

Document of
The World Bank

FOR OFFICIAL USE ONLY

Report No: PAD1691

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED ADDITIONAL CREDIT

IN THE AMOUNT OF SDR 142 MILLION
(US\$200 MILLION EQUIVALENT)

AND A GRANT

IN THE AMOUNT OF US\$5 MILLION FROM THE ENERGY SMALL AND MEDIUM
ENTERPRISES TRUST FUND

TO THE

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

FOR THE

ELECTRICITY NETWORK REINFORCEMENT AND EXPANSION PROJECT

May 6, 2016

Energy and Extractives Global Practice
Africa Region

This document has a restricted distribution and may be used by recipients only in the performance of their official duties. Its contents may not otherwise be disclosed without World Bank authorization.

CURRENCY EQUIVALENTS

(Exchange rate Effective as of March 31, 2016)

Currency Unit = Ethiopian Birr
ETB 21.5006 = US\$ 1
US\$0.71 = SDR 1

FISCAL YEAR
July 8 - July 7

ABBREVIATIONS AND ACRONYMS

| | |
|--------|---|
| AF | Additional Financing |
| BP | Bank Procedure |
| CCA | Customer Centric Applications |
| Ci-Dev | Carbon Initiative for Development |
| DA | Designated Account |
| DBE | Development Bank of Ethiopia |
| DSS | Decision Support System |
| EEP | Ethiopian Electric Power |
| EEPCo | Ethiopian Electric Power Corporation |
| EEU | Ethiopian Electric Utility |
| EIRR | Economic Internal Rate of Return |
| ENREP | Electricity Network Reinforcement and Expansion Project |
| EPC | Engineering, Procurement and Construction |
| ERP | Enterprise Resource Planning |
| ESIA | Environmental and Social Impact Assessment |
| ESME | Energy Small and Medium Enterprises Trust Fund |
| ESMF | Environmental and Social Management Framework |
| ESMP | Environmental and Social Management Plan |
| ESMU | Environmental and Social Management Unit |
| FIRR | Financial Internal Rate of Return |
| FM | Financial Management |
| FPPA | Federal Public Procurement Agency |
| GHG | Greenhouse Gas |
| GIS | Geographic Information System |
| GoE | Government of Ethiopia |
| GRS | Grievance Redress Service |
| GTP | Growth and Transformation Plan |
| GWh | Gigawatt Hour |
| HH | Households |

| | |
|-------|---|
| ICB | International Competitive Bidding |
| IDA | International Development Association |
| IFR | Interim Financial Report |
| JIT | Just in Time |
| km | Kilometer |
| kV | Kilovolt |
| kWh | Kilowatt Hour |
| LV | Low Voltage |
| MCC | Metering Control Center |
| MFI | Micro Finance Institution |
| MoFEC | Ministry of Finance and Economic Cooperation |
| MoU | Memorandum of Understanding |
| MoWIE | Ministry of Water, Irrigation and Electricity |
| MV | Medium Voltage |
| MW | Megawatt |
| NCB | National Competitive Bidding |
| NES | National Electrification Strategy |
| NPV | Net Present Value |
| O&M | Operations and Maintenance |
| OP | Operational Policy |
| PA | Project Agreement |
| PAP | Project Affected Person |
| PDO | Project Development Objective |
| PFM | Public Financial Management |
| POM | Project Operations Manual |
| PSE | Private Sector Enterprise |
| PV | Photovoltaic |
| QCBS | Quality and Cost Based Selection |
| RAP | Resettlement Action Plan |
| RPF | Resettlement Policy Framework |
| RPP | Revenue Protection Program |
| SAIDI | System Average Interruption Duration Index, |
| SAIFI | System Average Interruption Frequency Index |
| SDR | Special Drawing Rights |
| SHS | Solar Home System |
| SoE | Statements of Expenditure |
| T&D | Transmission and Distribution |
| ToR | Terms of Reference |
| UEAP | Universal Electricity Access Program |
| WACC | Weighted Average Cost of Capital |

| | |
|---|----------------------|
| Regional Vice President: | Makhtar Diop |
| Country Director: | Carolyn Turk |
| Acting Senior Global Practice Director: | Charles M. Feinstein |
| Practice Manager/Manager: | Lucio Monari |

Co-Task Team Leaders: Issa Diaw and Elvira Morella

ETHIOPIA

**ADDITIONAL FINANCING OF THE ETHIOPIA ELECTRICITY NETWORK
REINFORCEMENT AND EXPANSION PROJECT**

CONTENTS

ADDITIONAL FINANCING DATA SHEET vi

I. Introduction 1

II. Background and Rationale for Additional Financing 1

III. Proposed Changes 10

IV. World Bank Grievance Redress..... 31

Annex 1: Revised Project Result Framework..... 33

Annex 2: Economic and Financial Analysis..... 45

Annex 3: Financial Management and Disbursement 54

Annex 4: Procurement 68

ADDITIONAL FINANCING DATA SHEET

Ethiopia

ENREP ADDITIONAL FINANCING (P155563)

AFRICA

GEE01

| Basic Information – Parent | | | | | | | | | |
|---|---------------------------|--|------------------------|--------------------|--------------------|-----------------------|----------------------|-------------|-------------|
| Parent Project ID: | P119893 | Original EA Category: | B - Partial Assessment | | | | | | |
| Current Closing Date: | 31-Dec-2017 | | | | | | | | |
| Basic Information – Additional Financing (AF) | | | | | | | | | |
| Project ID: | P155563 | Additional Financing Type: | Scale Up | | | | | | |
| Regional Vice President: | Makhtar Diop | Proposed EA Category: | B-Partial Assessment | | | | | | |
| Country Director: | Carolyn Turk | Expected Effectiveness Date: | 30-Sep-2016 | | | | | | |
| Acting Senior Global Practice Director: | Charles M. Feinstein | Expected Closing Date: | 30-Jun-2019 | | | | | | |
| Practice Manager/Manager: | Lucio Monari | Report No: | PAD1691 | | | | | | |
| Team Leader(s): | Issa Diaw, Elvira Morella | | | | | | | | |
| Borrower | | | | | | | | | |
| Organization Name | Contact | Title | Telephone | Email | | | | | |
| Federal Democratic Republic of Ethiopia | Mr. Fisseha Aberra | Director, Financial Institutional Cooperation (Ministry of Finance and Economic Cooperation) | +251 111113247 | faberrak@gmail.com | | | | | |
| Project Financing Data - Parent (Electricity Network Reinforcement and Expansion Project (ENREP)-P119893) (in US\$ Millions) | | | | | | | | | |
| Key Dates | | | | | | | | | |
| Project | Ln/Cr/TF | Status | Approval Date | Signing Date | Effectiveness Date | Original Closing Date | Revised Closing Date | | |
| P119893 | IDA-51260 | Effective | 29-May-2012 | 12-Jun-2012 | 04-Jan-2013 | 31-Dec-2017 | 30-Jun-2019 | | |
| Disbursements | | | | | | | | | |
| Project | Ln/Cr/TF | Status | Currency | Original | Revised | Cancelled | Disbursed | Undisbursed | % Disbursed |
| P119893 | IDA – 51260 | Effective | XDR | 129.20 | 129.20 | 0.00 | 68.62 | 60.58 | 53.11 |

| Project Financing Data - Additional Financing ENREP ADDITIONAL FINANCING (P155563)(in US\$ Millions) | | | | | |
|--|--|-------------------------------------|-----------------------|------------------------------|---------------|
| <input type="checkbox"/> | Loan | <input checked="" type="checkbox"/> | Grant | <input type="checkbox"/> | IDA Grant |
| <input checked="" type="checkbox"/> | Credit | <input type="checkbox"/> | Guarantee | <input type="checkbox"/> | Other |
| Total Project Cost: | | 248.00 | | Total Bank Financing: 200.00 | |
| Financing Gap: | | 0.00 | | | |
| Financing Source – Additional Financing (AF) | | | | | Amount |
| BORROWER/RECIPIENT | | | | | 43.00 |
| International Development Association (IDA) | | | | | 200.00 |
| Energy Small and Medium Enterprises (ESME) Trust Fund | | | | | 5.00 |
| Total | | | | | 248.00 |
| Policy Waivers | | | | | |
| Does the project depart from the CAS in content or in other significant respects? | | | | | No |
| Explanation | | | | | |
| Does the project require any policy waiver(s)? | | | | | No |
| Explanation The audit report for one of the implementing agencies (the Ethiopian Electric Power) for the year ended on July 7, 2015 is overdue. In addition, the previous entity audit report was issued with a disclaimer opinion. The World Bank and the Government of Ethiopia agreed on a number of negotiations conditions that would help address the issues underlying the disclaimer opinion and the delays in the submission of entity audit reports. All measures were duly implemented. Upon compliance with negotiation conditions, Management approved an exception to OP/BP 10.00 to allow the Additional Financing to be negotiated and submitted for Board approval notwithstanding the overdue entity audit report. Further details are provided in the appraisal summary and Annex 3. | | | | | |
| Team Composition | | | | | |
| Bank Staff | | | | | |
| Name | Role | Title | Specialization | | |
| Issa Diaw | Team Leader | Senior Power Engineer | GEE01 | | |
| Elvira Morella | Team Leader | Senior Energy Specialist | GEE01 | | |
| Rahul Kitchlu | Renewable energy products market development | Senior Energy Specialist | GEE01 | | |
| Lara Born | Technical analysis and overall coordination | Junior Professional Officer | GEE01 | | |
| Patrick Thaddayos Balla | Renewable energy products market development | Energy Specialist | GEE01 | | |
| Mariano Salto | Economic & Financial Analysis | Energy Economist | GEE01 | | |

| | | | |
|---------------------------|--------------------------|--|-------|
| Nash Fiifi Eyison | Engineering Analysis | Energy Specialist | GEE07 |
| Abiy Demissie Belay | Financial Management | Senior Financial Management Specialist | GG025 |
| Meron Tadesse Techane | Financial Management | Senior Financial Management Specialist | GG025 |
| Chukwudi H. Okafor | Social Safeguards | Senior Social Development Specialist | GSU07 |
| Edward Felix Dwumfour | Environmental Safeguards | Senior Environmental Specialist | GEN01 |
| Tesfaye Ayele | Procurement | Senior Procurement Specialist | GG001 |
| Inka Ivette Schomer | Gender | Operations Officer | GCGDR |
| Mei Wang | Legal | Senior Counsel | LEGAM |
| Syed I. Ahmed | Legal | Lead Counsel | LEGAM |
| Jose C. Janeiro | Financial Management | Senior Financial Officer | WFALA |
| Zijun Li | Carbon finance | Carbon Finance Specialist | GCCCF |
| Mbuso Gwafila | Technical analysis | Senior Energy Specialist | GEE01 |
| Kenta Usui | GHG accounting | Junior Professional Officer | GEE01 |
| Pedro Antmann | Policy advice | Lead Energy Specialist | GEE01 |
| Yusuf Haji Ali Abdurahman | Technical analysis | Consultant | GEE01 |
| Chita Azuanuka Oje | Project team support | Program Assistant | GEE01 |
| Lemlem Workalemahu | Project team support | Program Assistant | AFCE3 |

Extended Team

| Name | Title | Location |
|--------------|---------------------------|--------------|
| Cephas Gapko | Power Engineer Consultant | Accra, Ghana |

Locations

| Country | First Administrative Division | Location | Planned | Actual | Comments |
|----------|--|--|---------|--------|----------|
| Ethiopia | Harari | Harari Region | X | | |
| Ethiopia | Adis Abeba | Adis Abeba City Astedader | | X | |
| Ethiopia | Amhara Region | Amhara Region | | X | |
| Ethiopia | Dire Dawa Region | Dire Dawa Region | | X | |
| Ethiopia | Oromiya Region | Oromiya Region | | X | |
| Ethiopia | Southern Nations, Nationalities, and People's Region | Southern Nations, Nationalities, and People's Region | | X | |
| Ethiopia | Tigray Region | Tigray Region | | X | |

| Institutional Data | | | | |
|---|--|-----|--------------------------|--------------------------|
| Parent (Electricity Network Reinforcement and Expansion Project (ENREP)-P119893) | | | | |
| Practice Area (Lead) | | | | |
| Energy & Extractives | | | | |
| Contributing Practice Areas | | | | |
| | | | | |
| Cross Cutting Topics | | | | |
| [] Climate Change | | | | |
| [] Fragile, Conflict & Violence | | | | |
| [] Gender | | | | |
| [] Jobs | | | | |
| [] Public Private Partnership | | | | |
| Sectors / Climate Change | | | | |
| Sector (Maximum 5 and total % must equal 100) | | | | |
| Major Sector | Sector | % | Adaptation Co-benefits % | Mitigation Co-benefits % |
| Energy and mining | Transmission and Distribution of Electricity | 75 | | |
| Energy and mining | Other Renewable Energy | 20 | | |
| Public Administration, Law, and Justice | Public administration- Energy and mining | 5 | | |
| Total | | 100 | | |
| Themes | | | | |
| Theme (Maximum 5 and total % must equal 100) | | | | |
| Major theme | Theme | % | | |
| Rural development | Rural services and infrastructure | 88 | | |
| Environment and natural resources management | Climate change | 12 | | |
| Total | | 100 | | |
| Additional Financing ENREP ADDITIONAL FINANCING (P155563) | | | | |
| Practice Area (Lead) | | | | |
| Energy & Extractives | | | | |
| Contributing Practice Areas | | | | |
| Climate Change and Carbon Finance | | | | |

Cross Cutting Topics

- Climate Change
 Fragile, Conflict & Violence
 Gender
 Jobs
 Public Private Partnership

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

| Major Sector | Sector | % | Adaptation Co-benefits % | Mitigation Co-benefits % |
|-------------------|--|-----|--------------------------|--------------------------|
| Energy and mining | Transmission and Distribution of Electricity | 75 | | |
| Energy and mining | Other Renewable Energy | 20 | | |
| Energy and mining | General energy sector | 5 | | |
| Total | | 100 | | |

I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

Green House Gas Accounting

| | | | |
|---------------|------------------------------|-----------------|------------------------|
| Net Emissions | 2,106,513.8 tCO ₂ | Gross Emissions | 6,546 tCO ₂ |
|---------------|------------------------------|-----------------|------------------------|

Themes

Theme (Maximum 5 and total % must equal 100)

| Major theme | Theme | % |
|-------------------|-----------------------------------|-----|
| Rural development | Rural services and infrastructure | 70 |
| Rural development | Other rural development | 30 |
| Total | | 100 |

I. Introduction

1. **This Project Paper seeks the approval of the Executive Directors** to provide an additional International Development Association (IDA) credit in the amount of SDR142 million (US\$200 million equivalent) to the Federal Democratic Republic of Ethiopia for the Electricity Network Reinforcement and Expansion Project (ENREP, P119893).

2. In addition to the IDA Additional Financing (AF) credit, the project has been allocated a US\$5 million grant from the Energy Small and Medium Enterprises (ESME) Trust Fund administered by the World Bank. The project will also benefit from carbon finance support. Two carbon finance programs have been approved under the Carbon Initiative for Development (Ci-Dev) for a total amount of US\$21 million. The carbon finance programs are intended to support the sustainable dissemination of off-grid renewable energy products, in conjunction with the activities envisaged under Component 3 of the project. In accordance with the procedures established under Ci-Dev, an Emission Reduction Purchase Agreement will be separately negotiated and signed between the beneficiary and Ci-Dev.¹

3. **The Project Development Objectives (PDOs) of ENREP are to improve reliability of the electricity network and to increase access to electricity services in Ethiopia.** The proposed AF will retain this PDO. The ESME and Ci-Dev activities are aligned with the PDO.

4. **The proposed AF will support: (a) expanded investments in on-grid electrification; (b) scaling-up of credit facilities for the financing of stand-alone renewable energy systems and energy efficient products; and (c) additional technical assistance for sector modernization.** The proposed AF activities will be linked to the four existing ENREP components, and the AF will use the existing ENREP implementation arrangements. As part of the approval of the AF, it is proposed to extend the closing date of ENREP by 18 months from December 31, 2017 to June 30, 2019 to allow sufficient time to complete all activities under the original project and the AF. Disbursement estimates, components and costs, and the implementation schedule are revised to reflect the scale-up of activities and extension of the closing date. The project results framework is also updated to reflect the expanded scope of investments and the new closing date.

II. Background and Rationale for Additional Financing

A. Country and Sector Background

5. **Ethiopia is a large, land-locked, diverse country.** Located in the Horn of Africa, Ethiopia extends over an area of 1.1 million square kilometers—about the size of France and Spain combined. With a population of 92 million, the vast majority of whom are rural dwellers, Ethiopia is the second most populous country in Sub-Saharan Africa. The country is a land of diverse nationalities and peoples, and its bio-physical environment includes a variety of ecosystems, with significant differences with regard to climate, soil properties, vegetation types, agriculture potential, biodiversity, and water resources. The natural resources base remains the

¹ In light of the linkages of the carbon programs to the IDA financing, the two carbon programs were appraised together with the AF, and description of the carbon finance programs is included in this Project Paper; this is in line with guidance on the processing of carbon finance operations that are linked to an IDA operation, see *Carbon Finance - Operational Processing and Review Guidelines*, World Bank, November 2007.

foundation for most livelihoods, and is subject to considerable climate risks. Despite past progress, a historic legacy of under-investment still bears its mark as more than half of the adult population is illiterate, and the country's infrastructure deficit remains one of the largest in the world. Ethiopia is undergoing a faster demographic transition than the rest of Africa, with a rapidly rising working age population that presents both opportunities and challenges.

6. **Ethiopia is one of the world's poorest countries, but has achieved substantial progress in economic, social, and human development over the past decade.** With a per capita income of US\$550 (2014), Ethiopia remains the 11th poorest country in the world. Nonetheless, growth averaged nearly 11 percent per year since 2004 and extreme poverty² fell from 55 percent in 2000 to 33 percent in 2011, which is one of the most impressive poverty reduction results recorded internationally (within Sub-Saharan Africa, only Uganda reduced poverty faster). Low levels of inequality have largely been maintained. With a few exceptions, Ethiopia attained the Millennium Development Goals. Yet, vulnerability to return to poverty remains high, especially for those engaged in rural livelihoods depending on rain-fed agriculture. Approximately 15 to 20 percent of poor rural households in Ethiopia are headed by women. A participatory poverty assessment, carried out by the Government of Ethiopia (GoE) and the Bank, revealed that female-headed households may be more vulnerable as they traditionally have less direct access to land and other productive resources.³

7. **The GoE has traditionally followed a “developmental state” model with a strong public role in many aspects of the economy.** The country has the third highest public investment rate in the world, but the sixth lowest private investment rate. This is reflected in the fact that state-owned enterprises dominate several key service sectors, while the private sector remains nascent. Fast growth has been mainly driven by agriculture development, which has been the cornerstone of Ethiopia's development agenda since the 1990s and is still prioritized.

8. **The GoE has embarked on a structural transformation of the economy and society.** Since the late 2000s, Ethiopia has been pursuing a process of structural transformation, with the objective of becoming a middle-income country by 2025. The First Growth and Transformation Plan (GTP I, 2010-15) increasingly promoted light manufacturing in key sectors where the country has a perceived comparative advantage. The recently launched Second Growth and Transformation Plan (GTP II, 2015-20) puts an even stronger emphasis on structural transformation, industrialization, urbanization, and export promotion. Massive public infrastructure investment has been at the center of the country's economic strategy. Ethiopia was able to achieve a substantial expansion of energy, road, railway, and telecom infrastructure, financed by domestic and external public borrowing. In addition, public investments in basic service provision, such as education and health, have contributed to poverty reduction as did the introduction of rural safety nets. GTP II continues to place a strong commitment on ensuring that women and youth benefit from and participate in overall economic, political and decision-making processes in Ethiopia.

B. Sector and Institutional Context

² Extreme poverty is measured as consuming less than US\$ 1.90 (2011 PPP) a day.

³ Ethiopia Multi-Sector Country Gender Profile, African Development Bank, 2004.

9. **The past decade has witnessed a turnaround in Ethiopia’s electricity sector.** Between 2005 and 2012, electricity services were spread to 7,000 towns and rural villages from the initial 648, and the number of electricity customers reached over two million from 800,000 at the beginning of the period. Accordingly, demand for electricity grew at more than 15 percent per annum. To accommodate the exponentially increasing power needs, the GoE focused on expanding power generation capacity, which tripled within a decade (from about 850 MW to above 2,000 MW). The steep growth in the electricity sector introduced significant constraints in the Ethiopian Electric Power Corporation (EEPCo), the vertically integrated utility, both with regard to infrastructure development and management. In 2013, the GoE resolved to unbundle EEPCo into two public enterprises: (a) the Ethiopian Electric Power company (EEP), responsible for the generation and transmission sub-sectors; and (b) the Ethiopian Electric Utility (EEU), responsible for power distribution, sales and implementation of the Universal Electricity Access Program (UEAP). To better manage the transition, the GoE appointed a management contractor for a period of two and half years, entrusted with the generation and transmission operations that fell under the responsibility of EEP, and all aspects of distribution that fell under the responsibility of EEU. In addition, the GoE established a federal electricity sector regulator, the Ethiopian Energy Authority (EEA), which replaced the Ethiopian Electricity Agency.

