Southeast Asia with a land area of about 654,000 square km. It is located between China, India, and Thailand, with more than 2,800 miles of coastline. This geographic advantage, and the country's endowed natural resources leaves it well positioned to resume its traditional role as a regional trading hub and key supplier of minerals, natural gas and electric power.

3. Myanmar is a culturally and ethnically diverse country, comprising more than 130 ethnic groups. It is also one of the poorest countries in the East Asia and Pacific Region, with an estimated GDP per capita of US\$1,105 and a poverty headcount of 37.5 percent among its population of around 53 million . While reliable poverty data are scarce in Myanmar, all indicators point to poverty being concentrated in rural areas with significant variations across the states and regions. Agriculture is the mainstay of the national economy, generating approximately 43 percent of gross domestic product, 54 percent of employment and providing livelihoods to more than 70 percent of the population.

4. Since 2011, leaving behind decades of isolation, fragility, and conflict, a reformist government has ushered in unprecedented political and economic reforms to open Myanmar to the global economy, boost growth, and reduce poverty. Thus, Myanmar is embarking on a triple transition: from an authoritarian military system to democratic governance; from a centrally directed economy to market oriented reforms; and from 60 years of conflict to peace in the border areas.

5. The government has set economic reform as a key priority and announced a series of reforms to remove economic distortions, such as floating their currency, new fiscal regulations to rationalize personal income tax and reduce consumption tax, reforms aimed at developing the private sector and stimulating direct foreign investments, a review of the financial sector, promotion of access to finance, and creation of an environment conducive to job creation.

6. Also, the government's plans recognize that expanding the quantity and quality of basic infrastructure and improving access to electricity in an efficient and sustainable manner is crucial to both economic growth and poverty reduction. Given the large scale of infrastructure and energy needs, the Government of Myanmar (GoM) is committed to attract significant private sector participation, including through independent power producers (IPPs) in the electric power sector.

### **Sectoral and Institutional Context**

7. Myanmar energy consumption is among the lowest in the world. About 70 percent of the population has no access to grid-based electricity services, and the consumption per capita is 160 kWh per annum – twenty times less than the world average. Only about 16 percent of rural households have access to grid-based electricity. Off-grid schemes are rare and typically provide high cost, low reliability power service for a few hours per day. Also, access to modern fuels for cooking (such as LPG) is limited to urban areas. Consequently, traditional biomass (fuelwood and animal dung) is widely utilized and accounts for about two-thirds of Myanmar's primary energy consumption.

8. Electricity consumption is growing fast in Myanmar. The peak load demand reached 2,100 mega-watts (MW) in 2014, growing on average 14 percent per annum in the past five years. During this same time, the electric energy supplied by the national grid grew on average about 15 percent

per annum and reached 9.6 TWh in 2013. Most of electricity (about 70%) is generated in hydropower plants with the total installed capacity of 2,970 MW, and gas-fired power plants meet the remaining 30% of demand with the total installed capacity of 1,320 MW, as of April 2014.

9. Electricity shortages and supply disruptions remain prevalent in the country. Accumulated delays in investments in power infrastructure, over-reliance on seasonal hydropower production, together with a rapid increase in electricity demand, which tripled over the last decade, resulted in large electricity shortages which peaked at about 30 percent of power demand in 2012-2013. Despite a significant recent increase in gas fired power generation (about 400 MW was commissioned during the last year) load shedding, blackouts and low reliability of power supply are major occurrences in Myanmar.

