PROJECT INFORMATION DOCUMENT (PID)
CONCEPT STAGE

Report No.: PIDC931

Project Name	Electric Power Project (P143988)
Region	EAST ASIA AND PACIFIC
Country	Myanmar
Sector(s)	Thermal Power Generation (100%)
Theme(s)	Rural services and infrastructure (100%)
Lending Instrument	Specific Investment Loan
Project ID	P143988
Borrower(s)	Ministry of Finance and Revenue
Implementing Agency	Ministry of Electric Power, Myanmar Electric Power Enterprise
Environmental Category	B-Partial Assessment
Date PID Prepared/ Updated	06-May-2013
Date PID Approved/ Disclosed	06-May-2013
Estimated Date of Appraisal Completion	29-Jul-2013
Estimated Date of Board Approval	26-Sep-2013
Concept Review Decision	Track II - The review did authorize the preparation to continue

I. Introduction and Context

Country Context

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 its 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.

Myanmar is one of the poorest countries in East Asia, with an estimated GDP per capita of between $500-800 and a poverty headcount of 26 percent. Since 2011, leaving behind decades of isolation, fragility, and conflict, 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.

The government of Myanmar 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. The government's plans recognize that expanding the quantity and quality of basic infrastructure and improving access to modern energy in an efficient and effective manner is crucial to both economic growth and poverty reduction.

Sectoral and Institutional Context

Myanmar's energy consumption is among the lowest in the world. About 73 percent of the population has no access to electricity, and only 16 percent of rural households have access to grid-based electricity. Moreover, traditional biomass accounts for two-thirds of Myanmar's primary energy consumption, because access to modern cooking fuel is limited mostly to urban areas.

Despite the underdeveloped domestic energy market, Myanmar is one of the major energy exporters in the region due to its abundant hydropower and natural gas resources. Offshore gas export revenue amounts to $3.56 billion (2011/12), ranking the top on the export revenue list. Also, a third of the country's foreign direct investment is in the oil and gas sector (2011)

Proven gas reserves total 11.8 trillion cubic feet (tcf) with a potential for more big discoveries. The production of natural gas increased from 61 billion cubic feet (bcf) in 1999 to 426 bcf in 2011. The incentive to export gas to neighboring countries, such as Thailand, was the driver behind this rapid increase of production. Thailand, currently imports about 86 percent of Myanmar's total gas production. Production will continue rising, as newly developed fields start exporting to China and Thailand in 2013-2014. Although large foreign investment and revenue come from natural gas exports, the domestic market of gas has remained underserved. Currently, Myanmar consumes about 60 bcf per year, which is 14 percent of the country's gas production. This only meets half the demand of domestic gas.

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In the hydropower sector, Myanmar has identified 92 potential projects with a total installed capacity of 46.1 GW out of an estimated 100 GW of total hydropower resources. Currently, the total installed capacity of hydropower plants is 2,660 MW, which accounts for 71 percent of installed capacity and 65 percent of electricity production, with a balance mostly coming from gas-fired power plants. This high dependency on hydropower makes the country's power generation extremely seasonal.

Most existing Gas Turbine (GT) stations are more than 30 years old, and use single-cycle gas turbines with efficiency as low as 20 percent for base-load duties. The overall efficiency of the power supply system is further reduced by large losses in transmission and distribution (T&D) networks which amount to 25 percent of the power supply.

Furthermore, the domestic price of gas and electricity is not fully cost-reflective. The price of gas for domestic power generation is priced at about half of the export parity price. Nonetheless, the average electricity tariff seems to be close to short-run marginal costs. Pricing policies in the gas and electricity sector may change again in 2013, which raise concerns about price volatility, increases financial risks for investors in gas-fired power generation, and tends to delay project development.

Overall, rapidly increasing electricity demand, investment delays, seasonal fluctuation in electricity production, obsolete infrastructure, low efficiency and high T&D loss, and underpricing are root causes of electricity shortages which amount to about 20 percent of power demand. The Government strategy to address these challenges is based on two pillars. First, an inter-governmental National Energy Management Committee (NEMC) chaired by Minister of Energy and co-chaired by Minister of Electric Power was established in January 2013 with the mandate to formulate the National Energy Policy, and ensure coordinated implementation. Second, a new Electricity Law was drafted clarifying conditions for private investments and concessions in the power sector. While ADB provided assistance to MOEP in drafting the new Electricity Law, the World Bank Group (WBG) prepared an Outline of Energy Development Policy, which was requested by NEMC as a basis for opening energy policy dialog and mobilization of technical assistance resources from WBG and other development partners.