10. **The GoE places electrification at the core of its development agenda.** Expanded and more reliable access to electricity is instrumental to the structural transformation of Ethiopia’s economy and society, including massive poverty reduction and a shift toward higher productivity rates and industrialization. Accordingly, the GTP I aimed to reach universal electricity access in the country in the medium term as well as to position Ethiopia as a power hub in the Eastern Africa Region. The Plan included clear and ambitious sector targets, most notably that of doubling the number of electricity customers from two to four million. The GTP II has set an even more ambitious target: to reach seven million customers by 2020. During the period of GTP I, Ethiopia has made major strides in increasing the national power generation capacity. Large scale hydropower projects, most notably the Great Renaissance Hydro Electric Power Project (6,000 MW) and the Genale Hydro Power Project (254 MW), are in advanced stages of construction. Also, wind power projects (Adama 1&2 and Ashegoda), for a total capacity of 324 MW, have started generating electricity, along with Gibe 3 hydropower plant (1870 MW). In total, the installed capacity will increase from 2,421 to 4,291 MW by the end of 2016. The share of hydro power in the energy mix will increase from 82 percent to 90 percent.

11. **Despite tangible results, electricity access remains far below Government targets, posing a binding constraint to economic and social growth.** The current number of electricity customers is just above 2.4 million, slightly more than half the number targeted under the GTP I. While the Government invested heavily in new power generation capacity, the extension of transmission and distribution infrastructure has not kept pace with demand growth and the scale-up of generation capacity. The resulting backlog has led to a critical deterioration of power supply and service levels to households, as well as commercial and industrial customers, with increasingly negative impacts on the economy. The GoE recognizes the need to focus on expanding transmission and distribution capacity in sync with generation expansion and has recently started investing in these areas. Clear targets were included in GTP I and II. GTP I envisaged to expand the transmission network from 11,441 to 17,000 km and the distribution

network from 126,038 to 258,038 km – objectives that were only partially achieved. GTP II envisages to add nearly 9,000 km of distributions lines.

12. **Recent electrification efforts have mostly focused on investments to expand network coverage.** The expansion of the network has not been accompanied by an equal effort to increase connectivity. In fact, until recently the GoE defined electricity access targets based on coverage of the network rather than connection to or use of electricity services. As a result, while 55 percent of the population resides in areas served by the network, less than 25 percent is connected to electricity services, a share that drops to a negligible ten percent in rural areas. Connections have lagged behind for several reasons, including the absence of a robust program and dedicated resources to roll out connections; affordability issues; and capacity constraints at the utility level in handling a growing customer base. Rolling out connections is a top priority; it is also a high-impact, low-hanging fruit to be reaped in areas already served by the network.

13. **Growth in the energy sector has come with new and more complex challenges and the sector as a whole has reached a turning point following the recent reform process.** Sustained economic growth in Ethiopia will fuel electricity demand, which is predicted to increase at above ten percent per annum in the medium term. Under these circumstances, meeting the ambitious electricity access targets set by the GTPs is even more challenging. There is a need to continue investing heavily in the rehabilitation and expansion of the transmission and distribution network, as well as to intensify connections in the areas covered by the grid. Such a massive electrification expansion can only be pursued in the context of a well-organized and efficient electricity sector, which is not yet the case in Ethiopia. Two years after the sector unbundling, the division of responsibilities and coordination arrangements between EEP and EEU remain to be finalized. The two agencies are overstretched with the implementation demands of numerous large-scale projects and challenging operational issues; they lack critical capacities needed to handle the complex challenges facing the energy sector. The electricity tariff, which is among the lowest in the world, compounds the problem and poses a major constraint to scaling up electricity access. The last tariff revision dates back to 2006, which set the tariff at the equivalent of US\$0.06/kWh. Given the significant depreciation of the Ethiopian Birr over the years, the average electricity tariff stands now at US\$0.0245/kWh. At this level, EEU cannot realistically operate as a sustainable business entity. This issue is increasingly recognized by the GoE, which is now in the process of evaluating a tariff increase⁴.

14. **In response to these challenges, the World Bank is providing programmatic technical assistance to help the GoE define and implement a roadmap for sustainable energy sector development.** Upon request from the GoE, the Bank has designed the *Ethiopia Energy Sector Review and Strategy*, a three-year programmatic knowledge activity which is intended to provide just-in-time analysis and policy advice flexibly tailored to the needs of Ethiopia's evolving energy sector context. Under Phase I of the program, the Bank is helping

⁴ The feasibility study prepared by the Ethiopian Electric Power for investments under component 2 indicates that the average tariff should increase to cost-recovery level (11.3 USc/kWh) during 2021-2023 and further to 12.6 USc/kWh from 2024 onwards. While such increases may be difficult to be implemented in the timeframe indicated, the Ethiopian Electric Power has prepared a proposal for a significant tariff increase that is currently under discussion and whose details remain to be confirmed.

prepare an integrated and comprehensive electrification strategy, the Ethiopia National Electrification Strategy (NES), addressing all key aspects of investment planning, institutional arrangements, and needed regulations for electricity access scale up. Based on a thorough gap analysis of the energy sector which was recently completed, the strategy will identify a clear, realistic and time-bound action plan to scale up electrification. Specifically, the action plan will define a coherent, long-term investment planning process, efficiently integrating transmission and distribution investments for grid-based access and off-grid schemes in areas that remain removed from the grid. It will propose a menu of options for the institutional setup underpinning the electrification effort and the most pressing regulatory improvements to support sector financial viability, provide reliable resources to finance electrification investments, and facilitate alternative business models for off-grid electrification. The NES, which is being prepared under the leadership of the Ministry of Water, Irrigation and Electricity (MoWIE) with close involvement of all the key sector stakeholders, is expected to be completed by June 30, 2016.

C. Project Description

15. ENREP, the parent project in the amount of SDR 129.2 million (US\$200 million equivalent), was approved by the World Bank Board on May 29, 2012. The project is aligned with the FY13-16 Ethiopia Country Partnership Strategy, which includes in its Pillar One the objective of ‘Increased and Improved Delivery of Infrastructure’.⁵ The project is also aligned with the World Bank Group’s twin goals of ending extreme poverty and boosting shared prosperity as it provides for the expansion and upgrading of both distribution and transmission infrastructure that provide more secure electricity supply to households, schools and public facilities, enabling opportunities for study, work and small-scale business, and contributing to raising quality of life and improving safety at night. The PDOs are to improve the reliability of the electricity network and to increase access to electricity services in Ethiopia. ENREP consists of the following four components:

- **Component 1: Reinforcement and Expansion of Electricity Network (US\$100 million equivalent from IDA and US\$20 million from GoE).** This component supports grid upgrade and extension to improve the overall service delivery of the Ethiopian electricity network.
- **Component 2: Access Scale-Up (US\$50 million equivalent from IDA and US\$20 million from GoE).** This component includes: (a) intensification of connections to households and villages in areas already covered by the grid; (b) extension of the distribution network in selected areas; and (c) enhancement of connectivity in newly connected areas.
- **Component 3: Market Development for Renewable Energy and Energy Efficient Products (US\$40 million equivalent from IDA and US\$10 million equity contribution from beneficiaries).** This component leverages the market-based approach developed under the umbrella of the Lighting Africa program⁶ to support the spread of off-grid renewable energy systems among households residing in areas far removed from the grid, or those in areas under the grid who cannot afford a connection. Specifically,

⁵ Report No. 71884-ET.

⁶ See <https://www.lightingafrica.org>.

under this component, credit facilities to Private Sector Enterprises (PSEs) and Micro Finance Institutions (MFIs) have been set up to provide financing for stand-alone renewable energy systems and energy efficient products, such as solar home systems (SHSs), solar lanterns, improved cook-stoves, biogas, and so on. The Development Bank of Ethiopia (DBE) serves as financial intermediary. PSEs are approved retailers that can access the credit line to import and commercialize products. MFIs provide financing to households or small businesses in rural areas interested in installing biogas plants, SHSs, and so on.

- **Component 4: Modernization Support (US\$10 million equivalent from IDA).** This component provides support to the modernization of the electricity sector initiated by the GoE, which ultimately led to the unbundling of EEPCo. Technical assistance targets planning capacity and operational efficiency improvements, contract management, asset management, and other good practices required for a utility to operate under commercial principles. A key activity financed under this component is the installation of an Enterprise Resource Planning (ERP), Customer Centric Applications and Decision Support System for EEU. This component also includes capacity building for DBE, MFIs, and the MoWIE.

D. Implementation Status of the Ongoing Project

16. Following approval by the Bank’s Board of Executive Directors, the ENREP Financing Agreement was signed on June 12, 2012, and the project was declared effective on January 4, 2013. “Implementation progress” and “progress towards achieving the development objectives” are rated moderately satisfactory in the most recent Implementation Status and Results Report and have consistently been rated as such or better over the past 12 months. Three years after effectiveness, significant progress has been made under the project. Overall, 53.1 percent of the approved IDA credit had been disbursed as of April 2016.

17. Project Components 1 and 2 are the most advanced, with 84.2 percent of the US\$150 million of financing allocated to the reinforcement and expansion of the transmission network and access scale-up committed and 50 percent disbursed. Component 1 includes rehabilitation and upgrading works in forty-four sub-stations as well as renewal of the communication equipment of sixty-six other sub-stations. Works are nearly completed, and the remaining construction and commissioning activities are expected to be completed by July 2016. Positive impacts⁷ on the operation of the transmission system are already apparent. The improved reliability and flexibility of the system is resulting in fewer customer complaints. The better transmission capacity can now enable to accommodate customers who have been on waiting list for a while and could not be connected earlier because of the inadequacy of the transmission network. However, comprehensive quantitative data on the impacts of the ongoing investments will only be available end 2016 (i.e. one year after commissioning).

18. The connection program envisaged under Component 2, which was intended to finance the materials and equipment required for the last-mile connectivity both in areas already covered by the grid and in newly covered areas, did not materialize as planned due to an issue related to

⁷ Refer to “PIU report regarding Outcome of Transmission Substation Rehabilitation and Upgrading Project” dated November 25,2015

the procurement of meters. EEPCo's Board mandated the meters be procured locally, which was against the Bank's procurement guidelines. The issue was resolved only recently, with the EEU Board resuming procurement of meters through International Competitive Bidding (ICB). In light of this, Component 2 was refocused to target the upgrading and expansion of medium voltage (MV) and low voltage (LV) distribution networks in eight towns (Addis Ababa, Mekele, Bahir Dar, Dessie, Adama, Dire Dawa, Hawassa, and Jimma). Design for these investments has been completed and equipment shipped. Construction works are expected to be completed by the end of 2016.

19. Under Component 3, most of the US\$20 million earmarked for credit facilities has been taken up. The credit support to PSEs has been particularly successful. To date, 779,514 Lighting Global Certified solar lanterns and 245,424 energy saving lamps (compact fluorescent lamp type) have been imported and distributed by eight approved retailers, providing lighting to more than four million Ethiopians. An additional 144,100 solar lanterns, SHSs, and improved cook stoves are currently under appraisal by DBE. The performance of MFIs in using the credit line has been less successful but has improved since the project midterm review conducted in July 2015. Out of the US\$6.4 million of approved loans to MFIs, US\$1.6 million has been on-lent to 14,881 households for purchasing biogas systems, solar lanterns, and SHSs.

20. Activities under Component 4 were delayed as a result of the unbundling of EPPCo and the transition to a new institutional set up, which posed new implementation challenges. Initially, this component was intended to support the GoE in reorganizing and restructuring EEPCo. Following the unbundling reform, which was formalized one year after ENREP effectiveness, the scope of Component 4 was refocused to help make operational the newly established power companies, EEP and EEU. Specifically, assistance was redesigned to help with completing the split of EEPCo assets between the two companies; addressing impending financial management issues; and establishing an ERP system. Following the GoE's decision to use internal staff to complete the first two tasks, resources were reallocated to finance the ERP, whose cost exceeded initial estimates. The ERP contract was launched in January 2016 and a specific Project Management Office, reporting directly to the EEU Chief Executive Officer, was appointed and made responsible for ERP implementation.

E. Rationale for Additional Financing

21. The proposed AF is intended to scale up and maximize the development impact of ENREP and further contribute to expanding access to electricity services in Ethiopia.

22. **Rationale for further reinforcement and expansion of the electricity transmission system.** In 2005, the GoE established the UEAP with the specific objective to provide grid-based electrification in rural towns and villages. Currently housed within EEU, the UEAP is financed mainly by the GoE, with several donors and other financiers also contributing support. The level of investments implemented on an annual basis by the UEAP, although remarkable, is highly inadequate to bridge the network coverage gap. The Ethiopia Power System Expansion Master Plan Study⁸ has identified priority investments for the expansion of transmission infrastructure in both urban and rural areas for the period up to 2020. These include 118 new transmission substations;

⁸ Parsons-Brinckerhoff, 2014.

reinforcement of 62 substations; and 13,695 km of new 500 kV to 66 kV transmission lines. The overall spending required is estimated at US\$7.4 billion, of which only US\$2.1 billion is currently funded. The investments envisaged under the ENREP focus on addressing major bottlenecks in the transmission system and cover only a minimal part of the needed financing. The AF will provide much needed resources to expand network coverage and ensure adequate transmission capacity so as to improve the reliability of electricity supply and enable access scale-up. In particular, the investments envisaged under Component 1 of the AF will critically support the UEAP.

23. Rationale for further upgrading and expansion of the electricity distribution network. Investments currently implemented under the ENREP have been identified as a priority to relieve distribution capacity bottlenecks and enable fast expansion of electricity access in high-demand areas, such as the eight targeted towns mentioned above. The same approach shall be replicated in other areas covered by the grid and where high demand calls for immediate increase of distribution capacity. There is great scope for expanding electricity access quickly by reinforcing the distribution network and rolling out connections. Surrounding rural areas may also be connected from upgraded substations.

24. Rationale for accelerating connectivity. It is imperative that the electrification effort focus on ensuring that households are connected and can reap the benefits of electricity service. The AF will support access expansion efforts under Component 2, especially in the areas where grid coverage exists. In most of these areas, a growing number of prospective customers who have requested service (and even paid for the connection) are put on a waiting list because of network constraints and/or a shortage of connection equipment, including meters.

25. Rationale for scaling up market development for renewable energy and energy efficient products. While efforts to increase connections to the grid are being supported, off-grid solutions are still needed for millions of people who reside in remote rural areas. ENREP's Component 3 has provided a significant push to the spread of off-grid renewable energy systems. There is clear scope for further expanding the program, building on the success of PSE lending. Demand is strong enough to diversify the range of products retailed. PSEs are willing to retail plug-and-play Lighting Africa-certified SHSs and call for more flexibility in importing solar photovoltaic (PV) components in line with the higher capacity requirements of homes and public facilities as well as energy efficient products. Clean cooking technologies are also picking up among households, leading to a larger and diversified demand for loans to be accommodated by MFIs. The ESME grant will support a more efficient use of the ENREP credit lines. A wider use of renewable energy for lighting and more efficient cooking practices can displace more polluting energy sources (notably kerosene). This, together with the spread of energy efficient products, promises to significantly reduce greenhouse gas (GHG) emissions associated with household energy consumption. In light of these considerations, the project was approved for support under Ci-Dev and two carbon finance programs, as described below, were designed by DBE in coordination with the World Bank.

26. Rationale for modernization support. The AF will scale-up technical assistance for sector modernization, which is a key priority in the face of the ongoing sector transition. While the former EEPCo served a small customer base mainly concentrated around Addis Ababa, the successor agencies, EEP and EEU, are expected to bring electricity to millions of Ethiopian households and businesses throughout the country. Equipping these agencies with the technical, operational, and

commercial capacities needed to handle a larger and broader customer base is critical. Financial sustainability at the utility level remains an issue. While this mostly relates to the low tariff level, well below cost recovery, operational measures can and should be adopted to help bring the power companies, and EEU in particular, on a more sustainable footing. Enhancing project implementation capacity is necessary given the large electrification program undertaken by the GoE, including with Bank support. Finally, the NES will identify clear actions to strengthen the institutional framework underpinning electrification, establish robust and integrated sector planning, and enhance utility performance; it is important that assistance is readily available to help EEP and EEU implement these activities in a timely and effective manner.

27. A summary of financing for ENREP is presented in Table 1.

Table 1. ENREP Summary of Financing (US\$ millions)

| Component | Original IDA Credit | GoE Original Counterpart Funding | AF IDA Credit | ESME Trust Fund | GoE Counterpart Funding for AF | Total |
|--|----------------------------|---|----------------------|------------------------|---------------------------------------|--------------|
| 1. Reinforcement and Expansion of Electricity Network | 100 | 20 | 90 | 0 | 10 | 220 |
| 2. Access Scale-Up | 50 | 20 | 70 | 0 | 10 | 150 |
| 3. Market Development for Renewable Energy and Energy Efficient Products | 40 | 10 ⁹ | 20 | 5 | - | 75 |
| 4. Modernization Support | 10 | 0 | 20 | 0.00 | 23 | 53 |
| Sub-total | 200 | 50 | 200 | 5 | 43 | 498 |

⁹ From beneficiaries' equity contribution.

III. Proposed Changes

| Summary of Proposed Changes | |
|--|---|
| The proposed AF will finance: (a) expanded investments in on-grid electrification; (b) scale-up of credit facilities for the financing of stand-alone, renewable energy systems and energy efficient products; and (c) additional technical assistance in support of sector modernization. A closing date extension of 18 months, to June 30, 2019, is proposed to allow sufficient time for completion of activities under the project, including the AF. Disbursement estimates, components and costs, and the implementation schedule are revised to reflect the scale-up of activities and extension of the closing date. The project results framework is also updated to reflect the expanded scope of investments and the new closing date. | |
| Change in Implementing Agency | Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>] |
| Change in Project's Development Objectives | Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>] |
| Change in Results Framework | Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>] |
| Change in Safeguard Policies Triggered | Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>] |
| Change of EA category | Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>] |
| Other Changes to Safeguards | Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>] |
| Change in Legal Covenants | Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>] |
| Change in Loan Closing Date(s) | Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>] |
| Cancellations Proposed | Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>] |
| Change in Disbursement Arrangements | Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>] |
| Reallocation between Disbursement Categories | Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>] |
| Change in Disbursement Estimates | Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>] |
| Change to Components and Cost | Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>] |
| Change in Institutional Arrangements | Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>] |
| Change in Financial Management | Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>] |
| Change in Procurement | Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>] |
| Change in Implementation Schedule | Yes [<input checked="" type="checkbox"/>] No [<input type="checkbox"/>] |
| Other Change(s) | Yes [<input type="checkbox"/>] No [<input checked="" type="checkbox"/>] |
| Development Objective/Results | |
| Project's Development Objectives | |
| Original PDO | |
| The Development Objectives of the Electricity Network Reinforcement and Expansion Project are to improve reliability of the electricity network and to increase access to electricity services in Ethiopia. | |
| Change in Results Framework | |
| Explanation: | |
| Given the expanded project scope as result of the AF, the results framework has been updated to increase | |

the target value of the PDO level indicators related to: (a) number of households connected to the grid; (b) number of households with access to modern energy services (off-grid); (c) number of direct project beneficiaries (and related percentage of females); (d) System Average Interruption Frequency Index, SAIFI; and (e) System Average Interruption Duration Index, SAIDI. The baseline values for the SAIFI and SAIDI indicators have been revised to focus specifically on the areas targeted by the project, although the project can impact significantly the whole network performance.

Intermediate indicators have been updated accordingly and additional indicators included in the results framework to capture: (a) the additional investments in the rehabilitation/expansion of the transmission and distribution network; (b) the further dissemination of renewable energy and energy efficiency products; (c) the increased institutional capacity of the key sector agencies as a result of technical assistance activities; (d) the dissemination of energy saving lamps and cook stoves (new indicators); and (e) citizen engagement/beneficiary feedback (new indicator). Baseline values for the indicators related to electricity sales are specific to the areas impacted by the project. To monitor women’s accessibility to financing offered by the MFIs, a gender focused breakdown has been added to the following indicators: “Total amount of loans given to households (HHs)” and “Number of loans given to households”. In addition, the indicator related to the number of awareness events was revised to focus on gender informed awareness events in the future.

Several intermediate indicators have been deleted as they have become redundant after the utility unbundling reform, or they no longer apply due to the discontinuation of certain activities following the project mid-term review (including, for instance, the advisory services for asset split). The connection program financed under the AF will target the household segment in particular, where most of suppressed demand lies. Public facilities have been given more priority under the GoE’s electrification program. As a result, the related indicator captures household connections only; the previously used indicators “Number of Schools Connected” and “Number of Health Centers Connected” have been deleted. Indicators related to sales and losses have been deleted as well as since it is impossible to track results from project areas only. The updated results framework is presented in Annex 1.

