PROJECT INFORMATION DOCUMENT (PID)
CONCEPT STAGE

Report No.: PIDC616

Project Name	Zambia Electricity Transmission and Distribution System Rehabilitation Project (P133184)
Region	AFRICA
Country	Zambia
Sector(s)	Transmission and Distribution of Electricity (100%)
Lending Instrument	Specific Investment Loan
Project ID	P133184
Borrower(s)	Ministry of Mines, Energy and Water
Implementing Agency	ZESCO
Environmental Category	B-Partial Assessment
Date PID Prepared	10-Dec-2012
Estimated Date of Appraisal Completion	18-Feb-2013
Estimated Date of Board Approval	30-May-2013
Concept Review Decision	Track II - The review did authorize the preparation to continue

I. Introduction and Context

Country Context

1. Zambia is a country of about 12 million inhabitants with a per capita income of US$1070. Real Gross Domestic Product (GDP) growth averaged 5.7 percent in the last decade driven largely by the copper industry allowing Zambia to reach lower middle income status. Despite the gains, the sources and benefits of economic growth have been narrowly focused on capital-intensive industrial (mining and construction) and services sectors, which has yet to translate into lowering poverty and raising living standards. More than 60 percent of the population lives below the poverty line.

2. Growth has been driven primarily by investments in the mining sector following escalation in global commodity prices driven by increasing demand for base metals. The economy grew by an average of 6 percent during 2009-2011, and is projected to grow by an average of at least 5 percent per year till 2015.

3. The peaceful transfer of power following the September 2011 elections in September 2011 has strengthened Zambia's democratic credentials. Zambia has benefited from two decades of democratic government with national multiparty elections. The current Government's platform is to redistribute wealth, boost employment and wages, and tackle corruption.

4. In keeping with its election time promises the new Government has identified poverty reduction and job creation as its main priority. The Government has recognized that mining sector-led growth had failed to reach the masses and looks upon agriculture and tourism development as

important sources of pro-poor growth and diversification. Construction and manufacturing are also identified as priority sectors and improving the business environment for development of the private sector is recognized as key.

Sectoral and Institutional Context

5. The overall national electrification rate is about 23 percent, with 47 percent of the population in urban and peri-urban areas and only 3 percent in rural areas having access to electricity. The current supply is inadequate to meet the demand during peak hours, resulting in load shedding in most residential areas. Further expansion of mining, agriculture, manufacturing, and residential customers will require increased supply of electricity.

6. The electricity sector in Zambia is dominated by ZESCO, the vertically integrated state-owned utility. The Ministry of Mines Energy and Water Development (MoMEWD) promulgates policy and provides strategic coordination of the energy sector. The Energy Regulation Board (ERB) reviews and approves tariffs. The Rural Electrification Authority (REA) is responsible for rural electrification through grid-extension and/or off-grid and mini-grid electrification. Other important sector actors include the Copperbelt Energy Corporation (CEC), a private company that purchases bulk power from ZESCO and supplies the copper mines and other small companies like North Western Distribution Company and Lusiwasi mini-hydro power station.

7. ZESCO has an installed generation capacity of about 1849 Megawatts (MW) which consists of 1841 MW hydro and 8 MW diesel. ZESCO's main generation stations are Kafue Gorge Power Station with 990MW capacity; Kariba North Bank Power Station with 720MW, and Victoria Falls Power Station with 108MW capacity. In addition it has mini-hydro power plants with total capacity of about 23MW and diesel power plants with a total capacity of 8 MW, which serve isolated mini grids in rural areas. However, there has been a substantial reduction in actual power generation in recent years due to on-going rehabilitation work at major power stations.

8. The National Grid is primarily supplied by hydropower stations in the southern part of the country while the major load centers are located in the north. ZESCO's transmission infrastructure is currently operating at full capacity in some areas of the country, and this has adversely affected the quality, security, and reliability of supply. Rehabilitation and upgrading of various segments of the transmission network are needed to address the quality and security of supply and to improve the financial viability of ZESCO.

9. Significant tariff adjustments totaling about 87% have been made in the last three years. Together, these measures have led to ZESCO's improved financial performance and its ability to contribute to the required power sector investments.

10. The Government also sees the potential of Zambia becoming the future electricity trading hub with the interconnections of the Eastern, Central and Southern African Power Pools, which would enable Zambia to maximize benefits from participation in the regional power markets around it.

11. The recently approved Kafue Town - Muzuma - Victoria Falls Regional Transmission Line Rehabilitation project (US$100 million, of which US$60 million is provided by IDA) would enable power flows between the northern and southern countries of the SAPP, enhance power trade both through bilateral contracts and on the short-term energy market in the pool, and overall security of supply in the SAPP.