10. The energy sector institutional and regulatory framework is fragmented, particularly in rural electrification. Several ministries are responsible for activities in the energy sector, with the Ministry of Energy (MOE) serving as the focal point for overall energy policy, and the Ministry of Electric Power (MOEP) as lead agency for power sector development. The Myanmar Electric Power Enterprise (MEPE) is responsible for gas-fired power generation, operates the high-voltage power grid and acts as the single-buyer of electricity and power market operator. Yangon Electricity Supply Board (YESB) and Electricity Supply Enterprise (ESE) are responsible for distribution networks in the greater Yangon area and the rest of the country, respectively. Department of Rural Development (DRD) of the Ministry of Livestock, Fisheries and Rural Development (MLFRD) is responsible for off-grid electrification in rural areas. In addition to the national (Union level) ministries, each state (7) and region (7) has a state/ regional energy ministry responsible for the planning and implementation of power projects on its territory. Recently, the Government has decided to transfer the electrification budget to the state/ regional ministries, as a part of the broader decentralization process in the country. As a part of the decentralization process in the power sector, the Government also reduced the role of ESE and YESB to primary distribution (medium voltage) and opened up secondary distribution (low voltage) for private sector participation including through village cooperatives and direct private investments.

11. The main challenge facing the Myanmar power sector is to scale-up access to electricity in reliable, efficient, affordable and sustainable manner. In the near-term, the main challenges are to (a) increase capacity and efficiency of power generation; and (b) reduce losses in transmission and distribution networks, which are currently about 25%, in order to eliminate electricity shortages. In the medium term, the main challenge will be the pricing reform to gradually implement the government policy of cost reflecting tariffs, while ensuring protection of poor and vulnerable consumers through well targeted and fiscally affordable subsidies. Finally, the long term objective is to achieve universal access to electricity by 2030, and secure reliable affordable and environmentally and socially sustainable energy supply to all consumers in Myanmar.

12. The Government has taken a number of strategic initiatives to support development and reforms in the power sector, including the development of National Electrification Plan. The government has adopted a National Energy Policy based on the guiding principles set in the National Framework of Economic and Social Reforms (FESR-2012). The new policies embrace principles of diversification of energy mix, reducing energy intensity by means of energy conservation and energy efficiency measures, and introduction of energy pricing policies reflecting economic costs for both suppliers and users of energy in the domestic market. Furthermore, with the assistance of development partners, the government has been preparing the Energy Sector Master

Plan, the Power Sector Master Plan, and the National Electrification Plan (NEP) aiming to achieve universal access to electricity by 2030. Finally, a new Electricity Law has been drafted and is under review by the Parliament which is expected to establish an independent Energy Regulatory Agency and provide the basis and directions for the sector reforms.

13. The joint World Bank Group (WBG) energy program includes support to Myanmar for both near-term and long-term solutions to the above challenges in the power sector. The Myanmar Electric Power Project (MEPP) was approved in September 2013 and provides financing for 106 MW of new gas-fired power generation to be quickly added to the national grid in Thaton, Mon State. The MEPP also provides technical assistance on power sector financial viability, electricity tariffs and subsidies review, and institutional capacity building for environmental and social due diligence, procurement and financial management in MEPE. IFC is supporting corporatization and has plans to invest equity in YESB and has accepted the government's request for similar support in Mandalay region. IFC was selected to assist MOEP in conducting the first competitive tender for the selection of developer for the 250 MW Myingyan gas-fired IPP which may also receive a guarantee support from IDA to facilitate private sector investment. Finally, the Bank has provided US\$1.5 million technical assistance (funded by the Sustainable Energy For All initiative administered by ESMAP) for the development of National Electrification Plan (NEP).

14. To achieve universal access to electricity by 2030, Myanmar will require an average annual electrification rate that is more than double the current rate. Currently, the rate of new connections acquired by YESB and ESE is about 180,000 residential customers per year (2012). At the current rate it would take 40 years to connect about 7.2 million households which presently do not have access to electricity in Myanmar. Therefore, the NEP calls for a more than doubling of the electrification rate to about 400,000 new connections per year. Clearly, the investment requirements will need to more than double as the cost of connections per household will continue to rise with the increasing penetration of electricity towards less populated areas. In order to ensure a maximum number of connections with the limited financing resources available, NEP has developed a geospatial least-cost plan based on an optimal combination of grid and off-grid solutions, and a sector-wide approach for the implementation of the national electrification project.