Compliance

Covenants - Additional Financing (ENREP ADDITIONAL FINANCING - P155563)

| Source of Funds | Finance Agreement Reference | Description of Covenants | Date Due | Recurrent | Frequency | Action |
|-----------------|-----------------------------|--|----------|-------------------------------------|-----------|--------|
| IDA | Schedule 2 Section V.A.1 | The Recipient shall implement the plan furnished to the Association under the original project which is designed to ensure the financial viability of EEP and EEU, during the next three years (Financial Viability Plan). | | <input checked="" type="checkbox"/> | Yearly | New |
| IDA | Schedule 2 Section V.A.2 | No later than May 15 of each year | | <input checked="" type="checkbox"/> | Yearly | New |

| | | | | | | |
|-----|------------------------------------|---|-------------|--------------------------|--|-----|
| | | during the Project implementation, the Recipient shall prepare and furnish to the Association an annual progress report on the implementation and update of the Financial Viability Plan including measures recommended to ensure the continued financial viability of the Recipient's Power Sector, particularly in light of the restructuring of the Ethiopian Electric Power Corporation pursuant to the regulation of the Council of Ministers of the Recipient No. 302/2013. | | | | |
| IDA | Schedule 2 Section V.B.1 (a) | The Recipient shall cause EEP to: recruit individual consultant(s), within three months of the effective date, in accordance with the terms of reference and with qualifications and experience satisfactory to the Association, to advise EEP and EEU on financial management matters including addressing the past audit issues and the | 31-Dec-2016 | <input type="checkbox"/> | | New |

| | | | | | |
|--|--|--|--|---------------|--|
| | | recommendations of the study on EEP's fiduciary accountability system. | | | |
| Conditions | | | | | |
| Source of Fund | | | | | |
| IDA | | Article V. 5.01 (a) EEP Subsidiary Agreement | | Effectiveness | |
| Description of Condition | | | | | |
| The EEP Subsidiary Agreement has been entered into between the Recipient and EEP. | | | | | |
| Source of Fund | | | | | |
| IDA | | Article V.5.01 (b) DBE Subsidiary Agreement | | Effectiveness | |
| Description of Condition | | | | | |
| The DBE Subsidiary Agreement has been entered into between the Recipient and DBE. | | | | | |
| Source of Fund | | | | | |
| ESME | | Schedule 2 Section IV.B.1(i) | | Disbursement | |
| Description of Condition | | | | | |
| Notwithstanding the provisions of Part A of Section IV.A of the Grant Agreement, no withdrawal shall be made (a) in respect of payments made prior to the date of the Grant Agreement; and (b) under category 1 unless the Steering Committee has been established by the Recipient. | | | | | |
| Source of Fund | | | | | |
| ESME | | Schedule 2 Section IV.B.1 (ii) | | Disbursement | |
| Description of Condition | | | | | |
| Notwithstanding the provisions of Part A of Section IV. A of the Grant Agreement, no withdrawal shall be made (a) in respect of payments made prior to the date of the Grant Agreement; and (b) under category 1 unless the Recipient, through DBE, has adopted the Collateral Support Facility Manual, satisfactory to the World Bank which shall, as a minimum, address the following elements of the Collateral Support Facility: (a) eligibility criteria for potential PSEs; (b) detailed conditions to be met by potential PSE in order to receive the benefits of the Collateral Support Facility; (c) mechanisms for delivery of the proposed Collateral Support; (d) decision mechanisms for the governance of the Collateral Support Facility; (e) environmental and social risk management arrangements; and (f) monitoring and evaluation system, including financial management arrangement and details on auditing said Collateral Support Facility. | | | | | |
| Source of Fund | | | | | |
| ESME | | Schedule 2 Section IV.B.1 (iii) | | Disbursement | |
| Description of Condition | | | | | |
| Notwithstanding the provisions of Part A of Section IV. A of the Grant Agreement, no withdrawal shall be made (a) in respect of payments made prior to the date of the Grant Agreement; and (b) under category 1 unless the withdrawal request has been submitted following the procedures and mechanisms | | | | | |

| | | | | | |
|--|---------------|------------------------------|--|------------------------------|---------------------------------|
| set forth in the Collateral Support Manual and accompanied by supporting documentation satisfactory to the World Bank. | | | | | |
| Risk | | | | | |
| Risk Category | | | | Rating (H, S, M, L) | |
| 1. Political and Governance | | | | Moderate | |
| 2. Macroeconomic | | | | Moderate | |
| 3. Sector Strategies and Policies | | | | High | |
| 4. Technical Design of Project or Program | | | | Moderate | |
| 5. Institutional Capacity for Implementation and Sustainability | | | | Substantial | |
| 6. Fiduciary | | | | High | |
| 7. Environment and Social | | | | Substantial | |
| 8. Stakeholders | | | | Low | |
| 9. Other | | | | | |
| OVERALL | | | | Substantial | |
| Finance | | | | | |
| Loan Closing Date - Additional Financing (ENREP ADDITIONAL FINANCING - P155563) | | | | | |
| Source of Funds | | | Proposed Additional Financing Loan Closing Date | | |
| Energy SME Support to SSA | | | 28-Feb-2018 | | |
| IDA Credit | | | 30-Jun-2019 | | |
| Loan Closing Date(s) - Parent (Electricity Network Reinforcement and Expansion Project (ENREP) - P119893) | | | | | |
| Explanation: | | | | | |
| As activities under the parent project and AF are closely aligned, the closing date of the parent project will be the same as that proposed for the AF. An additional 18 months is required to complete the original project and proposed AF activities. The proposed new closing date is June 30, 2019. | | | | | |
| Ln/Cr/TF | Status | Original Closing Date | Current Closing Date | Proposed Closing Date | Previous Closing Date(s) |
| IDA-51260 | Effective | 31-Dec-2017 | 31-Dec-2017 | 30-Jun-2019 | |
| Change in Disbursement Estimates (including all sources of Financing) | | | | | |
| Explanation: | | | | | |
| Disbursement estimates are updated to reflect the AF, the ESME Trust Fund grant, and the proposed new closing date. The carbon finance programs, although appraised together with the AF, are administered separately under Ci-Dev. They are regulated by the Emission Reduction Purchase Agreement to be signed between the beneficiary and Ci-Dev and have their own disbursement arrangements. In light of this, the disbursement schedule of the carbon finance programs is not included in the table below. | | | | | |
| Expected Disbursements (in USD Million) | | | | | |
| Fiscal Year | 2016 | 2017 | 2018 | 2019 | |

| Annual | 0.00 | 49.00 | 96.00 | 60 |
|---|----------|---|---------------|---|
| Cumulative | 0.00 | 49.00 | 145.00 | 205 |
| Allocations - Additional Financing (ENREP ADDITIONAL FINANCING - P155563) | | | | |
| Source of Fund | Currency | Category of Expenditure | Allocation | Disbursement % (Type Total) |
| | | | Proposed | Proposed |
| IDA | SDR | (1) Goods, works, non-consulting services, consultants' services and Operating Costs for Parts 1, 2, and 4.1 of Project | 127.80 | 100 00 |
| IDA | SDR | (2) Goods, works and services, required for Sub-Projects and to be financed under Sub-credits under Part 3.1 and 3.2 of the Project (DBE) | 14.20 | 100 percent of amount paid under the sub-credits. |
| | | Total: | 142.00 | |
| ESME | USD | (1) Collateral support under Part 3.3 of the Project. | 4.50 | 50 percent of total collateral amount approved under the sub-credits for eligible PSEs. |
| ESME | USD | (2) Goods, consulting and non-consulting services, operating costs, Training and workshops under Parts 3.4, 3.5 and 3.6 | 0.50 | 100.00 |
| | | Total: | 5.00 | |
| Components | | | | |
| Change to Components and Cost | | | | |
| Explanation: | | | | |
| Activities under the AF will be integrated into the existing ENREP components. Therefore, the scope of the AF is as follows: | | | | |
| <ul style="list-style-type: none"> • Component 1: Reinforcement and Expansion of the Electricity Network (US\$90 million equivalent from IDA, US\$10 million from GoE). Investments under this component focus on segments of the national transmission network that have been assessed as critical to enable the targeted expansion of electrification pursued under the UEAP and to increase grid coverage in rural areas. The three transmission lines proposed to be financed will improve the quality and reliability of electricity supply in areas currently connected through long overloaded MV lines. They will also enable additional supply capacity to connect towns to be electrified under the UEAP as well as irrigation schemes. Investments | | | | |

entail: (a) construction of three single circuit 230kV lines (Azezo-Chilga, 43 km; Fincha-Shambu, 42 km, and Metu-Masha, 66 km) with a total length of 151 km; and (b) substations upgrading/expansion.¹⁰ Overall investment costs including contingencies are estimated at approximately US\$100 million. IDA will finance US\$90 million while the GoE will provide co-financing to cover costs in local currency, estimated in the amount of US\$10 million.

| ENREP AF Component 1 | Total Costs (US\$ millions) |
|---|--|
| 1. Azezo-Chilga 230kV Transmission Project (43 km line + 2 substations) | 26.0 |
| 2. Finchaa Amerti Neshi-Shambu 230 kV Power Transmission Project (42 km line + 2 substations) | 25.0 |
| 3. Metu-Masha 230kV Power Transmission Project (66 km line + 2 substations) | 33.0 |
| <i>Total excluding contingencies</i> | <i>84.0</i> |
| TOTAL financing required (including contingencies) | 100.0 |
| <i>Financed by IDA</i> | <i>90.0</i> |
| <i>Financed by GoE</i> | <i>10.0</i> |

- **Component 2: Access Scale-up (US\$70 million equivalent from IDA, US\$10 million from GoE).** Investments under this component will expand the geographic coverage of ENREP's Component 2 to six new towns. Similarly to the eight towns initially targeted under ENREP, these additional towns are areas where high demand for electricity calls for immediate increase of distribution capacity. Investments as detailed below include: (a) substation upgrading and expansion; (b) rehabilitation/upgrading of existing transformers, MV and LV lines; and (c) construction of new MV and LV lines (790 km and 1,280 km, respectively). The AF will also re-launch the connection program initially envisaged under ENREP. EEU aims to add 405,500 connections in the short term in all areas covered by the project (including those initially targeted by ENREP). The AF will finance 150,000 of these connections and cover costs related to connection equipment, meters, and installation. Overall investment costs under Component 2 total approximately US\$80 million, including US\$48 million for investments in upgrading and expansion of the distribution network in the targeted six towns and US\$32 million estimated for the connection program. The GoE agreed to provide co-financing to cover costs in local currency, estimated at US\$10 million.

| ENREP AF Component 2 | | | | |
|---|--------------------------|---|---------------------------------------|--|
| Location | Substation Refurbishment | 15 kV Lines, LV Lines and Street Lights | Distribution Transformers (15/0.38kV) | Total by Town (US\$ millions) |
| Harar | 5.8 | 4.9 | 1.3 | <i>12.0</i> |
| Adigrat | 2.3 | 4.4 | 0.4 | <i>7.1</i> |
| Debre Markos | 0.3 | 4.3 | 0.4 | <i>5.0</i> |
| Shashemene | 2.5 | 5.4 | 0.6 | <i>8.5</i> |
| Gondar | 3.2 | 6.9 | 1.3 | <i>11.4</i> |
| Woleyita Soddo | 0.3 | 3.4 | 0.3 | <i>4.0</i> |
| <i>Sub-total distribution investments</i> | | | | 48.0 |
| <i>Connection program</i> | | | | 32.0 |
| TOTAL financing required (including contingencies) | | | | 80.0 |
| <i>Financed by IDA</i> | | | | <i>70.0</i> |
| <i>Financed by GoE</i> | | | | <i>10.0</i> |

¹⁰ Azezo, Fincha and Metu substations will be upgraded and expanded to accommodate a new bay and three new substations will be constructed at Chilga, Masha, and Shambu. New substations will be equipped with one 230/33kV-20MVA transformer each. At procurement stage, EEP will consider as an option a second transformer to ensure N-1 reliability.

- **Component 3: Market Development for Renewable Energy and Energy Efficient Products (US\$20 million equivalent from IDA and US\$5 million from ESME Trust Fund).** Additional financing in the amount of US\$20 million will be made available to DBE to expand credits to MFIs and PSEs, with the same objectives and based on the same arrangements currently in use under ENREP.

In addition to the proposed IDA credit, the US\$5 million grant from the ESME Trust Fund is meant to support and expand the results achieved by the credit lines in promoting local entrepreneurship, investment in and use of renewable energy technologies and products. The grant will be recipient-executed and fund the following four sub-activities:

- Collateral Support Facility for PSEs participating in the Credit Line (US\$4.5 million).* PSEs applying for sub-loans have to provide collateral in an amount equal to one hundred percent of the sub-loan they require. ESME funds will be used to establish a collateral support facility that will cover up to 50 percent of collateral requirement while the remaining amount is covered by the borrower. As a result, finance under the credit line will be more accessible to a wider range of small- and medium-sized retailers. The facility will be administered by a separate, ring-fenced unit of DBE. It will be governed by a Steering Committee comprised of sector experts and stakeholders from the MoWIE and the Ministry of Finance and Economic Cooperation (MoFEC), and supervised in its daily activities by a Management Committee. A fee for the risk coverage will be charged to borrowers on top of the interest rate paid on the sub-loans.
- Technical Assistance to MFIs (US\$0.05 million).* Technical assistance will be deployed to strengthen the capacity of MFIs in administering their credit line as well as their coordination with other stakeholders (notably Regional Energy Bureaus) involved in facilitating access to credit by households. Capacity building will target coordination and project management, community engagement, product development and marketing, and staff training. In addition, specific training will be provided to middle and senior managers on technologies (for example, Lighting Global products), business development for MFIs in the renewable energy sector, and financing options.
- Consumer Education and Awareness for Off-Grid Energy Products in Emerging Regions (US\$0.3 million).* The grant will support the consumer education and awareness campaign to be undertaken by the GoE in close collaboration with the media, private sector companies, and civil society, with the ultimate objective to increase the demand and build a sizeable market for off-grid lighting products in Ethiopia.
- Technical Assistance to DBE to Implement a Tracking and Monitoring System for Off-Grid Energy Products (US\$0.15 million).* The grant will be used to fund the hardware for the mobile-based (SMS-based), after sale warranty activation system currently being considered under the Ci-Dev programs. A few local software developers have been identified to design a platform for SMS data aggregation compatible with the technical features of Ethiopia's telecom network.

The two programs approved for Ci-Dev support, which as parallel programs are negotiated and disbursed independently, will also support the sustainable dissemination of off-grid renewable energy products¹¹ in conjunction with the activities envisaged under Component 3. Both programs are designed as result-based financing schemes and will entail:

- Off-Grid Renewable Energy Program (US\$11.6 million).* This program will finance post-sale and post-warranty services for solar products, including battery replacement. It will also help

¹¹ Including household biogas digesters, solar lanterns, and solar home systems.

strengthen the operation and maintenance of solar technologies. The GHG emission reductions associated with the nationwide uptake of off-grid renewable energy technologies for lighting and other domestic, commercial, or public facilities' energy needs will be purchased by Ci-Dev upon certification by the United Nation Framework Convention on Climate Change. In particular, Ci-Dev will purchase a total amount of 1,000,000 tCO₂e carbon credits from this program for the period 2015-2024.

- (b) *Clean Cooking Energy program (US\$9.4 million)*. The main focus of this program will be to support the shift from non-renewable biomass to biogas as cooking fuel. Carbon credits will be associated with the use of cleaner cooking technologies, including, in addition to biogas digesters, improved cook stoves and ethanol cook stoves. Ci-Dev will purchase a total amount of 800,000 tCO₂e carbon credits from this program for the period of 2015-2024. Carbon revenues will replenish the biogas subsidy fund established by the GoE, which currently subsidizes 30 percent of the investment cost of bio-digesters. The program will particularly benefit poor and vulnerable households, who are forced to rely primarily on wood fuels for cooking, with severe consequences on their health and the environment.

Ci-Dev will also provide a separate, recipient-executed grant in the amount of US\$0.35 million to support capacity building to the Climate and Carbon Finance Unit established under DBE for implementation of the two programs.

Access to electricity services through off-grid, renewables-based solutions has the potential to improve life standards and provide opportunities for productive uses of energy, which can be particularly empowering for women. The shift to clean cooking practices will reduce the time that women spend fetching biomass fuels for cooking and reduce indoor pollution, which poses a severe threat to people's health. To ensure equitable benefits and opportunities under Component 3 activities, several gender interventions will be implemented. Firstly, it will be ensured that a gender representative is part of the Technical Committee chaired by the MoWIE and established to review the technical quality of the products and services provided by PSEs that are assessed to be eligible for sub-loans, as well as of the Steering Committee to be established to oversee the governance of the collateral support facility. Secondly, the technical assistance to MFIs will include an investigation into the different constraints that men and women face in accessing credit to purchase renewable energy devices and technologies, as well as the actions that need to be put in place (for example, gender training for credit officers) to ensure equitable access to credit. Thirdly, it will be required that women's groups are engaged in and consulted for the consumer education and awareness campaign for off-grid energy products in emerging regions, so as to ensure that both men and women have full access to information on products. Fourthly, sex-disaggregated information will be collected through the proposed SMS-based tracking and monitoring system and maintenance forms. Lastly, it is proposed that a gender specialist supports the implementation of the outlined gender actions and works in collaboration with the various counterparts such as DBE and the MoWIE to build internal capacity.

- ***Component 4: Modernization Support (US\$20 million equivalent from IDA, US\$23 million from GoE)***. This component will finance assistance for strengthening the financial sustainability and the organizational and operational capacity of EEU and EEP. Specifically, this component will include:

- (a) *Revenue Protection Program (RPP)*. The RPP is intended to permanently protect the revenues that EEU earns from electricity sales to large and medium customers. Electricity consumers supplied in medium and high voltage, as well as consumers supplied in low voltage but with large consumption, constitute a small fraction of the 2.4 million customers currently served by EEU. Nonetheless they account for 65 percent of the total electricity billed. Protecting the revenues generated by this high value customer segment on a permanent basis is highly relevant for EEU's

operational and financial sustainability. The RPP entails ensuring that such customers are billed in a systematic manner in accordance to their actual consumption, which must be accurately metered. As a result, non-technical losses associated with this high value segment can be drastically reduced. This sub-component will finance: (a) supply and installation of advanced metering infrastructure at the premises of high and medium voltage users, including communication devices that allow to periodically transmit their records; (b) establishment of a Metering Control Center (MCC), including the organizational arrangements and the information technology infrastructure needed for its operation – which analyzes, processes, and monitors the information provided by the metering system; and (c) installation of state-of-the-art Meter Data Management software to monitor, detect and correct irregular conditions in electricity use, as well as training of MCC staff for its proper use.

- (b) *Live Line Maintenance*. Similarly to the assistance already being provided to EEP, the project will help EEU implement ‘live line’ maintenance of infrastructure; that is, maintenance performed without disconnecting assets/systems from the power grid. This practice requires the adoption of specific arrangements. Tools and personal protection equipment designed and manufactured to allow maximum safety need to be purchased. Staff who join live maintenance crews must be attentively selected and properly trained. Crews also need to coordinate smoothly with staff of other units (networks operations, regular maintenance, and so on.). Furthermore, training in all dimensions (technical aspects, safety issues, and so on.) must be systematically provided and staff capacity periodically assessed.
- (c) *Capacity Building and Community Development Initiatives*. Capacity building, to be identified in detail as part of the NES that is currently under preparation, will be provided to EEP and EEU. In addition, ad-hoc training and capacity building will be developed in response to impending needs that may emerge as the sector transition is completed. In preparing this project, the World Bank reviewed the lessons learned from resettlements undertaken previously in energy projects financed by the GoE. The review underscored the importance of ensuring basic services in resettlement sites, as well as development of livelihood activities for vulnerable groups. Therefore, this component will support community development initiatives that will be implemented based on the needs assessment conducted to identify localized impact on household livelihoods in the project affected areas. The project will emphasize strong community participation and support livelihood restoration measures.
- (d) *Supervising Engineers*. Project supervision on the part of EEP is severely constrained by the lack of adequate staffing resources. This has emerged as a major cause of delays during ENREP implementation. To ensure adequate supervision of the additional investments envisaged under the AF, this component will cover the costs of two Supervising Engineers, to be deployed for Components 1 and 2, respectively, from the onset of project implementation. The Supervising Engineer assigned to Component 2 will also carry out detailed designs of investments.
- (e) *Support to Implementation of the Enterprise Resource Planning System*. The ERP system being provided to EEU and financed by ENREP and the GoE consists of a set of information systems to support EEU operations in all business areas. Specifically, it includes an ERP tool; a Customer Centric Applications (CCA) system; and a Decision Support System (DSS). The ERP comprises several modules related to management of corporate functions and assets (finance and controlling; human resources and payroll; procurement and inventory; quality management; project management; enterprise asset management). The CCA supports all commercial processes and activities (billing; customer care; meter and device management); the DSS provides for data management (Energy Data Management and Business Intelligence and Data Warehouse). The integration of these systems will have a substantial impact on EEU, requiring reengineering and

customization of processes and practices in all business areas; intensive training of staff; and eventually changes in the organizational structure to adapt to the new functionalities. The AF will finance an external expert to support EEU in all aspects of implementation of the ERP system. They will help create counterpart teams within EEU to interface with the ERP contractor; support other organizational arrangements and advice in the process of reengineering and customization of EEU operations as needed.

- (f) *Geographic Information System (GIS)*. The AF will finance a GIS system provided to EEU and specifically dedicated to collect and keep information related to customers and network assets. This is critical to ensure proper use of the functionalities provided by the ERP system. Without reliable information on customers and the infrastructure used to serve them, the system would become ineffective and, as a result, there would be no improvements in the operational performance of EEU.