As detailed in the Outline of Energy Development Policy which was discussed and broadly agreed with NEMC, main challenges facing the energy sector can be divided in two time horizons. In the near-term (2013-2015), the main challenges are: (i) to ensure financial viability of sector enterprises; (ii) to secure affordable funding for capital investments in urgently need power generation; and (iii) to maximize efficiency of gas-fired power generation and reduce losses in transmission and distribution networks. In the medium to longer term, the main challenge facing the energy sector is to secure reliable, affordable and environmentally and socially sustainable energy supply. An overarching challenge for the policy makers will be to manage trade-offs between near-term and longer-term measures in order to ensure quick positive results without undermining sustainability of energy sector development in a longer run.

The proposed project targets the near term challenges due to the urgent need to increase power generation, focusing specifically on efficiency improvements in the existing Gas Turbine (GT) stations. Replacing outdated and low efficiency GTs with modern, high efficiency GTs and CCGT (Combined Cycle Gas Turbine) technology is the fastest and least cost approach to increase electricity production without increasing the consumption of gas, and therefore without increasing CO2 and other emissions. It is envisaged that the proposed project will help establish the basis for a programmatic WBG engagement in the energy sector in the coming years.

Relationship to CAS

After more than two decades of absence, the WBG is re-engaging in the development of Myanmar. On October 30, 2012 the WBG approved an Interim Strategy Note covering an 18-month period that will focus on supporting the country's current triple transition - from anauthoritarian 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 government’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.

The proposed project would support Pillar II by focusing on an activity of quick and tangible impact for communities, as is improving reliability and quality of electricity supply to the population; and Pillar III by starting WBG’s engagement in infrastructure by addressing emergency needs in coordination with other development partners, and as a government request to support the

modernization and expansion of electricity generation, which is a key constraint on economic growth and a rising source of popular frustration.

II. Proposed Development Objective(s)

Key Results (From PCN)

Achievement of the project development objectives will be measured by the: (i) installed capacity of gas-fired power generation constructed under this project (MW); (ii) electricity production (GWh) from new gas-fired power generation; (iii) increase in efficiency of gas-fired power generation (%); and (iv) reduction of CO2 emissions per kWh generated (tCO2eq/kWh).

Results of strengthening institutional capacity of MOEP and MEPE will be finalized with the government during the project preparation based on the program of technical assistance outlined in the energy policy note, and may include the adoption of (i) new Electricity Law and necessary secondary legislation; (ii) financial viability action plan for the power sector ; (iii) National Electrification Program; and (iv) guidelines for environmental and social assessment of investment projects in the power sector. Also, the results of TA components will include several workshops and other capacity building activities.

III. Preliminary Description

Concept Description

The main component of the proposed project is the replacement of outdated, low-efficiency gas turbines in the existing Thaton Gas Turbine (GT) station with a modern, high-efficiency Combined Cycle Gas Turbine (CCGT) plant, comprising two gas turbines and one steam turbine with the total capacity of 120 MW.

The selection of the 120 MW CCGT in Thaton is based on two main considerations: (a) available gas supply and allocation of gas in the domestic gas market which is severely constrained due to gas shortages; and (b) the age and condition of existing GT stations. The existing Thaton GT station is located near the main gas-pipeline which runs through Mon State, and the reliability of gas supply in Thaton is significantly better than in other GTs considered as alternative project locations. Furthermore, the Thaton station has a relatively strong grid connection and provides electricity to both the national grid and the local distribution network in Mon State. Therefore, the proposed IDA project will complement the IPP project supported by IFC in Yangon area, by focusing on other parts of the country which have higher incidence of poverty and electricity shortages.

The CCGT plant will be implemented through a “supply and installation” contract including engineering and project management services, supply of equipment, construction supervision, testing, and commissioning. The contract may also include implementation of the environmental and social management plan during the construction phase, insurance and maintenance support.

The project would include technical assistance in some of the following areas: (i) power market reform and development of necessary secondary legislation and power sector regulations; (ii) wholesale power market financial modeling and fiscal impact assessments to provide practical feedback to policy makers and help define an optimal trajectory for the power market reforms; (iii)

electricity tariffs and energy pricing policy to support financial viability of the power sector, as well as reduce investment risks in power generation projects; (iv) environmental and social protection policies and guidelines for investments in the power sector; and (v) development of National Electrification Program. The details of the scope of the TA activities will be agreed with the government during project preparation, in consultation with other development partners to ensure a coordinated approach in TA and capacity building support.

Table 1: Indicative Project Cost (in US$)
Combined-cycle gas power plant expansion---------- 120,000,000
Technical Assistance ---------- 4,000,000
- Regulatory Framework
- Financial viability
- Tariff study and pricing policy
- Environmental and social guidelines
- National Electrification Program

Contingencies ---------- 16,000,000
Grand Total ---------- 140,000,000

IV. Safeguard Policies that might apply

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

V. Financing (in USD Million)

Total Project Cost:	140.00	Total Bank Financing:	140.00
Total Cofinancing:		Financing Gap:	0.00

Financing Source	Amount
BORROWER/RECIPIENT	0.00
International Development Association (IDA)	140.00
Total	140.00

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