15. The proposed National Electrification Project (NEP) will support the expansion of electricity services in Myanmar through grid and off-grid solutions, and will work with all development partners and the private sector active in these areas. The proposed project will establish the basis for a sustained engagement of the WBG in supporting public and private sector investments needed to achieve universal access to electricity in Myanmar by 2030, as well as to strengthen institutional capacity of GoM. It is expected that the programmatic engagement will comprise three phases with the first phase covering 2015-2019. In addition to working with the public and private sector investors, the joint WBG energy team will work closely with all development partners (DPs) active in the power sector (ADB, JICA, KfW, DFID, Norway, Australia, etc.) and the NEP will be designed as an open platform which DPs can also use in supporting the electrification in Myanmar. Such a coordinated, sector-wide approach is considered the most effective in delivering benefits of electrification and working together with the GoM, DPs and the private sector towards twin goals of reducing extreme poverty and increasing shared prosperity in Myanmar.

### **Relationship to CAS**

16. After more than two decades absent from the country, the WBG is re-engaging in the

development of Myanmar. On October 30, 2012 the WBG approved an Interim Strategy Note (ISN) covering an 18-month period focusing on programs that can support the GoM in the country's current triple transition - from an authoritarian military system to democratic governance, from a centrally-directed economy to market-oriented reforms, and from conflict to peace in the border areas - for the benefit of the people of Myanmar. The ISN outlines support around three pillars: the first aimed at supporting GoM's efforts to transform institutions to allow them to deliver for citizens; the second at building confidence in the ongoing reform process; and the third focused on preparing the way for the resumption of a full country program.

17. The Project would support Pillar I by strengthening the capacity of electric power agencies to deliver sustainable energy services for citizens. The Project also supports Pillar II by building confidence for concessional and commercial financing providers to support national electrification in Myanmar; and Pillar III by continuing WBG's engagement in infrastructure by addressing immediate needs of the un-electrified and mostly under-privileged population. [Note: this section will be updated in the PAD to reflect the new CPF which is scheduled for the Board in April 2015.]

18. In the recently completed Systematic Country Diagnostics (SCD) for Myanmar, increasing electricity access was identified as one of the critical priorities for enhancing inclusiveness of growth through empowerment. In Myanmar, inadequate and unreliable electricity supply is a particularly critical constraint to existing and potential business activities. In addition, electricity is critical to improving the delivery of other services such as health, education, security, and finance. Better access to electricity and other basic services are important, not only to improve well-being, but also to reduce vulnerability to poverty, enhance current income generating opportunities and lower the inter-generational perpetuation of poverty.

## II. Proposed Development Objective(s)

### Proposed Development Objective(s) (From PCN)

19. The project development objective is to help increase access to electricity in Myanmar.

### Key Results (From PCN)

20. The expected results of the Project will include new household connections in urban and rural areas across the country. Also, the project will help establish and support a coordinated sector-wide institutional framework for the implementation of national electrification program, and strengthen institutional capacity of implementing agencies, including both public and private sector active in the grid rollout and off-grid pre-electrification.

21. The proposed grid roll-out program will not only improve the well-being of the affected population by better lighting, telecommunications and entertainment, but also enable income-generation opportunities and enhanced productivity. Importantly, the program will prioritize connections for health clinics and schools, particularly in poor and vulnerable areas, to maximize developmental impacts.

22. The project will include an off-grid pre-electrification program to directly benefit the poor and vulnerable households by targeting those who reside outside the realm of power grid and are expected to receive grid-based electricity services more than 10 years after the first phase of NEP.

23. The project will also include a Contingency Emergency Response Component (CERC) to

allow a rapid response and quick support for emergency recovery and reconstruction in case of an adverse natural disaster event.

24. Many of these project benefits will occur over time and will continue to accrue many years after the project is completed. An impact evaluation to establish the baseline and assess these benefits in a timely and systematic manner will be initiated along with the proposed project.