In addition to the assistance defined above, financing will allocated to cover part of the cost of the ERP system, which totals US\$40 million. US\$10 million have been provided under ENREP, leaving a balance of US\$30 million. US\$7 million will be covered by the AF, the remaining cost will be borne by the GoE.

| ENREP AF Component 4 | Costs (US\$ millions) |
|--|------------------------------|
| 1. Revenue Protection Program | 4.00 |
| 2. Live Line Maintenance | 1.00 |
| 3. Capacity Building and Community Development Initiatives | 2.00 |
| 4. Supervising Engineers | 4.00 |
| 5. Support to ERP Implementation | 0.50 |
| 6. GIS System | 1.50 |
| 7. Balance of ERP Costs | 30.00 |
| TOTAL financing required | 43.00 |
| | <i>Financed by IDA</i> |
| | <i>20.00</i> |
| | <i>Financed by GoE</i> |
| | <i>23.0</i> |

Summary of changes to project components and costs

The updated component costs shown in the table below reflect the IDA AF, ESME Trust Fund support, and GoE counterpart funding.

| Current Component Name | Proposed Component Name | Current Cost (US\$M) | Proposed Cost (US\$M) | Action |
|---|---|-----------------------------|------------------------------|---------------|
| Reinforcement and Expansion of Electricity Network | Reinforcement and Expansion of Electricity Network | 120.00 | 220.00 | Revised |
| Access Scale-Up | Access Scale-Up | 70.00 | 150.00 | Revised |
| Market Development for Renewable Energy and Energy Efficient Products | Market Development for Renewable Energy and Energy Efficient Products | 50.00 | 75.00 | Revised |
| Modernization Support | Modernization Support | 10.00 | 53.00 | Revised |
| | Total: | 250.00 | 498.00 | |
| Other Change(s) | | | | |
| | | | | |

| Implementing Agency Name | Type | Action |
|---|------------------|---------------|
| Ethiopian Electric Power | Power Company | No change |
| Development Bank of Ethiopia | Development Bank | No change |
| Change in Implementation Schedule | | |
| <p>Explanation:</p> <p>Implementation arrangements remain the same as those defined for the parent project. Specifically, EEP will implement Components 1, 2, and 4; DBE will implement Component 3.</p> <p>Following the unbundling reform, the implementation responsibilities for ENREP entrusted to EEPCo were transferred to EEP. The original Project Agreement (PA) was amended accordingly. The revised PA, which was signed on August 28, 2014, established the institutional arrangements under which EEP would implement ENREP’s Components 1, 2 and 4. In particular, EEP was mandated to appoint a dedicated team, including three Project Coordinators, one for each project component. The same structure and arrangements will be used to implement the AF activities. In addition, EEP will sign a Memorandum of Understanding (MoU) with EEU defining coordination arrangements for the implementation of investments (such as those associated to the connection program) and technical assistance to be deployed under Component 4, which strictly concern EEU. DBE will continue to play the role of a financial intermediary (Component 3) in collaboration with MFIs and the MoWIE, which will provide market development and technical assistance support. At the time of approval of the original project, assessment of DBE capacity was done in line with the requirements for financial intermediary projects.</p> <p>Under the parent project, DBE and the MoWIE were also mandated to implement selected activities of Component 4. They will retain such responsibility for the activities that are ongoing under the ENREP, while they will not be responsible for any additional activity financed through the AF. However, it is important to note that financial management functions associated with the activities to be implemented by the MoWIE will be handled by DBE. The MoWIE will perform all technical functions and DBE will manage the related financial management aspects.</p> <p>The project implementation schedule has been updated to reflect the AF activities and new project closing date agreed to with the implementing agencies.</p> | | |
| Appraisal Summary | | |
| Economic and Financial Analysis | | |
| <p>Explanation:</p> <p>Ethiopia’s electrification program is best financed through public investment. Expanding electricity access is recognized as a key social goal in the country and a main element in attaining massive poverty reduction and shared prosperity in line with the ultimate objective to achieve the middle-income status. In addition, in a context where power companies remain publicly-owned, reinforcement, rehabilitation and expansion of the national electricity network as well as a significant scale up of connections naturally require public financing. Expansion of on-grid electrification is more efficiently pursued through a market-based approach, geared towards eliciting investment by private firms and households. In this context, financial support aims to provide adequate access to credit, which is critical to enable private participation.</p> <p>The UEAP is one of the largest electrification programs being implemented in Africa, and rightly so given the size of the country and the magnitude of the electricity access challenge. The results it has achieved in terms of service coverage in rural areas are remarkable. The UEAP must be continued and so do investments in distribution capacity in urban centers. Network investments are a necessary condition to</p> | | |

enable electricity access; nonetheless, they are not sufficient. A renewed focus on connecting people is mostly needed to ensure that Ethiopia’s people and firms benefit from electrification. The investments needs associated to electrification exceeds the capacity of Ethiopia’s public finances. Historically, donor financing has provided critical support and will continue to play an important role in the near future.

Compared to other donors, the World Bank brings significant added value is light of its vast experience in supporting electricity access scale up through diversified, sector-wide approaches and private sector participation in the power sector in Africa as well as other developing regions. The Bank’s energy portfolio in Ethiopia, including recently closed and ongoing operations, spans all energy sub-sectors. Also, the AF is poised to maximize the development impact of ENREP, by expanding network investments and supporting an unprecedented push on connecting people. The market-based approach developed under the umbrella of the Lighting Africa program in partnership with the IFC is a Bank’s trademark successfully implemented across Africa and whose results are now manifest in Ethiopia as well. The Bank’s energy portfolio is designed in a strategic and integrated manner to best serve Ethiopia’s needs. In addition to investments financing and technical assistance deployed at project level, the Bank remains closely engaged at sector level. Policy support and advisory services provided on a programmatic basis under the Ethiopia Energy Sector Review and Strategy can help bring the energy sector on a more solid footing, which in turn will strengthen the sustainability of the electrification program and the associated investments.

An economic and financial analysis has been carried out to assess the economic and financial viability of the AF. Economic and financial internal rates of return and net present values (NPVs) by component are calculated using a standard cost-benefit methodology. The analysis focuses on costs and benefits that are strictly related to the activities funded by the AF credit.

The economic evaluation is restricted to the project activities that generate benefits for which an economic value can be clearly identified and measured, notably benefits associated with investments under Components 1, 2, and 3. Component 4 is excluded because of the difficulty in valuing the outcomes of technical assistance.

The financial evaluation, which by definition is carried out from the perspective of the implementing agency, focuses on Components 1 and 2 only. Component 3 is excluded from the financial analysis because of its particular scope (market development) and the specific financing framework used, which entails credit facilities for retailers and energy end-users. The full economic and financial analysis is presented in Annex 2.

Results. The economic analysis shows that Components 1, 2, and 3 are economically viable with economic internal rates of return (EIRRs) for each individual component well beyond the recommended threshold of six percent. The table below presents a summary of the EIRR and NPV for each component.

| Economic Analysis of ENREP AF | NPV (6% discount rate) | EIRR |
|--|-----------------------------------|-------------|
| 1: Reinforcement and Expansion of the Electricity Network | US\$272.6 million. | 17.1% |
| 2: Access Scale-up | US\$471.8 million. | 33.3% |
| 3: Market Development for Renewable Energy and Energy Efficient Products | US\$20.54 per replaced lantern | 31.1% |

The financial analysis also demonstrate the financial viability of Components 1 and 2 as summarized in the table below. The analysis assumes average tariff increases as indicated in the feasibility study prepared by EEP for investments under component 2 (details provided in Annex 2).

| Financial Analysis of ENREP AF | NPV (1.5% discount rate) | FIRR |
|---|-------------------------------------|-------------|
| 1: Reinforcement and Expansion of the Electricity Network | US\$21.8 million | 5.6% |
| 2: Access Scale-up | US\$137.8 million | 15.9% |

Technical Analysis

Explanation:

The investments in transmission and distribution infrastructure proposed for financing under the AF have been selected based on the Ethiopia Power System Expansion Master Plan Study, which identified priority lines to be built/rehabilitated and operational bottlenecks to be addressed to meet fast growing electricity demand. The dissemination of stand-alone renewable energy products is also critical to promoting off-grid access in areas far removed from the grid. The market-based approach promoted under Component 3 can greatly contribute to this objective.

Transmission investments. The three proposed transmission lines are meant to improve the supply of electricity to areas currently connected through overloaded and unreliable MV lines. They are also intended to enable supply to new areas that are expected to be electrified under the UEAP and for planned irrigation schemes. Given projected loads, different options were considered and optimal network configurations were selected based on system analysis (including load flow and short circuit analysis using PSS/E). Voltage level, conductor sizes, and basic equipment specifications were selected taking into account technical and operational standards, as well as planning criteria in line with international practices. Further refinement is expected during design stage.

EEP has implemented similar transmission projects with acceptable standards of quality, including previous Bank-funded projects. The agency has well-qualified staff to undertake/supervise the design engineering, planning, and implementation of investments. However, the staff is overstretched given multiple ongoing contracts worth billions of US dollars. It was therefore agreed that: (a) project implementation will be based mainly on an Engineering, Procurement and Construction (EPC) contract to minimize risks due to lack of coordination and to ensure full responsibility by contractors; and (b) a Supervising Engineer will be hired to oversee project implementation in conjunction with the EEP team, who will also be further trained.

Distribution investments and access scale-up: The proposed six towns where investments will be focused have a distribution system that is overloaded and outdated, with components aged up to 40 years. As a result, the voltage profile is poor, outages are frequent, and there is no possibility to connect new customers. The proposed investments will provide much needed additional distribution capacity and help improve system reliability significantly. The investment scope has been defined based on a feasibility study prepared by EEP and reviewed by the Bank team. Revisions to some of the assumptions made in the study and alternative design options and technical choices were discussed and agreed upon with EEP and reflected in the investments' scope. Operational constraints at the utility level were taken into account to minimize level of spare parts stocks. In particular replacement of uninsulated conductors with ABC conductors was agreed upon to ensure more safety and reliability of LV networks.

EEP is implementing similar works under Component 2 of ENREP. Similar technical standards and criteria will be used for design studies and preparation of bidding documents. The main technical issue anticipated is that rehabilitation works will require close involvement of EEU in the studies and execution of works to minimize interruption and ensure compatibility of equipment. EEP and EEU will coordinate based on the aforementioned MoU.

With the increasing network capacity, EEU will be able to connect new customers. It was therefore agreed to procure connection cable, accessories, and meters and mobilize trained staff to intensify connections in total compliance with safety requirements.

Similarly to the transmission component, distribution investments are not complex, but will require the hiring of a Supervising Engineer to support both detailed design and implementation of investments, and ensure that works are performed using modern technological practices, as well as that contracts are managed properly and implemented within the agreed timeline and budget.

Market Development for Renewable Energy and Energy Efficient Products: Only solar lamps that comply with the Lighting Global Minimum Quality Standards and have a warranty period of two years are currently eligible to be included in the program. Inclusion of plug-and-play SHSs up to 100 KW will enable further development of the market. Moreover, the International Finance Corporation is working closely with the MoWIE and relevant stakeholders to enforce high quality standards. For the biogas plants financed by the lines of credit allocated to MFIs, the National Biogas Program has regional offices that are equipped with manpower and infrastructure to provide technical support to the Biogas Construction Enterprises, as well as to implement the quality assurance and installation verification activities. A technical committee chaired by the MoWIE has been established and will be responsible for the technical review of all other products to ensure they meet minimum quality standards before any loan is approved. The carbon finance programs associated with Component 3 will be partially devoted to support this quality review process, as well as to ensure that adequate post-sale assistance is provided (warranty enforcement/extension, battery replacement subsidy, and so on).

Procurement and Financial Management

Explanation:

Procurement. Most contracts to be procured under the AF will be similar with regard to typology and size to those being procured under ENREP. While EEP's procurement risk is assessed as high, EEP is in the process of completing a procurement manual by customizing/updating the original manual used by EEPCo for ENREP implementation. Once ready, the updated procurement manual will be approved by the EEP/EEU Board of Directors and officially adopted. The newly adopted procurement manual will streamline procedures and standards for procurement functions.

Detailed procurement arrangements for each component of the AF will be as follows:

Component 1: Reinforcement and Expansion of the Electricity Network. An ICB (possibly EPC contract modality) will be used with one bidding process covering four lots. Three lots will be designed for transmission lines (one lot for each transmission line); the fourth lot will cover all substations. This strategy may be refined based on the market situations and are agreed to in the initial Procurement Plan (dated April 13, 2016).

Component 2: Access Scale-up. Procurement will relate to: (a) investments in distribution network rehabilitation and expansion as well as installation of connections in the six new towns targeted under the AF; and (b) installation of connections in the eight towns currently targeted by ENREP. Accordingly, procurement packages will include:

- (a) Works, including both network-related and connection-related works in the six new towns. These will be procured through a ICB/national competitive bidding (NCB) (post qualification) depending on package value with two lots, one for towns in the northern areas (Adigrat, Gondar and Debre Markos) and one for towns in the southern areas (Harar, Woleyita Soddo and Shashemene);
- (b) Goods supply contracts including poles, conductors, transformers, cross-arms, accessories, meters, and so on for investments in the six new towns;
- (c) Works related to installation of connections in the eight towns currently targeted under ENREP. An ICB/NCB process will be followed, most likely with multiple lots (one for each town or for a group of towns);
- (d) Goods supply contracts including connection cables and accessories, tools, meters and so on. for rolling out connections in the eight towns currently targeted under ENREP;
- (e) Service contract to support the enrollment and contracting of new customers in all towns. Tasks may include inspection of customers, internal wiring, registering and so on; and
- (f) Procurement of contracts, goods, works and non-consultancy services, prior review thresholds, and ICB/NCB methods remain the same as in the parent project. Domestic preference will apply following the provisions of the Bank's Guidelines.

Component 4: Modernization support. Procurement packages will include:

- (a) Supply and installation of advance meters, advance data management system, and metering control centers;
- (b) Supply of equipment and tools for live-line maintenance;
- (c) Multiple consulting service contracts (individual and/or firms) for capacity building targeting EEP and EEU;
- (d) Supervising Engineer's services contract for supervision of Component 1;
- (e) Supervising Engineer's service contract for detailed design and supervision associated with investments under Component 2;
- (f) Consulting service contract (individual consultant) to support implementation of the ERP system; and
- (g) Supply and installation of GIS technology.

Procurement arrangements and management established for the parent project will be used for the implementation of this AF. Challenges and procurement risks associated to the former implementing agency EEPCo, as they were identified during preparation of ENREP, also apply to EEP and therefore remain relevant under the AF.

A summary of EEP Procurement capacity assessment and an initial Procurement Plan are presented in annex 4.

Financial Management:

Financial management assessment. A financial management (FM) assessment was conducted to determine whether the implementing agencies have adequate financial management systems and capacity in place, in accordance with the Bank's Operational Policy/Bank Procedure (OP/BP) 10.00, *Investment Project Financing*. The assessment also identified key perceived financial management risks that may affect project implementation and proceeded to identify mitigation measures against such risks. The detailed FM assessment is presented in Annex 3.

The main strength of ENREP and one that will apply to the AF is that the project implementing units established within EEPCo have been substantially maintained at EEP. As a result, EEP has staff with

experience in Bank-financed projects. A key weakness, which has emerged since EEPCo's split, relates to uncertainties on EEP's opening balance, which has led to delays in submitting audit reports. In addition, EEP has inherited weaknesses in EEPCo financial management policies and practices. These issues are discussed in detail in Annex 3. The key take away is that EEP's true financial position is weaker than its financial statements seem to indicate.

While project audits have been so far acceptable and submitted on time, entity audits for both EEP and DBE have been consistently delayed. The EEP audit report for the year ended on July 7, 2015 is long overdue. In addition, the audit report for the period from the split date to July 7, 2014, was issued with a disclaimer opinion. The issues leading to such opinion are described in Annex 3.

The Bank has signaled to the GoE and its energy sector agencies the strong need for credible commitment and determination in resolving the issues underlying the disclaimer opinion. Two main measures have been identified and agreed with the GoE. The first entails the establishment of a task force involving all key stakeholders, including the Management and the Board of the power companies (EEP and EEU), the MoWIE (which has the role of Supervisory Agency), and the MoFEC, to ensure credible follow-up on a regular basis (minimum quarterly) on the actions needed to solve financial management issues. The second is an action plan with realistic timeframes to address entity audit and other financial management issues. The action plan has been prepared and will be implemented by EEP/EEU Management and closely monitored by the Board. EEP/EEU Management will regularly update other relevant stakeholders and the World Bank on the progress made. Such updates will be provided regularly, at minimum quarterly together with submissions of interim financial reports (IFRs).

Both measures were duly implemented ahead of negotiations. The task force was established as recommended and met once; a robust action plan detailing actions and decisions to be taken by EEP Management, EEP/EEU Board, the MoWIE and the MoFEC was also submitted. Upon compliance with negotiation conditions, which was documented by the GoE (the action plan and the related Management Letter were submitted to the Bank on March 25, 2016¹²) and verified by the Bank, Management approved an exception to OP/BP 10.00 to allow the AF to be negotiated and submitted for Board approval notwithstanding the overdue entity audit report.

In addition, actions are being taken to address financial management issues, both in the short and the medium term. While DBE has developed procedure manuals, EEP is in the process of updating the former EEPCo's Finance Procedures and Accounting Manuals. Budget procedures are laid out and are consistent with government budget procedures. Efforts to strengthen budget utilization and control/monitoring aspects will be intensified. The Internal Audit units of both EEP and DBE will review project activities, including expenditures, at least once per year as reflected in a dated covenant. The Finance Head of EEP has formally communicated to the Bank, and internally to the units/departments implementing the different project activities, the FM staff who are assigned to the project. If needed, the Bank will provide training on disbursement and FM aspects. DBE and EEP will continue to prepare and submit quarterly unaudited IFRs. Format and content of the IFRs submitted so far under ENREP conform to the standards agreed with the Bank. The same format will be used for the AF, with some modifications to accommodate reporting for the activities financed under the ESME grant and implemented by DBE. Annual audits of the financial statements will continue to be conducted and audited financial statements submitted in a form and content satisfactory to the Bank. The terms of reference (ToR) for the audit currently in use will apply to the AF as well, with some modifications to accommodate auditing for the activities financed under the ESME grant.

The residual FM risk, after implementation of mitigation measures, is rated substantial.

¹² Letter from EEP ref no co/2.6/191/08 dated March 25 2016 and EEU letter ref no 2.6/41/08 dated March 25 2016

Disbursement arrangements:

Disbursement arrangements for the AF IDA credit remain the same as under the parent project, including disbursement methods and banking details.

For the ESME grant, a new Disbursement Letter has been prepared and eligible expenditures will be grouped under two main withdrawal categories, as follows:

- (1) *Collateral support facility:* eligible expenditures are up to 50 percent of the collateral amount required against the sub-loans provided to eligible PSEs under the credit line financed by IDA; and
- (2) *Technical assistance:* eligible expenditures include Goods, Consulting and Non-consulting Services, Operating costs, Training and Workshops to be undertaken by DBE in coordination with the MoWIE.

Additional arrangements concerning funds flow and disbursement are provided in detail in Annex 3.

Social Analysis

Explanation:

The availability or lack of energy (including electricity and other energy sources for lighting and cooking needs and for productive uses) has a sustainability impact on the delivery of basic services such as health, and education, as well as on environmental protection, private sector development, and rural development, all dimensions that critically affect life standards of the poor. Additional financing for expansion and upgrading of both distribution and transmission infrastructure will provide more secured electricity supply to households, schools and public facilities, enabling opportunities for study, work and small-scale business, and contributing to raising quality of life and improving safety at night.

Social safeguards instruments were prepared and implemented for the existing ENREP. No major safeguards issues have been reported under the parent project to date. Social impacts have been assessed for the new investments to be accommodated under the AF.

It is envisaged that the distribution lines financed under the AF will be installed in existing road corridors with limited compensation requirements. The AF will strengthen the ability of citizens to monitor service delivery, particularly metered versus not metered consumption and usage among beneficiaries, including vulnerable groups, as well as reduce leakage and illegal connections. As exact locations of investments are not yet known, a framework approach to safeguards has been adopted. Potential social impacts on the populations residing in the six towns targeted by the AF and related mitigations measures are addressed in the Resettlement Policy Framework (RPF) prepared by EEP, which has been publicly disclosed in-country and at the Bank's InfoShop on April 5, 2016.

On the other hand, investments in transmission infrastructure supported under the AF might lead to unavoidable social issues associated with land acquisition for sub-stations and tower activities. Potential negative impacts might include social interaction between the contractor's workers and local populations that might lead to HIV/AIDs, temporary disturbance during construction activities, loss of crop, temporary loss of access to common property resources, restriction on the height of trees to be grown below towers and conductors, loss of houses/structure on the land, and decrease in livelihood due to acquisition of private agricultural land. These impacts are addressed in the Resettlement Action Plan (RAP) and the Environmental and Social Impact Assessment (ESIA) – with the latter including an Environmental and Social Management Plan (ESMP) – that have been prepared specifically for the new transmission investments covered under the AF. The ESIA/ESMP and the RAP have been publicly disclosed in-country and at the Bank's InfoShop on April 8, 2016.

Risk and Safeguards Management. As with the parent project, flexibility was exercised (and will be further exercised) under the AF in selecting the route for the transmission lines and sites for sub-stations with a view to avoid private land take and, where unavoidable, to minimize the adverse impact on local communities. Alternative routes were examined for investments that may cause adverse social and economic impacts in the target areas. For this purpose, the AF carried out preliminary survey of social and physical conditions of the area, avoiding forests, wetlands, culturally sensitive areas, and so on. The flexibility of site selection for sub-stations will enable the project to minimize physical relocation and economic displacement as well as to avoid socially and environmentally sensitive areas. Preference is given to government land with no encumbrances.

The project will minimize economic disturbance to those dependent on land and only partial land will be acquired from the owners if needed, so that project affected persons (PAPs) are not deprived of their income earning ability. Valuation of land and compensations for each type of asset will be based on replacement value; proper consultation with the communities involved and local authorities on all socioeconomics issues raised from project activities will be ensured.