12. The electricity distribution system consists of about 21,400 kilometers (km) of medium and low voltage lines, distributed among four operational regions (Lusaka, Copperbelt, Northern, and Southern). Most of the distribution infrastructure is aged as the cables, overhead lines and switchgear in the established residential and commercial areas of the major towns in Zambia were installed in the sixties and early seventies. The network has reached its limits and frequent

equipment failures are common, resulting in the deterioration of quality and reliability of supply

13. Lusaka is one of the largest centers of power demand in Zambia, accounting for about 40 percent of the non-mining load. The average electrical annual load growth in Lusaka has been 6% for the past 5 years.

14. The present load in this area is already close to maximum thermal capacity of the 132kV and 88kV lines and the equipment installed at the substations. Assessment of the Lusaka distribution infrastructure has shown that most of the substations will be overloaded and would require significant upgrades. The load forecasts for the area indicate that the load will more than double by 2022, far exceeding the installed capacity at these facilities.

Relationship to CAS

15. The proposed project will support the reinforcement of the existing transmission and distribution networks in the Lusaka area, increasing ZESCO's power delivery capacity and improving services for agricultural, commercial, industrial, and household customers to support growth in productivity and improve the welfare of the poor.

16. The project is aligned with the Sixth National Development Plan (SNDP). The SNDP recognizes that a secure and reliable supply of electricity is essential for accelerating and diversifying growth as well as enhancing economic development. The strategic focus of the energy sector in the SNDP is to ensure that adequate and reliable supply of energy is made available through development of appropriate infrastructure to support the development processes in the growth sectors of the economy, especially agriculture and manufacturing.

17. The Poverty Reduction Strategy Paper (PRSP) recognizes the direct relationship between energy and poverty and that increasing access to electricity is needed to contribute to poverty alleviation. It also acknowledges Zambia's strategic geographic position and considers the electricity sector as central to realization of Government's development objectives.

18. The proposed project is directly linked to infrastructure development objectives under the 2008-2012 CAS– Accelerating and Sharing Growth through Improved Competitiveness. The CAS articulates three priority areas in the support to the energy sector: (i) financing new generation and transmission capacity and demand-side management measures to mitigate the power crisis; (ii) provision of financing and technical assistance for access expansion to increase the current low electrification rate; and (iii) provision of investment and technical assistance to ZESCO to improve efficiency and quality of services.

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19. The CAS considers electrical power shortages as a major risk to Zambia's development strategy: "Although the overall outlook for Zambia remains broadly positive, the country faces several risks in implementing its development strategy. These include … energy sector risk, due to increasingly severe shortages of electrical power, which could undermine growth objectives, unless the shortages are addressed urgently…"

20. The Government is fully committed to implementation of this project and has formally requested the Bank's financial support for this project.

II. Proposed Development Objective(s)

Proposed Development Objective(s) (From PCN)

The objective of this project is to increase the capacity and improve the reliability of electricity transmission and distribution system in the project target areas.

Key Results (From PCN)

Progress toward achieving the project outcomes will be measured by the following indicators:

- Increase in transmission capacity (between Leopards Hill, Roma and Lusaka West

substations, and between Lusaka West and Coventry substations for the upgraded132kV transmission lines; and between Leopards Hill and Waterworks substations for the upgraded Transmission lines from 88kV to 132kV).

- Decrease in transmission losses between substations along the upgraded Transmission line.
- Average interruption frequency per year in the project area (number).
- Transmission lines constructed or rehabilitated under the project (km).
  i. Transmission lines constructed under the project (km).
  ii. Transmission lines rehabilitated under the project (km).
- Distribution lines constructed or rehabilitated under the project (km).
  i. Distribution lines constructed under the project (km).
  ii. Distribution lines rehabilitated under the project (km).
- Direct project beneficiaries in project target areas (number).

III. Preliminary Description

Concept Description

23. The proposed project will reinforce and upgrade the power transmission and distribution infrastructure in Lusaka area as a priority to increase the capacity and improve the reliability of the electricity network throughout the area.

24. The proposed project consists of the following three components:

Component 1: Rehabilitation of the 132kV and 88kV Transmission Network in Lusaka Area This component will include (a) Lusaka Transmission Ring Upgrade; and (b) Upgrade / Construction of Bulk Supply Point Substations.

Component 2: Rehabilitation of the 33kV and 11kV Distribution Network in Lusaka Area This component consists of the following sub-components: (a) Upgrading of existing distribution substations; (b) Construction of new substations and associated lines; (c) Upgrading of existing 33kV and 11kV distribution lines; and (d) Upgrading / extension of the distribution control system.

Component 3: Technical Assistance and Project Supervision.
This component will support (i) Technical assistance to ZESCO; (ii) Funding preparation of new electricity infrastructure projects; (iii) Environmental and social mitigation activities; (iv) Engineering and Project Implementation Management consultants; and (v) Capacity building.

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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. Tentative financing

Financing Source	Amount
BORROWER/RECIPIENT	75.00
International Development Association (IDA)	100.00
EC European Investment Bank	65.00
Total	240.00

VI. Contact point

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