25. Achievement of the project development objective will be measured by the core sector indicator (CSI): People provided with access to electricity under the project by household connections.

26. As a part of CSI monitoring, the project will also measure (i) number of new household customers connected to national grid; (ii) number of new household customers with access to electricity services from off-grid systems; and (iii) number of direct female beneficiaries out of people provided with access to electricity by household connections to the grid and off-grid solutions.

27. Interimmediate result indicators will include (i) amount of investment financing from the private sector, development partners and the government's budget leveraged for the electrification; (ii) permanent national electrification executive secretariat (NEES) established, adequately staffed and functional in line with its mandate; (iii) number of NEES and other agency staff trained; and (iv) number of qualified private sector operators/ village cooperatives participating in the grid and off-grid electrification program.

### III. Preliminary Description

#### Concept Description

28. The proposed project has four main components.

Component 1: Grid rollout [IDA US\$ 200 million]. The grid component will support the extension of distribution networks currently operated by ESE and YESB and connections of villages and households which are identified in NEP as closest to the existing national grid and, thus, on the least-cost path for the grid rollout. This component will include (i) expansion of existing Medium Voltage (MV) substations and construction of new MV substations, (ii) construction of new MV lines, Low Voltage (LV) lines and MV/LV transformers; and (iii) household connections and meters. It is expected that the primary distribution MV parts (above 11 kV) will be implemented by ESE and YESB, while the 11 kV and LV components (including household connections) will be implemented through a public private partnership or direct private investments.

The Bank financing for the grid rollout will include two modalities. First, IDA will finance procurement of MV goods (transformers, poles, conductors, insulators, switchgear, materials etc.) which will be installed by ESE and YESB to expand the primary distribution network (above 11 kV). Second, IDA and IFC will use part of the IDA funds to support the private sector participation in the expansion of secondary distribution network (11kV and 0.4 kV). The joint WBG team will develop and put in place a 'Menu of Options' for private sector participation. This could include (a) IDA funds to buy down the capital cost of assets and services; (b) Output Based Aid (OBA) scheme, whereby IDA funds would pay to the (private) service provider the difference in tariff between what the consumers are able to pay, and the tariff level that would deliver to the service provider an adequate (regulated) return; and (c) IDA support to selected concessioners in carrying

out distribution activities in franchise areas of YESB and ESE. The above ‘Menu of Options’ is not exclusive and will be modified and adapted to the evolving conditions in the distribution sector during the project preparation.

Component 2: Off-grid pre-electrification [IDA US\$ 80 million]. The off-grid component will target households which are located outside the realm of the existing national grid and, thus, unlikely to receive grid-based access in the next 10 years. The pre-electrification will be based on application of mini-grids and household energy systems, including solar photovoltaic (PV) systems, mini-hydropower, wind, diesel and hybrid systems (e.g. diesel/solar). Currently, MFLRD is responsible for the off-grid rural electrification through its local DRD (Department for Rural Development) offices. The implementation modalities for the off-grid electrification, including IDA and IFC support to the private sector, will be developed during the project preparation.

Component 3: Capacity building and technical assistance (TA) [IDA US\$ 20 million] This component will provide TA and advisory support to GoM agencies responsible for the planning, implementation, monitoring and evaluation of the national electrification program. The capacity building will cover all institutional levels (union, state/ region, and district) involved in the NEP planning and implementation, including technical design, economic and financial analysis, environmental and social impact management, as well as procurement and financial management.

Component 4: Contingent Emergency Response [US\$ 0 million]. The objective of this “zero component” is to allow a rapid reallocation of IDA credit 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 Myanmar’s 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.

#### 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:	550.00	Total Bank Financing:	300.00
Financing Gap:	0.00		
<b>Financing Source</b>			<b>Amount</b>
BORROWER/RECIPIENT			50.00
International Development Association (IDA)			300.00
Foreign Private Commercial Sources (unidentified)			200.00
Total			550.00

## VI. Contact point

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