The AF is considered by the Bank to be a “substantial” risk operation due, among other factors, to low capacity of project implementers. EEP is required to carry out safeguard monitoring to ensure that the AF brings the intended benefits, while potential adverse environmental and social impacts are avoided or minimized. However, in the past EEP has shown weaknesses in relation to this task. Therefore, it is envisaged that a local safeguard consultant will be hired to undertake periodic (bi-annual) safeguard monitoring, assess compliance with safeguard instruments, determine lessons learned, and provide guidance for improving future performance. As with the parent project, EEP’s reporting format will also include monitoring indicators on safeguards implementation performance.

The approach to safeguards risk management hinges upon some key mitigation actions:

1. The AF will not be implemented in communities participating in the Government’s Commune Development Program. Strict screening criteria based on the findings of the recent Alignment Study and Proposed Guidance for World Bank Task Teams with Sub-projects with an Operational Interface with other GoE initiatives will be applied to ensure that the project is not active in these areas, particularly in non-viable commune centers/communities.
2. The environmental and social risks associated with the AF will be mitigated and managed using the RPF for the distribution lines and the RAP for the transmission lines.

Institutional arrangements and capacity building requirements. Institutional capacity to handle safeguards is weak; there is narrow focus on land acquisition and the related policy seems to cover only impacts on environment. Considering the land acquisition impact of high voltage lines, and especially any possible impact with regard to loss of access to resources (crops, fields, grazing land, and so on.), it is imperative that EEP ensures implementation of the project’s RAP, RPF, ESIA/ESMP, and Environmental and Social Management Framework (ESMF) with the support of its Social and Environmental staff, and that the project’s contractors are held accountable for implementation of their responsibilities. The Bank will provide capacity building training and supervision support.

Citizen Engagement and Gender. The GoE has a strong commitment to gender equality, which is rooted in national policies as well as in the signing of international and regional treaties and protocols on women’s rights. The Ministry of Women, Children and Youth Affairs, contributes to policy development and supports gender mainstreaming in all government ministries and bureaus. To date, gender units have been established in all line ministries including the MoWIE. However, encouraging active participation by

women in energy projects is a challenge due to existing social and economic barriers and women's limited roles in the decision making processes in their communities. For example, in Ethiopia women account for only 30 percent of the active microfinance borrowers¹³, against the average of 62 percent observed in Africa in 2010¹⁴, indicating barriers to access to finance and participation in economic activities.

There are various benefits associated with women's inclusion and participation in the transition toward new energy technologies. For example the use of fuel-saving cook stoves and alternative forms of fuel (for example, biogas, solar, and wind energy) can reduce the time women and girls spend on unpaid domestic work. To ensure equitable benefits and opportunities under the project, specific attention will be paid to activities under Component 3 where gender interventions will be implemented by various counterparts such as DBE and the MoWIE, particularly through: (a) active participation of a gender representative in the Technical Committee chaired by the MoWIE as well as in the Steering Committee to be established to oversee governance of the collateral support facility; (b) technical assistance to MFIs including studies capturing the gender constraints in accessing the credit line available to households; (c) active participation of women in consumer education and awareness; (d) collection of sex-disaggregated information as part of the project's results tracking and monitoring system; and (e) support by a gender specialist to the implementation of the outlined gender actions in collaboration with the various counterparts such as DBE and the MoWIE to build internal capacity.

Grievance Redress Systems and Mechanisms will be implemented under the AF as part of the citizen engagement process. Further, public consultations have been held with local population in the project areas while preparing the safeguards instruments. Furthermore, standard procedures will be followed for disclosure in line with guidelines of the Bank's requirements and the National Environmental Impact Assessment Promulgation.

Environmental Analysis

Explanation:

To a large extent, the implementation of the AF will generate similar impacts and face similar environmental issues as those encountered in the parent project, including safety and health risks. Threats such as loss of vegetation and biodiversity, soil erosion and sedimentation of nearby aquatic/drainage systems, air pollution, soil and water contamination from both liquid and solid waste, hazardous chemical poisoning of biotic life from use of weedicides and herbicides, and so on. are foreseen during the construction phase as vegetation will be cleared to pave way for erecting substations and towers for power lines, as well as for constructing camp sites, material storage facilities, and access roads. To mitigate these threats, the substations and power lines will avoid going through forests and natural habitats including protected areas, swamps/wetlands, and any fragile and sensitive aquatic habitats. It is likely that transmission and distribution lines may traverse culturally sensitive sites such as graveyards, archaeological sites, and so on.

Under this AF, OP/BP 4.01, *Environmental Assessment*, OP/BP4.11, *Physical Cultural Resources*, and OP/BP4.12, *Involuntary Resettlement*, will be retained and no additional safeguards policy will be triggered. In accordance with OP/BP 4.01, the project has been assigned Environmental Assessment "Category B".

An ESMF acceptable to the World Bank has been prepared specifically for the distribution investments to be accommodated under the AF, indicating how the project will review and address the environmental and

¹³ Ethiopia Multi-Sector Country Gender Profile, African Development Bank, 2004.

¹⁴ MIX Microfinance World: Sub-Saharan Africa Microfinance Analysis and Benchmarking Report, 2010

social impacts associated to such investments. The ESMF has been publicly disclosed in-country and at the Bank's InfoShop on April 5, 2016. The ESIA/ESMP prepared for investments in transmission infrastructure also provides measures to mitigate environmental impacts. OP/BP 4.11 has been triggered with the expectation that a chance find could occur during project implementation. The policy ensures that cultural heritage is protected in the course of project activities through a dedicated procedure, designed based on the provisions for managing chance finds, as stated in the ESMF. OP/BP 4.12 is triggered because of potential minor physical displacement and relocation occurring as a result of loss of land and damage to crops during civil works. It is anticipated that project activities will not lead to major land acquisition or restriction of access to parks or protected areas.

The Borrower has agreed to implement appropriate ESMPs, as well as include safeguards technical specifications in the bidding documents and in the contracts signed with work contractors and equipment suppliers. Noise and electromagnetic field levels expected to be generated by the project are below the World Health Organization criteria and appropriate measures will be taken to mitigate impact of any leakage of transformer oil in the soil.

Project impacts on the environment will be monitored during implementation using indicators that reflect the objectives and the results of the project. Responsibility for the implementation of the ESIA/ESMPs resides with EEP and will be coordinated through its Environmental and Social Management Unit (ESMU). In addition to the consultation procedures already established, monitoring mechanisms involving various stakeholders will be established.

Mitigation measures. The project will take preventive mitigation measures to remediate any potential threats during the construction and operations and maintenance (O&M) phases. A key undertaking prior to starting the project would be to ensure that the environmental and social clauses annexed to the main ESMF are incorporated into the works contract, as well as that an effective multi-stakeholder institutional and implementation framework/arrangement is established for the management (including safeguard management) of all aspects of the project. This should include activities for capacity building, training and skills upgrade. Mitigation actions including the establishment of effective mechanisms for safeguard monitoring, capacity building, governance (collaboration and consultations, accountability and transparency), and so on are essential to counteract in a cost-effective and timely manner any potential threats that are likely to occur during the construction and O&M phases of the project.

Borrower's capacity. The Borrower's capacity to ensure environmental due diligence of the project is low. EEP's ESMU will implement and monitor the safeguard instruments such as ESMFs and ESIA/ESMP. ESMU has implemented several ESMFs and other safeguard instruments for EEP in a number of donor-financed projects in the energy sector including hydropower generation, transmission and distribution projects.

Stakeholder consultations and disclosure of safeguard documents. In accordance with the World Bank's operational policies, stakeholder consultations with public and private sector institutions, research and academia, civil society organizations, traditional authorities, communities groups have taken place as part of ESMF formulation. Stakeholder workshops have been carried out to discuss all aspects of the project prior to finalization of the ESMF. These workshops have had the purpose of involving all key beneficiary and stakeholder groups, particularly PAPs; seeking feedback and consensus from stakeholders; and incorporating comments, suggestions and remediation proposals into the ESMF and other safeguard instruments.

Risk

Explanation:

The proposed AF faces similar risks as the parent project and the overall risk remains substantial.

Sector Strategies and Policies (High). The power sector is still evolving following the unbundling reform and so are the arrangements and regulations defining the responsibilities of the key sector agencies and programs. Financial sustainability of the sector also hinges upon a revision of the electricity tariff, which is currently under discussion. In light of these impending challenges, the risk rating for the category “Sector Strategies and Policies” has been raised to “High”. The Bank will remain closely involved with the GoE and provide advisory and technical assistance as needed under the *Ethiopia Energy Sector Review and Strategy*.

Institutional Capacity for Implementation and Sustainability (Substantial). Implementation challenges remains similar to those detected for the parent project, and, as discussed above, are mainly associated to EEP’s lack of adequate staff resources. EEP technical skills are solid, but more staff would be required to meet the demands of the many ongoing projects implemented by the company. The use of EPC contracts and the hiring of two Supervising Engineers for investments under components 1 and 2 are key mitigation measures to simplify implementation and lift the burden on EEP staff. Also, investments associated to the connection program and technical assistance under Component 4 require close coordination between EEP and EEU, which will be defined in detail by the MoU to be signed by the two companies.

Environment and Social (Substantial). Challenges associated to the EEP’s weak institutional capacity to handle safeguards persist, as discussed at length above. The Bank will closely monitor implementation of safeguard instruments and will provide support and training to EEP’s Social and Environmental staff as needed. Also, work contracts will be attentively reviewed to ensure that the provisions of the ESMP/ESMF/RAP/RPF are duly incorporated and contractors are held accountable for their responsibilities.

Fiduciary (High). The risk rating for this category has been raised to “High” in light of the additional challenges associated to the split of EEPCo and the resulting financial management issues at the entity level, as discussed at length above. The action plan agreed with the GoE is deemed to be solid and comprehensive. The other actions being taken to address financial management issues both in the short and the medium term provide adequate mitigation to fiduciary risks. The Bank will remain closely involved with the GoE and its key energy sector agencies to ensure continue commitment in addressing financial management challenges and will exercise thorough supervision.

Climate and Disaster Risk. The AF has been screened for risks related to climate change and disaster risk management. Recurrent drought and floods pose the greatest threat to the country’s environment and its local population. Hydroelectricity is the main source of energy in Ethiopia, which makes the energy sector vulnerable to increasing droughts. The GoE is keen to diversify the energy mix through the exploitation of geothermal and other renewable energy resources, including wind and solar. The climate risks have limited impact on the transmission and distribution components. Activities under Component 3 and the associated Ci-Dev-funded programs support the Government’s agenda of diversifying energy resources through the promotion of solar products and biogas for clean cooking. At the same time, the use of renewable and energy efficient products will lead to GHG reductions that are expected to alleviate climate and disaster risks in the long-term.

IV. World Bank Grievance Redress

28. Communities and individuals who believe that they are adversely affected by a World Bank supported project may submit complaints to existing project-level grievance redress mechanisms or the World Bank's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the World Bank's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of World Bank non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Annex 1: Revised Project Result Framework

| | | | | | |
|--------------------|--------------------------------------|----------------------|---|--------------|-----------------------------------|
| Project Name: | ENREP ADDITIONAL FINANCING (P155563) | Project Stage: | Additional Financing | Status: | FINAL |
| Team Leader(s): | Issa Diaw | Requesting Unit: | AFCE3 | Created by: | Elvira Morella on 29-Oct-2015 |
| Product Line: | IBRD/IDA | Responsible Unit: | GEE01 | Modified by: | Chita Azuanuka Oje on 27-Apr-2016 |
| Country: | Ethiopia | Approval FY: 2016 | | | |
| Region: | AFRICA | Lending Instrument: | Investment Project Financing | | |
| Parent Project ID: | P119893 | Parent Project Name: | Electricity Network Reinforcement and Expansion Project (ENREP) (P119893) | | |

Project Development Objectives

Original Project Development Objective - Parent:

The Development Objectives of the Electricity Network Reinforcement and Expansion Project are to improve reliability of the electricity network and to increase access to electricity services in Ethiopia.

Proposed Project Development Objective - Additional Financing (AF): no change

Results

Core sector indicators are considered: Yes

Results reporting level: Project Level

Project Development Objective Indicators

| Status | Indicator Name | Core | Unit of Measure | | Baseline | Actual(Current) | End Target |
|---------|------------------------------|-------------------------------------|-----------------|-------|-------------|-----------------|-------------|
| Revised | Direct project beneficiaries | <input checked="" type="checkbox"/> | Number | Value | 0.00 | 3725001.00 | 9675000.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |

| | | | | | | | |
|---------|--|-------------------------------------|--|---------|--|-------------|--|
| | | | | Comment | Indicator measures number of HHs with access to electricity (off grid and on grid) multiplied by the HH size of 4.5. | | End target revised to reflect additional financing. Female beneficiaries' sub-indicator revised from number to percentage. |
| Revised | Female beneficiaries | <input checked="" type="checkbox"/> | Percentage Sub Type Supplemental | Value | 0.00 | 50.00 | 50.00 |
| Revised | Access: Number of HHs connected to the grid | <input type="checkbox"/> | Number | Value | 0.00 | 0.00 | 150000.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | | | End target reintroduced and reflecting connections to be installed with AF support. |
| Revised | Access: Number of HHs with access to modern energy services (off-grid) | <input type="checkbox"/> | Number | Value | 0.00 | 827778.00 | 2000000.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | | | End target revised to reflect additional financing. |
| Revised | Reliability: System Average Interruption Frequency Index, SAIFI, in the project areas. | <input type="checkbox"/> | Number | Value | 178.00 | 178.00 | 89 |
| | | | | Date | 31-Dec-2015 | 31-Dec-2015 | 30-Jun-2019 |
| | | | | Comment | New baseline | | |

| | | | | | | | |
|-----|----------------------------------|--------------------------|---------------------------------|---------|--|-------------|-------------|
| | | | | | covers the average annual interruption frequency from Project Area 1 and 2. Sub-indicators added. | | |
| New | SAIFI - Project Area 1 (7 towns) | <input type="checkbox"/> | Number Sub Type Breakdown | Value | 196.00 | 196.00 | 98.00 |
| | | | | Date | 31-Dec-2015 | 31-Dec-2015 | 30-Jun-2019 |
| | | | | Comment | Baseline covers the average annual interruption frequency from 7 towns: Dessie, Jimma, Bahr Dar, Mekele, Awasa, Dire Dawa, Nazereth. | | |
| New | SAIFI - Project Area 2 (6 towns) | <input type="checkbox"/> | Number Sub Type Breakdown | Value | 157.00 | 157.00 | 78.00 |
| | | | | Date | 31-Dec-2015 | 31-Dec-2015 | 30-Jun-2019 |
| | | | | Comment | Baseline covers the average annual interruption frequency from 6 towns: Gonder, D/Markos, Shashemene, Welayta, | | |

| | | | | | | | |
|---------------------|--|--------------------------|--------|---------|-----------------|-------------|-----------------------------------|
| Marked for Deletion | Reliability: System Average Interruption Duration Index, SAIDI | <input type="checkbox"/> | Number | | Harer, Adigrat. | | |
| | | | | Value | 76.00 | 152.40 | 57.00 |
| | | | | Date | 30-Jun-2011 | 30-Nov-2014 | 31-Dec-2017 |
| | | | | Comment | | | Moved to intermediate indicators. |

Intermediate Results Indicators

| Status | Indicator Name | Core | Unit of Measure | | Baseline | Actual(Current) | End Target |
|--------|--|--------------------------|--------------------------------|---------|---|-----------------|---------------------|
| New | Reliability: System Average Interruption Duration Index, SAIDI, in the project areas | <input type="checkbox"/> | Hours | Value | 258.00 | 258.00 | 129.00 |
| | | | | Date | 28-Jan-2016 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | Moved from PDO level. New baseline covers the average annual interruption duration from Project Area 1 and 2. Sub-indicators added. | | End target updated. |
| New | Project Area 1 (7 towns) | <input type="checkbox"/> | Hours Sub Type Breakdown | Value | 224.00 | 224.00 | 112.00 |
| | | | | Date | 28-Jan-2016 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | Baseline covers the average annual interruption duration from 7 towns: Dessie, Jimma, Bahr Dar, | | |

| | | | | | | | |
|---------|--|--------------------------|--------------------------------|---------|---|-------------|--|
| | | | | | Mekele, Hawassa, Dire Dawa, Adama. | | |
| New | Project Area 2 (6 towns) | <input type="checkbox"/> | Hours Sub Type Breakdown | Value | 298.00 | 298.00 | 149.00 |
| | | | | Date | 28-Jan-2016 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | Baseline covers the average annual interruption duration from 6 towns: Gonder, D/Markos, Shashemene, Welayta, Harer, Adigrat. | | |
| Revised | Total energy sales in the project areas | <input type="checkbox"/> | Gigawatt-hour (GWh) | Value | 0.00 | 1564.00 | 2240.00 |
| | | | | Date | 30-Jun-2011 | 31-Dec-2015 | 30-Jun-2019 |
| | | | | Comment | New baseline covers results from Project Areas 1 and 2 only (6 and 7 towns). | | End target revised to focus on project areas only, not nationwide sales. |
| Revised | Segments of transmission lines constructed, upgraded or rehabilitated (km) | <input type="checkbox"/> | Kilometers | Value | 0.00 | 0.00 | 609.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | | | End target revised to reflect actual sub-projects identified vs. |

| | | | | | | | |
|---------|---|--------------------------|------------|---------|-------------|-------------|--|
| | | | | | | | initial estimates based on framework approach (as used at inception of ENREP). |
| New | Segments of distribution lines constructed, upgraded or rehabilitated | <input type="checkbox"/> | Kilometers | Value | 0.00 | 0.00 | 3338.00 |
| | | | | Date | 28-Jan-2016 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | | | |
| Revised | Number of substations constructed or upgraded under the project | <input type="checkbox"/> | Number | Value | 0.00 | 20.00 | 30.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | | | End target revised to reflect additional financing. |
| Revised | Number of biogas plants installed | <input type="checkbox"/> | Number | Value | 0.00 | 661.00 | 5000.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | | | End target revised to reflect additional financing. |
| Revised | Number of Solar Lanterns sold | <input type="checkbox"/> | Number | Value | 0.00 | 701728.00 | 1500000.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | | | End target revised to reflect additional financing. |
| Revised | Number of Solar Home Systems sold | <input type="checkbox"/> | Number | Value | 0.00 | 116.00 | 10000.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |

| | | | | | | | |
|---------|---|--------------------------|-------------|---------|--|-------------|---|
| | | | | Comment | | | End target revised to reflect additional financing. |
| Revised | Number of Solar Lanterns procured | <input type="checkbox"/> | Number | Value | 0.00 | 701728.00 | 1500000.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | Indicator clarified from "imported" to "procured." | | End target revised to reflect additional financing. |
| Revised | Number of Solar Home Systems procured | <input type="checkbox"/> | Number | Value | 0.00 | 116.00 | 10000.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | Indicator clarified from "imported" to "procured." | | End target revised to reflect additional financing. |
| New | Number of energy savings lamps imported and distributed | <input type="checkbox"/> | Number | Value | 245424.00 | 245424.00 | 500000.00 |
| | | | | Date | 28-Jan-2016 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | | | |
| Revised | Number of efficient cookstoves installed | <input type="checkbox"/> | Number | Value | 0.00 | 0.00 | 100000.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | | | End target revised to reflect additional financing. |
| Revised | Total amount of loans given to HHs | <input type="checkbox"/> | Amount(USD) | Value | 0.00 | 1631429.00 | 11000000.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | Unit of measure | | End target revised to reflect |

| | | | | | changed from Million Birr to USD. | | additional financing. |
|---------|--|--------------------------|--------------------------------------|---------|---|-------------|---|
| New | Total amount of loans given to female applicants | <input type="checkbox"/> | Amount(USD) Sub Type Breakdown | Value | 28.66 | 28.66 | 35.00 |
| | | | | Date | 28-Jan-2016 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | | | |
| Revised | Number of loans given to HHs | <input type="checkbox"/> | Number | Value | 0.00 | 14881.00 | 40000.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 31-Dec-2017 |
| | | | | Comment | | | End target date updated. |
| New | Number of loans given to female applicants | <input type="checkbox"/> | Number Sub Type Breakdown | Value | 34.45 | 34.45 | 40.00 |
| | | | | Date | 29-Jan-2016 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | | | |
| Revised | NPL Ratio of HH Loan Portfolio | <input type="checkbox"/> | Percentage | Value | 0.00 | 0.00 | 5.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | | | End target revised to reflect additional financing. |
| Revised | Number of Partner MFIs | <input type="checkbox"/> | Number | Value | 0.00 | 5.00 | 15.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | | | End target revised to reflect additional financing. |
| Revised | Woreda covered by credit line | <input type="checkbox"/> | Number | Value | 0.00 | 40.00 | 150.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |

| | | | | | | | |
|---------|--|--------------------------|-------------|---------|---|-------------|---|
| | | | | Comment | | | End target revised to reflect additional financing. |
| Revised | Total amount of loans given to PSEs | <input type="checkbox"/> | Amount(USD) | Value | 0.00 | 7765100.00 | 29000000.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | Unit of measure changed from Million Birr to USD. | | End target revised to reflect additional financing. |
| Revised | Number of loans given to PSEs | <input type="checkbox"/> | Number | Value | 0.00 | 8.00 | 24.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | | | End target revised to reflect additional financing. |
| Revised | NPL Ratio of the PSE Loan Portfolio | <input type="checkbox"/> | Percentage | Value | 0.00 | 0.00 | 5.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | | | End target revised to reflect additional financing. |
| Revised | Time to complete EEP entity audit report | <input type="checkbox"/> | Months | Value | 7.00 | 18.00 | 6.00 |
| | | | | Date | 01-Mar-2012 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | Indicator clarified from EEPCo to EEP. | | End target updated. |
| Revised | Number of EEP retained | <input type="checkbox"/> | Number | Value | 1.00 | 1.00 | 4.00 |

| | | | | | | | |
|---------------------|---|--------------------------|--------|---------|--|-------------|------------------------------------|
| | procurement staff | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | Indicator clarified from EEPCo to EEP. Baseline reset. | | End target updated. |
| Revised | Number of EEP/EEU staff trained | <input type="checkbox"/> | Number | Value | 0.00 | 60.00 | 90.00 |
| | | | | Date | 30-Jun-2011 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | Indicator clarified from EEPCo to EEP and EEU. | | End target updated. |
| Revised | Number of gender informed awareness events held | <input type="checkbox"/> | Number | Value | 0.00 | 5.00 | 9.00 |
| | | | | Date | 30-Jun-2011 | 30-Sep-2015 | 30-Jun-2019 |
| | | | | Comment | Indicator clarified to reflect that awareness events need to be gender informed. | | End target updated. |
| New | EEP publishes annual report on citizen engagement | <input type="checkbox"/> | Yes/No | Value | No | No | Yes |
| | | | | Date | 28-Jan-2016 | 28-Jan-2016 | 30-Jun-2019 |
| | | | | Comment | | | |
| Marked for Deletion | Number of schools connected | <input type="checkbox"/> | Number | Value | 0.00 | 0.00 | 150.00 |
| | | | | Date | 30-Jun-2011 | 20-Nov-2015 | 31-Dec-2017 |
| | | | | Comment | | | Is already prioritized under UEAP. |
| Marked for | Number of Health Centers | <input type="checkbox"/> | Number | Value | 0.00 | 0.00 | 150.00 |

| | | | | | | | |
|---------------------|--|--------------------------|---------------------|---------|-------------|-------------|--|
| Deletion | connected | <input type="checkbox"/> | | Date | 30-Jun-2011 | 20-Nov-2015 | 31-Dec-2017 |
| | | | | Comment | | | Is already prioritized under UEAP. |
| Marked for Deletion | Total Energy sales | <input type="checkbox"/> | Gigawatt-hour (GWh) | Value | 4795.00 | 6598.00 | 12000.00 |
| | | | | Date | 30-Jun-2011 | 20-Nov-2014 | 31-Dec-2017 |
| | | | | Comment | | | Appears twice in the Results Framework. |
| Marked for Deletion | Transmission System loss | <input type="checkbox"/> | Percentage | Value | 4.50 | 4.50 | 4.00 |
| | | | | Date | 30-Jun-2011 | 20-Nov-2014 | 31-Dec-2017 |
| | | | | Comment | | | Project related results cannot be tracked. |
| Marked for Deletion | Distribution System loss | <input type="checkbox"/> | Percentage | Value | 10.80 | 10.80 | 5.60 |
| | | | | Date | 30-Jun-2011 | 20-Nov-2014 | 31-Dec-2017 |
| | | | | Comment | | | Project related results cannot be tracked. |
| Marked for Deletion | ESIA and RAP Completed - km of lines | <input type="checkbox"/> | Kilometers | Value | 0.00 | 0.00 | 750.00 |
| | | | | Date | 30-Jun-2011 | 20-Nov-2014 | 31-Dec-2016 |
| | | | | Comment | | | |
| Marked for Deletion | ESIA and RAP completed - Number of substations | <input type="checkbox"/> | Number | Value | 0.00 | 0.00 | 10.00 |
| | | | | Date | 30-Jun-2011 | 20-Nov-2014 | 31-Dec-2017 |
| | | | | Comment | | | |
| Marked for Deletion | Number of EEPCO retained Procurement Advisors | <input type="checkbox"/> | Number | Value | 0.00 | 0.00 | 1.00 |
| | | | | Date | 30-Jun-2011 | 20-Nov-2014 | 31-Dec-2017 |

| | | | | | | | |
|---------------------|---|--------------------------|--------|---------|-------------|-------------|-------------------------------------|
| | | | | Comment | | | Redundant following split of EEPCO. |
| Marked for Deletion | Number of EEPCO Retained Financial Advisors | <input type="checkbox"/> | Number | Value | 0.00 | 0.00 | 1.00 |
| | | | | Date | 30-Jun-2011 | 20-Nov-2014 | 31-Dec-2017 |
| | | | | Comment | | | Redundant following split of EEPCO. |
| Marked for Deletion | Number of beneficiaries trained | <input type="checkbox"/> | Number | Value | 0.00 | 0.00 | 90.00 |
| | | | | Date | 30-Jun-2011 | 20-Nov-2014 | 31-Dec-2017 |
| | | | | Comment | | | |

Annex 2: Economic and Financial Analysis

Economic Analysis

Component 1: Reinforcement and Expansion of the Electricity Network

Description of Benefits and Costs

1. Investments under this component will finance the upgrade and expansion of selected segments of the transmission network as detailed in table 2.1.

Table 2.1 Transmission Lines included in Component 1

| | Total Costs (US\$ millions) |
|---|------------------------------------|
| 1. Azezo-Chilga 230kV Transmission Project (43 km line + 2 substations) | 26.0 |
| 2. Finchaa Amerti Neshi-Shambu 230 kV Power Transmission Project (42 km line + 2 substations) | 25.0 |
| 3. Metu-Masha 230kV Power Transmission Project (66 km line + 2 substations) | 33.0 |

2. The proposed investments will increase the transmission capacity of the electricity network in the targeted areas, which in turn will enable: (a) incremental electricity consumption in the project areas; and (b) energy savings that will result from reduced technical losses along the rehabilitated transmission lines. These are the more quantifiable benefits that are assessed under the economic analysis. The main costs associated with such investments are: (a) capital costs, including line upgrade and expansion, refurbishment of substations and feeder connection as required; (b) O&M costs of the transmission infrastructure; and (c) average cost of generating additional electricity (except the energy saved from reduced technical losses).

Methodology and Assumptions

3. The economic viability of the project is assessed over of period of 35 years starting from 2016. The construction period is assumed to last two years (2016 - 2017); thus, benefits will start accruing in 2018. Detailed investment scope, cost figures, as well as all assumptions related to additional electricity supplied and reduction of technical losses are derived from feasibility studies prepared by EEP in each of the areas covered by this project component. Demand forecasts in the project areas as derived from the EEP feasibility studies are used only for the first 15 years of project implementation. Afterwards, demand for electricity is assumed to remain constant. Because of the large amount of unserved demand in the project areas, it is also assumed that any energy saved from reduced technical losses is absorbed by electricity customers. While further reductions in losses are expected on the transmission network beyond the project areas, such losses are not included in this analysis as a conservative approach.

4. To assess the economic viability of the project, the stream of benefits from increased supply of electricity and reduced losses are evaluated against the project capital costs, the O&M costs, and the cost of electricity generation. The table below presents the main assumptions underlying the analysis.

Table 2.2 – Main Assumptions for the Economic Analysis

| Variable | Value | Note |
|-------------------------------------|-------|------------------------------------|
| CAPEX (US, millions) | 92.4 | Inclusive of Contingencies and VAT |
| Project Life (years) | 35 | - |
| Discount rate | 6% | - |
| VAT | 15% | - |
| Contingencies | 10% | - |
| O&M Cost (% of capex) | 1.5% | - |
| Insurance costs (% of capex) | 0.5% | - |
| Grid energy cost (US\$ /kWh) | 0.08 | - |
| Willingness to pay (US\$ /kWh) | 0.33 | Residential consumption |
| Cost of unserved energy (US\$ /kWh) | 1.00 | Commercial and industrial demand |

***Note:** Capex is assumed to be drawn down over 2016 - 2017 in the following manner: 50 percent and 50 percent. Willingness to pay and cost of unserved energy values are derived from the feasibility study prepared by EEP.

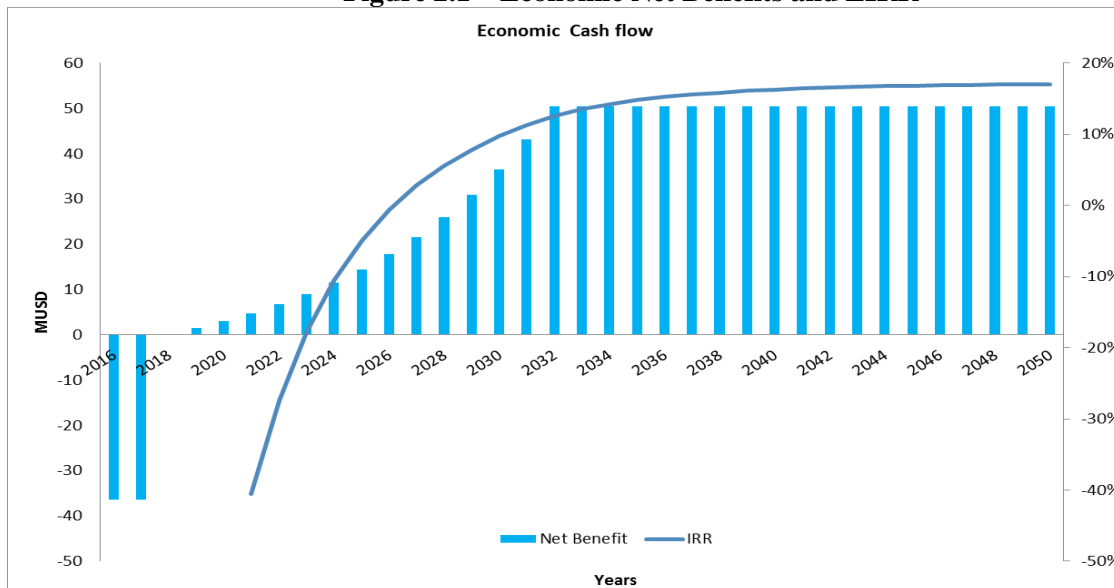
Results

5. The results show that investments under Component 1 are economically viable and robust to variations in the key underlying parameters within reasonable limits. Assuming a discount rate of six percent and removing taxes and contingencies from capital expenditure, the NPV is estimated at US\$272.6 million and the EIRR at 17.1 percent (Table 2.3).

Table 1.3 – Estimated Economic Viability

| Base Case | |
|-------------------------|-------------------|
| EIRR | 17.1% |
| NPV (@6% discount rate) | US\$272.6 million |

Figure 2.1 – Economic Net Benefits and EIRR



Sensitivity Analysis

6. A switching value analysis has been performed to test the robustness of the economic viability of Component 1 to changes in the assumed values of key parameters. The results show that investments remain viable under the following circumstances: (a) any increase in capital expenditure below 406 percent; electricity demand decreasing by no more than 65 percent; or any increase in the generation cost lower than 486 percent (which would imply an average generation cost of US\$0.47/kWh, highly unlikely for a generation system that is predominantly hydro-based). The economic viability of investments remain sufficiently robust to changes in the parameter values even when the low power scenario envisaged under the EEP feasibility studies is considered.

Table 2.4 – Sensitivity Analysis (Switching Values)

| Parameter | Base Case | Switch Value | % Change |
|---------------------------------|-----------|--------------|--------------|
| Capital Costs (US\$, millions.) | 73.0 | 369.8 | 406 |
| Power Flow | x1 | x0.35 | -65 per year |
| Generation Cost (US\$/kWh) | 0.08 | 0.47 | 486 |

Component 2: Access Scale-up

Description of Benefits and Costs

7. The objective of this component is to increase the capacity of the existing distribution network in six selected towns that have been assessed as high-demand areas. Investments will enable to accommodate increasing demand by existing customers that currently remains suppressed because of distribution capacity bottlenecks resulting in frequent outages and voltage fluctuations, as well as unserved demand by new customers. EEU has an ambitious connection program, which aims to provide an additional 405,500 connections to the grid in the short term. The economic analysis assumes a more conservative target of 150,000 connections. In addition, investments will help reduce technical losses which are assumed at two percent of the demand.

8. Total costs are estimated at US\$80 million as detailed in Table 2.5. The main costs considered in the economic analysis include: (a) capital costs associated to the upgrading and expansion of distribution infrastructure as detailed above; (b) O&M costs for the distribution infrastructure; (c) capital costs for the installation of new connections, which are assumed to be a grant; and (d) average cost of generating additional electricity (except the energy saved from reduced technical losses).

Table 2.5 – Investment costs breakdown for Component 2

| Cost Component | Total (US\$, millions) |
|---|---------------------------|
| Distribution infrastructure investments | 48.0 |
| Connection program | 32.0 |
| Total | 80.0 |

Methodology and Assumptions

9. The economic viability of the project is evaluated over a period of 35 years starting in 2016 with a two year construction period. Detailed investment scope, cost figures, as well as all assumptions related to additional electricity supplied and reduction of technical losses are derived from a feasibility study covering all six towns prepared by EEP. Demand forecasts in these towns as derived from the feasibility study are used only for the first 15 years of project implementation. Afterwards, demand for electricity is assumed to remain constant. The analysis also assumes that any electricity saved through the reduction of distribution losses is absorbed by end users. Table 2.6 presents the main assumptions underlying the analysis.

Table 2.6 – Main assumptions for the economic analysis

| Variable | Value | Note |
|--------------------------------|-------|------------------------------------|
| CAPEX (US\$ millions) | 80.0 | Inclusive of Contingencies and VAT |
| Project Life (years) | 35 | - |
| Discount rate | 6% | - |
| VAT | 15% | - |
| O&M Cost (% of capex) | 1.5% | - |
| Insurance costs (% of capex) | 0.5% | - |
| Grid energy cost (US\$ /kWh) | 0.08 | - |
| Willingness to pay (US\$ /kWh) | 0.33 | Residential consumption |

***Note:** Capex is assumed to be drawn down over 2016 - 2017 in the following manner: 50 percent and 50 percent. Willingness to pay values derived from the feasibility study prepared by EEP.

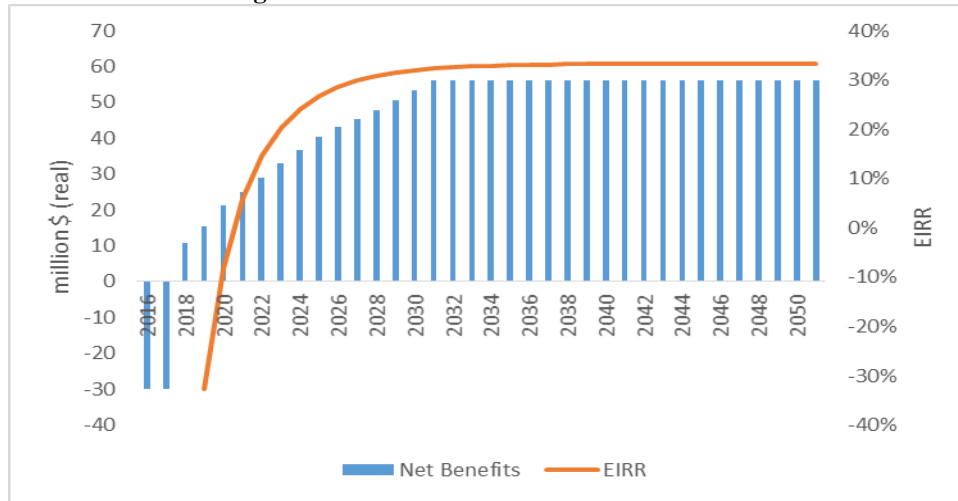
Results

10. The analysis shows that investments under Component 2 are economically viable and robust to variations in the key underlying parameters within reasonable limits. Assuming a discount rate of six percent and removing taxes and contingencies from capital expenditure, the NPV is estimated at US\$471.8 million and the EIRR at 33.3 percent (Table 2.7).

Table 2.7 – Estimated Economic Viability

| Base Case | |
|-------------------------|-------------------|
| EIRR | 33.3% |
| NPV (@6% discount rate) | US\$471.8 million |

Figure 2.2 – Economic Net Benefits and EIRR



Sensitivity Analysis

11. The switching value analysis shows that investments under Component 2 remains viable unless unlikely variations in key parameters occur including: (a) increase in capital expenditure of 855 percent; (b) a reduction in electricity demand of up to 93 percent; or (c) an increase in the generation cost of 283 percent. The economic viability of investments remain sufficiently robust to changes in the parameter values even when the low power scenario envisaged under the EEP feasibility study is considered.

Table 2.8 – Sensitivity Analysis (Switching Values)

| Parameter | Base Case | Switch Value | % Change |
|--------------------------------|-----------|--------------|----------|
| Capital Costs (US\$, millions) | 60.2 | 574.9 | 855 |
| Power demand | x1 | x0.07 | -93 |
| Generation Cost (US\$ /kWh) | 0.08 | 0.30 | 283 |

Component 3: Market Development for Renewable Energy and Energy Efficient Products

Methodology, Benefits and Costs

12. The economic analysis of this component focuses only on the benefits associated to the dissemination of solar products and specifically solar lanterns, for which cost data could be collected. Benefits related to the use of other technologies have not been considered because of the difficulty of obtaining reliable cost estimates. Also, the analysis does not estimate the economic value associated to the use of energy efficient products or to more sustainable cooking practices, including the switch to environmental-friendly cooking fuels and the use of improved cook stoves. All of them promise to promote positive environmental externalities that cannot be easily measured in economic terms, although they constitute a key benefit under this project component.

13. Therefore, the main benefit assessed by the economic analysis is given by the avoided costs of alternative lighting sources experienced by consumers who switch to solar lanterns. The analysis builds on the Market Intelligence Report prepared for the Lighting Africa Program¹⁵, which assessed use patterns and associated expenditures for lighting sources that are typical in Ethiopia, including lanterns powered by dry cell batteries, kerosene lamps, and candles. It should be noted that the report does not account for the fact that solar lanterns provide better lighting compared to traditional sources. Specifically, pico-PV products such as solar lanterns and solar home systems provide more lumens of better quality light and also allow charging mobile phones or provide power for small home utilities.

14. Given the difference in lighting output across the various sources, the report compares the cost of equal lighting output measured in dollar per thousand kilo-Lumen hours (US\$/kLh). The estimated cost per kLh of lighting output of the various alternatives and the underlying analytical assumptions are presented in Table 2.9.

Table 2.9 - Economic Analysis of Lighting Alternatives

| | PV Led Lamp with USB Charger | Lantern Powered by Dry Cell Batteries | Kerosene Lamp | Candles |
|---------------------------------|-------------------------------------|--|--------------------------------------|--------------------|
| | 1*3W Led | (3 * type D) | | |
| Consumption / replacement | 1 pack every 5 yrs | 1 lamp per year 6 batt per month | 1 lamp every year 1.9 l per month | 40 units per month |
| Light output (lumens) | 110 | 61 | 20 | 8 |
| Daily usage | 4 | 4 | 3 | 4 |
| Annual service provided | 160,600 | 155,855 | 82,125 | 11,680 |
| First and recurrent costs | US\$60 every 2 yrs | US\$ 5 for lamp US\$0.55 each batt | US\$0.36 for lamp US\$1.04/ltr | US\$0.19 per unit |
| Annualized cost (6% Disc. rate) | US\$15.83 | US\$44.60 | US\$24.07 | US\$88.80 |
| Unit cost (US\$ /kLh) | US\$0.15 | US\$0.50 | US\$1.12 | US\$7.60 |

Results

15. The estimated cost per unit of lighting output of solar lanterns was found to be the lowest (US\$0.14/kLh) compared to equivalent lighting provided by alternative sources. Therefore, there is a clear cost advantage for pico-PV products. Assuming that a consumer replaces one lantern powered by dry cell batteries with one solar lantern which provides approximately the same level of lumens over the same amount of hours per day the economic benefit can be estimated at approximately US\$29 per year, leading to a NPV of US\$20.5 per lantern and an EIRR of 31 percent. This should be considered a lower bound estimation since solar lanterns have in addition a USB charger that allows to recharge a mobile phone or a small radio in addition to provide lighting.

16. There are also significant environmental and health benefits associated to the use of pico-PV products compared to alternatives using fossil fuels on dry cell batteries that need to be disposed. These benefits include reduced greenhouse gas emissions, reduced risk for indoor pollution and fire hazards as well as reduced amount of hazardous waste. The Market

¹⁵ Final report, June 2013, prepared by Ethio Resource Group.

Intelligence Report also shows that there is a strong market potential for pico-PV products in Ethiopia, with an estimated demand of at least 200,000 units per year in the next 3.5 years alone.

Financial Analysis

Component 1: Reinforcement and Expansion of the Electricity Network

17. **Project costs.** Cash outflows include investment costs, O&M costs and the costs associated to generating electricity. Investments under this component are estimated at US\$92.4 million inclusive of contingencies and VAT.¹⁶ Construction is assumed to start in 2016 with commissioning at the beginning of 2018. O&M costs are assumed to be equal to 1.5 percent of total investment value.

18. **Project benefits.** Cash inflows consist of the revenues accruing from the incremental electricity sales enabled by the increased transmission capacity. These are estimated based on the average end-user tariff for residential, commercial and industrial customers. It is important to note that, as already pointed out in this project paper, the current tariff structure in Ethiopia has not been updated since 2006. As result, the average electricity tariff stands at US\$0.0245/kWh, a level that does not allow cost recovery by the utility. The financial analysis assumes that a cost reflective tariff will be established within five years after project commissioning. This is in line with the EEP feasibility study, which forecasts the average tariff to increase to 11.3 USc/kWh during 2021-2023 and to 12.6 USc/kWh from 2024 onwards.

19. **Discount rate.** The financial discount rate is calculated assuming that 90 percent of investments are financed through an IDA loan with a cost of debt of 1.9 percent per year in nominal US dollars while the remaining 10 percent is financed by the GoE through an equity injection, with an estimated 15 percent rate of return in nominal US dollars. Assuming a U.S. inflation rate of 1.9 percent, the Weighted Average Cost of Capital (WACC) can be estimated at 1.5 percent.¹⁷

20. **Results.** Based on these assumptions, Component 1 is financially viable with a NPV of US\$21.8 million with a discount rate of 1.5 percent and a FIRR of 5.6 percent (Table 2.10). It is important to highlight that such results are based on the assumption of a tariff increase that has not been confirmed yet.

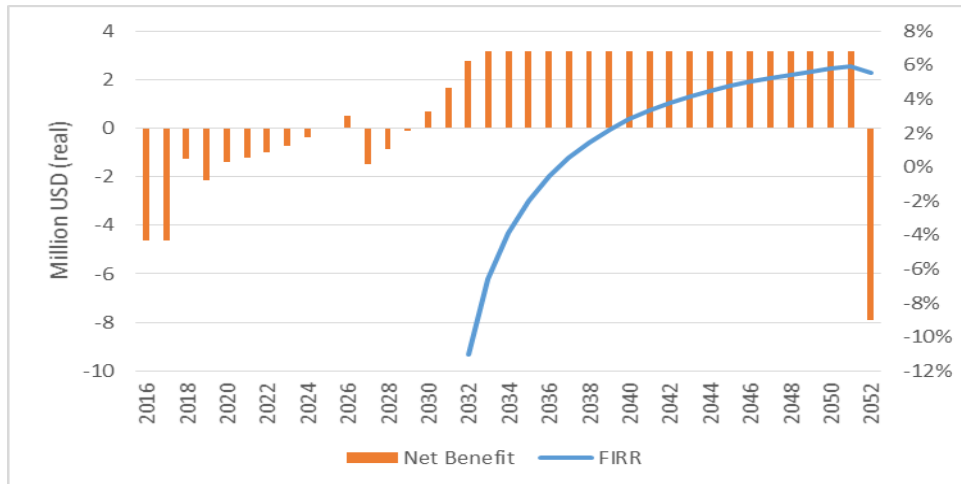
Table 2.10 Estimated Financial Viability

| | Base case |
|----------------|------------------|
| FIRR | 5.6% |
| NPV (@1.5% DR) | US\$21.8 ml. |

Figure 2.3 – Financial Net Benefits and FIRR

¹⁶ 15 percent VAT is considered for the financial analysis.

¹⁷ Assuming no tax shield.



21. **Sensitivity.** The switching value analysis shows that Component 1 is somehow robust to changes in the key parameter values (Table 2.11). Investments remain viable unless any of the following occurs: (a) an increase in capital expenditure of 33 percent; (b) a reduction in electricity sales of up to nine percent; or (c) an increase in operation costs (inclusive of generation costs) of 14 percent.

Table 2.11. Sensitivity Analysis (Switching Values)

| Parameter | Base Case | Switch Value | % Change |
|--------------------------|-----------|--------------|----------|
| Capital Costs (US\$ ml.) | 92.4 | 123.0 | 33 |
| Sales | x1 | X91 | -9 |
| Costs | x1 | x1.14 | 14 |

Component 2: Access Scale-up

22. **Project costs.** Cash outflows include investment costs, O&M costs, costs associated to generating electricity and loan repayments. Investments under Component 2 are estimated at US\$80 million (inclusive of contingencies and a 15 percent value added tax). Construction is assumed to start in 2016 with commissioning at the beginning of 2018. O&M costs are assumed to be equal to 1.5 percent of total investment value.

23. **Project benefits.** Cash inflows consist of the revenues accruing from the incremental electricity sales enabled by the increased distribution capacity, including sales to existing customers and sales to new customers. It is also assumed here that a cost reflective tariff will be established within five years after project commissioning.

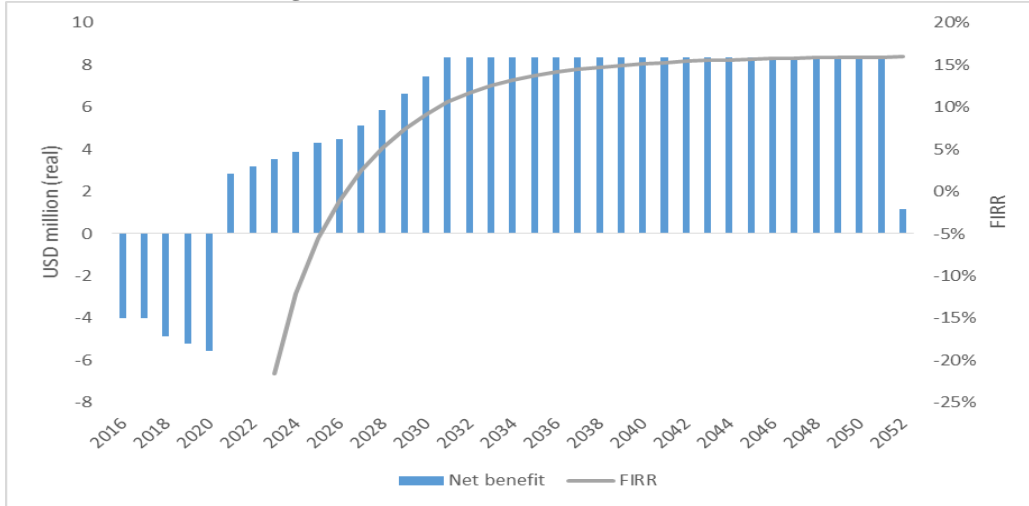
24. **Discount rate.** The financial analysis of Component 2 assumes the same discount rate used for Component 1, namely 1.5 percent in real U.S. dollars.

25. **Results.** Based on these assumptions, Component 2 is financially viable with a NPV of US\$137.8 million and a FIRR of 15.9 percent (Table 2.12).

Table 2.12 – Estimated Financial Viability

| Base Case | |
|----------------|-------------------|
| FIRR | 15.9% |
| NPV (@1.5% DR) | US\$137.8 million |

Figure 2.4 – Financial Net Benefits and FIRR



26. **Sensitivity.** The switching value analysis shows that Component 2 is moderately robust to changes in the key parameter values (Table 2.13). Investments remain viable unless any of the following occurs: (a) an increase in capital expenditure of 239 percent; (b) a reduction in electricity sales of up to 22 percent; or (c) an increase in operation costs (inclusive of generation costs) of 31 percent.

Table 2.13 – Sensitivity analysis (switching values)

| Parameter | Base Case | Switch Value | % Change |
|------------------------------|-----------|--------------|----------|
| Capital Costs (US, millions) | 80.0 | 271.4 | 239 |
| Sales | x1 | x0.78 | -22 |
| Costs | x1 | x1.31 | 31 |

Annex 3: Financial Management and Disbursement

1. A financial management assessment was conducted in accordance with the Financial Management Practices Manual for World Bank-financed investment operations issued by the Financial Management Sector Board on March 1, 2010 and supporting guidelines. In conducting the assessment, the Bank team relied on the information gathered through various ongoing engagements with the implementing entities.

Country Context

2. In the last 12 years, the GoE has been implementing a comprehensive public financial management (PFM) reform through the Expenditure Management and Control sub-program of the Government's Civil Service Reform Program. This is supported by the closed IDA-financed Public Sector Capacity Building Support Program, the ongoing Promoting Basic Services Program, and other donor financing as well as Government own financing. These programs have focused on strengthening the basics of PFM systems, including budget preparation, revenue administration, budget execution, internal controls, cash management, accounting, reporting, and auditing.

3. The 2014 Ethiopia Public Expenditure and Financial Accountability PFM Performance Measurement Framework Assessment highlighted good improvements in the area of budget credibility and execution as well as on internal controls. The tax audit function is gradually improving with a stronger focus on risk assessment, although capacity constraints remain. Budget execution systems continue to work well. Despite some improvements, the strengthening of the internal audit function has proceeded at a slower pace than expected. The assessment revealed that high staff turnover and capacity constraints continue to affect procurement and internal audit.

Project Financial Management Arrangements

Financial Management Implementing Entities

4. According to the ENREP's Financing Agreement and amendments thereof, there are three implementing entities: EEP, DBE, and the MoWIE. These will continue to be lead implementing entities for the ongoing ENREP activities. There is no additional financing set aside for the MoWIE, which will only continue to implement some of the activities under Component 4 of the ongoing ENREP (part 4.3, for a total financing of SDR 130,000). Also, since there are no separate FM arrangements laid out for the MoWIE, activities under part 4.3 of ENREP will be implemented through DBE, which will handle the FM aspects.

5. EEP and DBE will implement the AF. The finance units of EEP and DBE, apart from assuming overall financial management responsibility for project funds, will at least ensure that: (a) financial management activities under the project are carried out efficiently and in accordance with acceptable accounting standards; (b) financial tasks and administration are carried out according to the Financing Agreement; (c) qualified accountants are recruited and assigned to manage the project funds; (d) adequate internal controls are in place and internal auditors provide

regular support to the project; and (e) the project financial transactions are audited by an independent external auditor in accordance with international standards on auditing.

6. MFIs will continue to be responsible for the credit line established for households under Component 3. DBE will follow up with each MFI to ensure that the use of resources complies with ENREP's Project Appraisal Document, Operations Manual, original Financing Agreement and Disbursement Letter and amendments thereof.

ESME Grant

7. DBE will be responsible for the ESME grant, which is considered part of the AF. The arrangements established for the IDA credit will also be used for the grant. Basically, there will be one planning, accounting and internal control, reporting and auditing system in place covering all activities implemented by DBE including this grant.

8. The Eligible Expenditures under the ESME grant are grouped under two main withdrawal categories, as follows:

- (i) **Collateral support facility.** Eligible expenditures are up to 50 percent of the collateral amount required against sub-loans provided to eligible PSEs under the credit line financed by IDA. Disbursement conditions are set for this component, including: (a) preparation and adoption of an Operational Manual which is agreed with the Bank; and (b) setting up of a governance body that is, a Steering Committee involving the MoWIE, MoFEC, and relevant stakeholders. Eligible PSEs and their sub-loan proposals should be selected in accordance with agreed criteria to be defined in the Operation Manual and approved by the Steering Committee. The proposal is expected to indicate the total collateral requirement and the share (up to 50 percent) to be covered under the collateral support facility. The Steering Committee will approve eligible PSEs, the associated collateral required, and the collateral amount to be covered under the facility. DBE will enter into an agreement with the PSEs approved by the Steering Committee. DBE will then submit to IDA withdrawal applications based on statements of expenditure (SoE), attaching the list of approved sub-loans to PSEs along with identified collateral needs and relevant supporting documents (that is, agreements with PSEs). This will trigger the disbursement of the ESME grant and/or will be used to document any advances to the DA that may be made to DBE.
- (ii) **Technical Assistance.** Eligible expenditures include goods, consulting and non-consulting services, operating costs, training and workshops to be undertaken by DBE in coordination with the MoWIE.

Budgeting

9. **Budget Preparation.** Both implementing entities will continue to follow the existing budgeting process and procedures. EEP updated the budget preparation and control guidelines of EEPCo and shared them with the Bank on May 27, 2015. At EEP, each unit prepares an individual budget and submits it to the corporate planning unit, which consolidates all these budgets into an annual budget. The consolidated budget is first reviewed by Management and then submitted to the Board for approval. The budget guidelines of EEP envisage that utilization of the approved annual budget starts from the first day of the new fiscal year, that is, July 8 of each year. However, experience demonstrates that the budget approval process, including

notification to the project unit, is often delayed. Also, the annual project budget prepared and submitted to the Corporate Planning Unit is not disaggregated by project components, activities and category. This will be rectified going forward. At DBE, each unit prepares an individual unit budget and submits it to the planning department, which compiles and consolidates the master budget for discussion with management. The budget is subsequently forwarded to the Board for approval. After approval, it is submitted to the Public Financial Enterprises Supervising Agency (PFESA). However, during ENREP implementation, it was observed that the approval process is often delayed. EEP and DBE are recommended to prepare a project budget and submit it to the Bank for approval.

10. **Budget Monitoring and Utilization.** Budget monitoring arrangements for the AF will remain largely similar to those established for the existing project. DBE's performance in monitoring the budget is acceptable. Conversely, EEP's performance needs to be strengthened as the budgets are not entered into the system and the quarterly budget utilization report (Use of Funds by Project Activity) in the quarterly IFR is not supported by adequate explanation of variances. The experience of the existing project indicates low budget utilization on the part of both DBE and EEP with the quarterly IFRs failing to provide adequate explanation of the underpinning reasons. It is therefore important to ensure that project budget monitoring aspects are strengthened through regular assessment of budget and expenditures by project component and categories. Significant variances should be explained and reported to management for corrective actions; all of this should be documented.

11. The budgeting arrangements established for the IDA credit, including budget preparation and budget monitoring arrangements, will also be used for the ESME grant.

Accounting

12. **FM manual.** The financial management manuals used for ENREP's activities implemented by EEP will continued to be used for the AF. Nine out of fourteen Finance Procedures and Accounting Manuals were revised/prepared and approved by the Chief Finance Officer of EEP; they were distributed to all units and shared with the Bank. EEP Board's approval is also required for the manuals and EEP is planning to have it secured soon. The Bank shall be informed of the Board's approval within three months after effectiveness of the AF. EEP will also finalize the revision/preparation of the remaining five manuals and will inform the Bank within six months of effectiveness. As for the activities implemented by DBE, there is a manual that defines the relevant FM arrangements, including accounting and internal control arrangements. In addition, the Project Operations Manual (POM) lays down the FM aspects of the project. The implementing entities will review the POM to ensure consistency with the AF. As far as the ESME grant implemented by DBE is concerned, in addition to the normal policies and procedures of the entity, an Operation Manual will be prepared and include FM aspects of the grant management.

13. **Accounting staff.** During ENREP implementation, EEP assigned an FM staff to the project. However, such appointment was not communicated to the Bank or to the other EEP teams concerned with project implementation, leading to coordination issues. Also, such staff did not have adequate capacity. As part of negotiation conditions, it was agreed that the Finance

Head of EEP would formally communicate to the Bank, and internally to the units/departments implementing the various project activities, the new FM staff assigned to the project along with the curriculum vitae. The assignment was duly made and the staff was assessed to have adequate capacity. Nonetheless, if needed, the Bank will provide training on disbursement and FM aspects. Adequate FM staff is assigned at DBE and will be maintained for the implementation of the AF including the ESME grant.

14. **Accounting software.** An Agresso accounting software is used by EEP to process and journalize project's transactions. However, the EEP unit currently responsible for ENREP's FM aspects does not have access to the software and has to make trips to the headquarter office to post transactions and maintain accounts. As result, during ENREP implementation, the recording of transactions has been frequently delayed. To solve this issue, it was agreed that EEP will install the Agresso software at the vicinity of the project office within 3 months after effectiveness of the AF. DBE uses the T-24 Core Banking system release 10 produced by TENEMOS to process and journalize the project's transactions. Chart of accounts are created for the project and transactions are recorded in the DBE accounts. The system is supplemented with memorandum records (that is, spreadsheet), which allow to produce the financing reports required according to the Financing Agreement. DBE will be responsible for recording and duly reporting to the Bank the transactions related to the ESME grant. In case these are not compatible with the existing system used by DBE, they will be recorded and monitored based on a memorandum records maintained off the system.

15. **Accountability issues of Just in Time (JIT) assessment.** When EEPCo was the implementing agency of ENREP, its Agresso system had continuous problems of software interface and mapping with the billing system software, which resulted in a backlog of outdated information, unreconciled balances, suspense accounts, incomplete records, and so on. The Bank, in collaboration with EEPCo, commissioned a JJIT study to address this issue as well as other accountability problems. The study (Report on Accountability Issues) was submitted to EEPCo in January 2013. The study identified a number of solutions to key issues including billing and account system interface issues, reconciliation problems, capacity problems, governance challenges, and so on. It was agreed that a qualified and experienced Financial Advisor, who would coordinate accounting functions between EEPCo and the project implementing unit, would be recruited based on ToR acceptable to the Bank within three months of ENREP's effectiveness. However, the recruitment process was delayed due to a lack of suitable candidates as well as to the unbundling of EEPCo, which was carried out in the meantime. In general, the implementation of the JIT recommendations has not been satisfactory. Upon Bank's request, EEP submitted its first progress update on April 2, 2014. The update indicated the plan to hire a consulting firm to help with the splitting of EEPCo's balance sheets between the newly unbundled entities. The consulting firm was supposed to review the status of implementation of the JIT recommendations, assess the effects of the split on the issues raised by the JIT, and address such issues to the extent possible based on a revised action plan and in coordination with the concerned departments of EEP and EEU. The Bank accepted this strategy and the amended Financing Agreement dated August 28, 2014 clearly indicating that EEP should recruit this consulting firm by October 31, 2014¹⁸ in accordance with ToR acceptable to the

¹⁸ Refer to Amendment to financing agreement- Ref: WB/CD/285/8/28/2014 dated August 28, 2014 page 2 paragraph 6. B-Other Fiduciary Undertakings- 1.

Bank. However, contrarily to the agreements made with the Bank, EEP/EEU Management decided to discontinue the recruitment process and have only the split, excluding the JIT issues, taken over by the Split Committee,¹⁹ which resumed its tasks.

16. Updates on the status of implementation of the JIT recommendations were provided by EEP, along with other updates on outstanding FM issues, in June and September 2015. The Bank could note that, although a few actions had been completed, most of them remained outstanding. In addition, the most recent update²⁰ was incomplete as it did not address the issues related to EEU. Since then, the Bank has noted some positive initiatives by both EEP and EEU to address the concerns raised by the JIT. In particular, the procurement of a new, comprehensive ERP system for EEU was completed and the related contract signed in October 2015. The Information Network Security Agency of Ethiopia is also involved to some extent in the issues related to the automation of the entities. As part of negotiation conditions for the AF, EEP and EEU submitted a complete status update and proposed action plan concerning the implementation of the JIT recommendations,²¹ which was reviewed and accepted by the Bank. It is agreed that regular updates on the JIT recommendations as well as on automation issues are provided on a quarterly basis along with the IFRs.

17. **Split of accounts.** The split of EEPCo's balance sheet and the assignment of opening balances to the newly formed entities was carried out, as noted above, by the Split Committee. However the split was completed with substantial delays and imperfections. As result, the setting up of opening balances, the preparation of separate financial statements by EEP and EEU, and the submission of the related audit reports were also delayed. Furthermore, EEP's first audit report was issued with a disclaimer opinion, as discussed in detail in paragraphs 29 – 30 below.

Internal Control and Internal Auditing

18. **Project internal control system.** As stated above, EEP has prepared and approved nine out of 14 Finance Procedures and Accounting Manuals, which incorporate the detailed internal control arrangements. The updated versions will be used for the AF. The activities implemented by EEP are supported by reasonable internal control arrangements, which will be maintained for the AF. However, because of the issues associated with the recording of transactions to the Agresso system as highlighted above, bank reconciliations have not been performed. Once the Agresso software is installed at the vicinity of the project office, EEP will prepare reconciliations through the system. DBE's internal control system for the project is strong and robust. There are clear lines of communication, adequate segregation of duties, procedural and policy manuals established and clear authorization. Transactions are reconciled on a daily basis, and bank reconciliations are being prepared and approved on a monthly basis. The authorized signatories approve payment vouchers and related documents before payments are processed.

¹⁹ This committee was established on January 28, 2014 by the MoWIE to undertake the splitting of the accounts/the balance sheet of EEPCo between EEP and EEU. The Bank was initially informed that this Committee would be discontinued since EEP/EEU planned to use a consulting firm. However, once the plan to recruit such a firm was abandoned, the committee was resumed.

²⁰ Status update ref no CO/2.6/2/08 dated September 15, 2015.

²¹ Letter from EEP ref no co/2.6/191/08 dated March 25 2016 and EEU letter ref no 2.6/41/08 dated March 25 2016.

19. **EEP internal control system.** The compliance or practical application of controls by EEP is inadequate, as assessed by the entity audits. Issues raised by the audits include non-reconciling balances on suspense accounts; poor property (stock and fixed asset) management issues; long outstanding balances in receivables and payables; long outstanding assets in transit; inconsistent treatment of work in progress; cash management issues; abnormal balances; weakness in control in personal files; and so on. Although action plans in response to such issues have prepared and submitted to the Bank, solutions have not been consistently identified or actions not implemented as needed. EEP is requested to undertake a systemic review of its internal control system within 3 months of effectiveness of the AF and take corrective action. The management and the Board of EEP/EEU including the supervisory agency should ensure close follow up. Regular updates on the progress made should be provided to the Bank on a quarterly basis along with the IFRs.

20. **Internal audit.** EEP has an internal audit department, including technical, financial and performance audit teams, that reports directly to the Board of Directors. However, staff is below capacity, as only nine out of the 19 envisaged positions are filled. Recruitment of more staff is ongoing and should be completed within six months of effectiveness. The internal audit charter has been prepared and is awaiting approval by the Board; the internal audit manuals are expected to be prepared and approved soon. Past experience indicates that the internal audit department has capacity gaps, and mainly concentrates on case-based audits rather than systematically following the annual audit plan. Also, past annual audit plans were not risk-based. Training on this aspect is recommended. EEP finally assigned an internal auditor to the Bank-financed projects in June 2015 and obtained no-objection from the Bank. DBE has an independent internal audit department reporting to the Board and divided into two teams: one team is responsible for the operational audits (process audit, procurement, risk analysis, property management, IT Audit and legal audit); the second is responsible for financial audit and international banking. DBE's internal audit charter provides the framework for operations and emphasizes the independence of the internal audit functions. The internal audit of project transactions has so far proceeded with no major issues. The existing internal audit arrangement will be maintained for the AF. The Internal Audit units of both EEP and DBE will review project activities at least once per year and prepare audit reports which will be shared during project supervisions.

Funds Flow and Disbursement Arrangements

21. **Disbursements arrangements.** The transaction-based disbursement method using SoE will continue to be applicable under the AF when disbursing funds to the Designated Accounts (DAs) for the project activities implemented by EEP and DBE. New DAs will be opened for the AF and ESME grant. Other methods of disbursement that can be used by both EEP and DBE include direct payments, special commitments, and reimbursements. The Borrower will be obligated to refund any ineligible expenditures made from the DAs. If the DAs remain inactive for more than six months, the Borrower may be requested to refund to IDA the advanced amounts.

22. **Flow of funds arrangements.** The fund flow arrangements already in place for ENREP will remain largely applicable for the AF. However, in view of the new activities to be accommodated under the AF, the following should be taken into consideration:

- (a) The disbursement and fund flow arrangements established for ENREP will be maintained for the AF components implemented by EEP, which include: (a) Reinforcement and Expansion of the Electricity Network; (b) Access Scale-Up; and (c) Modernization Support. EEP will continue to be the lead entity for FM and disbursement. Transaction-based disbursement for the advance method will remain. EEP will open a new segregated DA denominated in U.S. dollars at the National Bank of Ethiopia. Any change to the account signatories shall be communicated to the Bank. Any change to the DA ceiling needs will have to be discussed and agreed with the Bank. Under the Modernization Support component, there is counterpart contribution for the ERP system. As needed, the GoE's counterpart funding under the project will be accounted and reported as part of the project.
- (b) The following arrangements will be in place for the AF component to be implemented by DBE (Market Development for Renewable Energy and Energy Efficient Products):
- (i) Existing FM arrangements, including fund flow and disbursement arrangements, will continue to be used for the IDA credit of US\$20 million allocated to the credit lines established for MFIs and PSEs. Transaction-based disbursement for the advance method will be applicable. DBE will open a new segregated DA denominated in U.S. dollars at the National Bank of Ethiopia. Signatories shall be communicated to the Bank. Any change to the DA ceilings will have to be discussed and agreed with the Bank. The same disbursement category will be used (that is category 2 of the parent project).
- (ii) As far as the ESME grant in the amount of US\$5 million is concerned, disbursement and fund flow arrangements are as follows:
- **Designated bank accounts.** A new Separate DA will be opened for the ESME grant at the National Bank of Ethiopia (NBE) and denominated in U.S dollars. The DA will be managed by DBE. It will be used for initial advances and subsequent replenishment on the basis of SoE for eligible expenditures of all categories. Signatories that approve withdrawal applications will be notified to the Bank.
 - **Fund flow and disbursement methods.** Funds will flow from the World Bank to DBE. The ESME grant will use the Advances to the DA and Reimbursement methods only. SoE or Traditional Basis of disbursement will be used for the Grant. An initial advance up to the agreed ceiling will be made to the DA and subsequent replenishments will be on the basis of SoE for eligible expenditures. Details will be listed in the Disbursement Letter of the grant.
 - **Local currency collateral funds account.** Funds devoted to the collateral support facility will be deposited in a separate local currency "Collateral Fund Account" (at NBE) under the control of NBE/GoE through the Steering

Committee. Approved collateral financing under the grant will be transferred from the DA to this “Collateral Fund Account”.

- **Disbursement conditions for the collateral support facility.** Includes establishment of the Steering Committee and the associated governance structure; and adoption of an Operational Manual satisfactory to IDA. The manual should include: eligibility criteria and conditions to be met by potential beneficiaries to access the sub-loans, decision mechanisms for the governance of the collateral support facility; and monitoring and evaluation and FM arrangements.
- **Grant Agreements and disbursement letters.** Separate ones have been prepared.

(iii) The CF projects in the amount of US\$20 million (that is, Ci-Dev carbon purchase under *Off-Grid Renewable Energy Program* and *Clean Cooking Energy Program*) will be governed by the Emission Reduction Purchase Agreement to be entered into by the beneficiary and Ci-Dev. Such Agreement will not be included in the AF-related amendment to the Financing Agreement nor in the Disbursement Letter. As the carbon finance programs are not governed by the Investment Project Financing framework, there will not be FM oversight.

(iv) It is agreed with the GoE and DBE that FM functions associated to the activities currently entrusted to the MoWIE²² will be handled by DBE.

23. Past experience shows that the disbursement rate is low for most projects and there are delays in submission of withdrawal applications leading to inactive DAs. The underpinning reasons are largely related to project implementation issues and capacities. In addition, costs in the amount of US\$ 4.4 million incurred for activities being implemented by DBE were questioned by the Bank as the amounts replenished were not in line with the requirements indicated in the Disbursement Letter. The Bank discussed this issue internally and a set of recommended actions was notified to DBE.²³ DBE followed up and subsequently collected the related amounts from MFIs,²⁴ which is the major issue noted in the Bank’s notification to the DBE. Other remaining issues will be followed up and resolved in line with the Bank’s letter dated March 9, 2016.

Financial Reporting

24. EEP and DBE will continue to prepare quarterly un-audited Interim Financial Reports for the project in form and content satisfactory to the Bank, which will be submitted to the Bank within 45 days of the end of the quarter to which they relate. The format and content of the IFRs has been agreed with both DBE and EEP under the parent project and will continue to be used for the AF. However, the format used by DBE will be amended to reflect the specific nature of the ESME grant. In general, the contents of the IFR will include at least a Statement of Sources

²² In line with para 4 page 56.

²³ World Bank Letter of March 9, 2016.

²⁴ DBE letter of April 13, 2016 ref no ECGF/050/2016

and Uses of Funds, a Statement of Uses of Funds by Project Activity/Component or Categories, a Statement of DA, Notes on the IFR on financial performances, and schedule and supporting documents.

25. The implementing agencies will also continue to prepare the projects annual accounts/financial statements within three months of the end of the accounting year in accordance with accounting standards acceptable to the Bank. The audited financial statements should be submitted to the World Bank within six months of the end of the accounting year.

26. Past experience indicates that DBE submits its IFRs on time and with acceptable quality. Reports submitted by EEP are often late and of variable quality. Typical flaws include wrong presentation of balances (for example, advances and payables); inadequate explanation of financial performances; repeatedly observed cumulative balance and opening balance differences; unrecorded disbursements from the Bank and adjustments included without any explanation. These issues require attentions.

Auditing

27. **Project audit.** Annual audited financial statements and audit report (including Management Letter) for the project will continue to be submitted by EEP and DBE to the Bank within six months of the end of the fiscal year using auditors acceptable to the Bank. With respect to the ESME grant, DBE will be subjected to the same auditing arrangements as agreed under ENREP. DBE will include the grant's financial statements into the overall project financial statement and will have them audited as part of the project. Sources and uses of the project will include sources and eligible expenditure of the ESME grant. Appropriate notes and schedules to elaborate on this arrangement can be included as needed. The existing terms of reface for the audit will be updated to reflect these changes and the peculiarities associated with the grant.

28. The annual financial statements of the project, to be prepared in accordance with the required standards, will be completed within three months of the end of the fiscal year and provided to the auditor. The audit will be completed in accordance with the International Standards of Auditing issued by the International Federation of Accountants. The auditor will provide an opinion on the project financial statements as well as a Management Letter, which will outline deficiencies or weakness in systems and controls, recommendations for their improvement, and report on compliance with key financial covenants. The ToR for the audit currently in use for ENREP will be applicable to the AF as well. The ToR used by DBE will be amended as agreed at negotiation to reflect peculiarities and changes related to the ESME grant. In accordance with Bank's policies, the Bank requires that the Borrower discloses the audited financial statements in a manner acceptable to the Bank. Following the Bank's formal receipt of these statements, the Bank makes them available to the public in accordance with the World Bank Policy on Access to Information.

29. **DBE entity audit report.** DBE audit report for the year ended on June 30, 2015, which was due on December 31, 2015, was submitted with significant delay (on March 28, 2016). Both this report, as well as the previous one for the year ended on June 30, 2014, were issued with a clean (un-qualified) opinion. The audit report for the year ended on June 30, 2014 noted that

issues such as long outstanding assets and liabilities and differences in inter-branch accounts were resolved. The audit for the following year did not identify any issue.

30. **EEP Entity audit report.** EEP audit report for the year ended on July 7, 2015 is outstanding. The audit report for the period from the split date up to July 7, 2014, which was submitted to the Bank only on February 16, 2016, was issued with a disclaimer opinion. Among the reasons for the disclaimer, the auditors noted that they had not received any report from the Supervising Authority attesting how EEPCo's specific rights and obligations had been transferred to EEP when this was established on December 9, 2013. As result, they were unable to assess the correctness of the opening balances stated by EEP. The auditors also noted that there was no separate book keeping for EEP and EEU, and financial statements were prepared by analyzing accounts manually. Because of the magnitude of transactions involved, the auditors were not able to extract data and confirm (or verify by alternative means) that there were no misstatements. Furthermore, they were not able to verify (and were not provided with the required documentation) the revenues included in the profit and loss amounting to Birr 1,586,218,866 (approximately US\$75 million). Another limitation highlighted relates to the stock included in the balance sheet as of July 7, 2014, amounting to Birr 442,603,916 (approximately US\$21.1 million), which could not be verified. The auditors also expressed reservation on the transfer of Birr 43,377,511 (approximately US\$2.1 million) from profits to paid-up capital, for which they had not obtained appropriate and adequate evidence. Other qualification points include: (a) capitalization of losses due to currency exchange rate fluctuation in the amount of Birr 1,241,416,980 (approximately US\$59.1 million), which were included in the balance sheet instead of being reported in the profit and loss; and (b) retention of payables in foreign currency converted in Birr at the rate of the day liabilities were incurred instead of using the balance sheet date. EEU's audit was also issued with a disclaimer opinion. The Management Letters for both entities' audits noted significant weaknesses in the internal control system and raised compliance issues.

31. Two main measures were identified and agreed as negotiation conditions for the ENREP AF to resolve the issues underlying the disclaimer opinion. The first entailed the establishment of a task force involving all key stakeholders, including the Management and the Board of the power companies (EEP and EEU), the MoWIE which has the role of Supervisory Agency, and the MoFEC, to ensure a credible follow up on a regular basis (minimum quarterly) on the actions needed to solve such issues. The second entailed the preparation of an action plan with realistic timeframes to address entity audit and other financial management issues agreed upon by all stakeholders. This action plan will be implemented by EEP/EEU Management and closely monitored by the Board. EEP/EEU Management will regularly update other relevant stakeholders and the World Bank on the progress made. Such updates could be provided quarterly along with submissions of IFRs. The task force has been established as recommended and met once; a robust action plan detailing actions and decisions to be taken by EEP Management, EEP/EEU Board, the MoWIE, and the MoFEC has been submitted. Consultants will be recruited by EEP to support the Management and the Board in all aspects noted above. The Bank is also committed to offer support, including making available financing to recruit consultancy support. The Managements of both EEP and EEU have committed to deliver the

outstanding audit reports by the end of July 2016. The action plan and the related Management Letter were submitted to the Bank on March 25, 2016.²⁵

Financial Covenants

32. FM-related covenants:

(a) **Standard covenants**, which include: (i) maintenance of a satisfactory financial management system for the project; (ii) submission of interim financial reports for each quarter within 45 days of the end of the quarter; and (iii) submission of annual audited financial statements and audit report within six months of the end of each fiscal year.

(b) **Additional covenants**, which include: (i) the Internal Audit units of both EEP and DBE will review project activities at least once per year and prepare audit reports which will be shared during project supervisions; (ii) EEP will recruit individual consultants within three months of effectiveness to support the Board and the Management in addressing FM issues including the systemic issues noted in the audit reports; and (iii) the established task force will meet quarterly to follow up on FM issues

Risk Assessment and Mitigation

33. The FM risk for the project is rated as high and is expected to decrease to substantial when mitigating actions are implemented. The main strength of the project is that the project implementing units established within the former EEPCo have been substantially maintained within EEP following the split. As result, EEP has staff with experience in Bank-financed projects. EEP will finalize the updating of the Finance Procedures and Accounting Manuals, which describe the financial management systems and related internal control systems and other procedures. The main risks for the FM arrangement relate to the delays in submitting audit reports. In addition, there are pending issues that need to be addressed properly. They include past entity audit issues and the reported findings, as well as the JIT reported findings and recommendations thereof. The main lesson learnt from energy projects is that there are challenges in budget monitoring, internal audit oversight, and some internal control issues.

34. Action plans that encompass the mitigation measures for the risks and weaknesses are prepared, agreed, and documented below.

Table 3.1 FM Actions to be implemented in the Short run

| | | |
|---|---------------------|---------------------|
| 1. EEP/EEU shall submit the outstanding audit reports for the year ended on July 7, 2015 | As soon as possible | EEP/EEU |
| 2. EEP/EEU Management and Board as well as the established task force shall ensure constant follow up on EEP and EEU audit issues | Monthly | EEP/EEU/MoWIE/MoFEC |
| 3. The established task force shall meet regularly until issues are resolved | Monthly | EEP/EEU/MoWIE/MoFEC |

²⁵ Letter from EEP ref no co/2.6/191/08 dated March 25 2016 and EEU letter ref no 2.6/41/08 dated March 25 2016

| | | |
|--|---|---------------------|
| 4. EEP and EEU shall follow up on the implementation of JIT recommendations as defined by the action plan | Monthly | EEP/EEU/MoWIE/MoFEC |
| 5. EEP and EEU shall provide a comprehensive update to the Bank on the status of implementation of the action plan | Quarterly | EEP and EEU |
| 6. The EEP shall inform the Bank about the Board's approval of the already prepared 9 Finance Procedures and Accounting Manuals | Within 3 months of effectiveness | EEP |
| 7. Establishing disbursement and fund flow arrangements: a. A separate Designated Account shall be opened for the AF including the ESME grant b. DBE shall take actions on the questioned costs based on the guidance provided by the Task Team Leader on March 9, 2016. This includes refunding to DBE resources unused by MFIs and submitting withdrawal applications and notifications so as to allow updating Bank's records and upgrading the ceiling | a. Within 3 months of effectiveness b. As soon as possible | DBE |
| 8. EEP shall recruit individual consultants to support the Board and the Management in addressing FM issues including the systemic issues noted in the audit reports | Within 3 months of effectiveness | EEP |

Table 3.2 Actions in the Medium/long term

| <i>Action</i> | <i>Date Due By</i> | <i>Responsible</i> |
|---|--|----------------------------------|
| 1. Addressing EEP and EEU audit issues: a. EEP/EEU Board shall closely monitor and follow up on the implementation of the action plan b. The task force shall follow up on the implementation of the action plan c. EEP Management shall regularly update these bodies and the World Bank on the status of implementation of the action plan. These updates can be provided quarterly along with IFR submissions | a. Monthly b. Quarterly c. Regularly but at minimum quarterly | EEP and EEU management and Board |
| 2. Timely submitting project/entity audit reports: a. EEP shall timely submit annual audited financial statements and audit report (including the Management Letter) for the project and for the entity b. In accordance with Bank Policy, EEP/DBE shall disclose the project audited financial statements in a manner acceptable to the Bank. The Bank shall also disclose the report following formal receipt. | a. Within 6 months of the end of the fiscal year of the entities b. Within 2 months of issuance of the audit report | |
| 3. Improving budget preparation, utilization and monitoring: a. EEP and DBE shall prepare and have approved an annual work plan and a budget for the project. Both should be completed on time; properly articulated by project components, activities and categories; and submitted to the Bank for no-objection b. Both DBE and EEP shall intensify their efforts to improve budget utilization. Close monitoring shall be ensured on the utilization of funds transferred to MFIs, which remains low and may require to recall | Ongoing | EEP/EEU |

| <i>Action</i> | <i>Date Due By</i> | <i>Responsible</i> |
|---|---|--|
| <p>resources</p> <p>c. Systemic or system-based comparison of expenditures with budget availability shall be made for transactions. Where this is not possible, (off the system) checking, comparing availability of budget for planned payments against detailed budget by component/categories of the project, shall be used</p> <p>d. Budget monitoring shall be strengthened by improving reporting to Management and notably by providing adequate explanation of variances so as to facilitating corrective actions</p> | | |
| <p>4. Improving accounting arrangements:</p> <p>a. EPP shall finalize the preparation and approval processes for the remaining Finance Procedures and Accounting Manuals, which should incorporate the relevant FM aspects including budgeting, accounting and internal control. The approved manuals should be shared with the Bank</p> <p>b. EPP shall urgently finalize arrangements to provide connection to Agresso accounting system to the Project Implementation Unit needs</p> <p>c. The World Bank shall provide training to the assigned FM staff if capacity gaps are noted</p> | <p>Within 6 months of effectiveness</p> | <p>EEP</p> |
| <p>5. Strengthening internal control and audit</p> <p>a. EEP shall review the internal control system in place so as to identify areas with gaps and take corrective action while updating the manual</p> <p>b. EEP should fill, through assignment and/or recruitment, the vacant posts in the internal audit unit</p> <p>c. Training shall be provided to the internal auditors</p> <p>d. The Internal Audit manuals should be updated/developed so as to benefit from the required governance role of the internal audit;</p> <p>e. Project accounts should be audited by EEP and DBE's internal audit and reports should be shared during Bank missions</p> | <p>a. Within 3 months of effectiveness</p> <p>b. As soon as possible but no later than 6 months of effectiveness</p> <p>c. As soon as possible</p> <p>d. End April 2016</p> <p>e. Regularly</p> | <p>a. EEP</p> <p>b. EEP</p> <p>c. EEP/World Bank</p> <p>d. EEP</p> <p>e. EEP and DBE</p> |
| <p>6. Addressing accountability issues raised in JIT assessment</p> <p>a. EEP and EEU shall follow up on implementation of the actions concerning the JIT recommendations identified in the action plan</p> <p>b. EEP and EEU shall provide a comprehensive update to the Bank on the status of implementation of the action plan, eventually as part of the quarterly IFR</p> | <p>a. According to timetables</p> <p>b. Quarterly</p> | <p>EEP and EEU</p> |
| <p>7. Addressing IFR/Report issues</p> <p>a. IFRs shall be submitted to the Bank</p> | <p>a. Within 45 days from the quarter</p> | <p>a. EEP & DBE</p> |

| <i>Action</i> | <i>Date Due By</i> | <i>Responsible</i> |
|--|---------------------------------|--------------------|
| b. EEP should improve the quality of IFRs, addressing the highlighted reporting challenges | b. Ongoing on a quarterly basis | b. EEP |
| c. Trainings on IFR preparation shall be provided by the Bank | c. Ongoing | c. World Bank |

Supervision Plan

35. The project will be subject to full on site supervision, at least twice per year on the basis that the current FM risk assessment after mitigation measures remains substantial. After each supervision, the risk will be measured and recalibrated accordingly. Supervision activities will include: assessment of compliance with the agreed FM arrangements; review of quarterly IFRs; review of annual audited financial statements as well as timely follow-up of impending issues; transaction review; participation in project supervision missions as appropriate; and updating of the FM rating in the Implementation Status and Results Report.

Annex 4: Procurement

Procurement Arrangements and Management

General Provisions

1. Procurement for the proposed AF will be carried out in accordance with the World Bank's Guidelines: Procurement of Goods, Works and non-Consulting Services under IBRD Loans and IDA Credits and Grants, January 2011 and revised in July 2014; Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers, dated January 2011 and revised in July 2014; Bank's Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants dated October 15, 2006; and the provisions stipulated in the Financing Agreement. The general description of various items under different expenditure categories is presented in the Financing Agreement and elaborated in the Procurement Plan. For each contract to be financed under the AF, the different procurement methods or consultant selection methods, the need for prequalification, estimated costs, prior review requirements, and time frame are agreed between the Recipient and the Bank's project team in the Procurement Plan. The Procurement Plan will be updated at least annually, or as required, to reflect the actual project implementation needs and improvements in institutional capacity. The use of different procurement methods and market approaches for contracts financed under the AF are based on similar procedures and provisions as agreed in the Financing Agreement signed for ENREP. All exceptions for use of NCB as agreed for the parent project are valid for the AF as well.

Procurement Environment

2. The Federal Public Procurement Agency (FPPA) is mandated to regulate and enforce public procurement procedures in Ethiopia at the federal level. The country has public procurement proclamation (Public Procurement Proclamation No. 649/2009), directives, and manual and subsequent standard procurement documents to be used by all agencies implementing public procurement at federal level. The procedures for public procurement used by FPPA are fairly acceptable (with some qualification and exceptions while used in Bank-financed contracts). Nonetheless, there is no obligation on the part of the implementing agency (EEP) to follow FPPA directives in carrying out procurement activities under the AF.

Procurement Capacity of the Project Implementing Agency (IA)

3. EEP is endowed with a procurement directorate whose staff has fair experience in Bank-financed projects. Procurement oversight is provided by EEP's Board of Directors. EEP's procurement management system is lacking legal ground and is based more on institutional norms than written and binding procedures. Although EEP is a government-owned enterprise and uses public funding, it is not necessarily regulated under Ethiopia's Federal Government Public Procurement Proclamation No.649/2009. It has rather volunteered to follow the FPPA law. EEP is currently using EEPCo's procurement manual as a procedural guide.

4. In light of the above, the legal framework underpinning procurement carried out by EEP is inadequate as it is not enforceable by the law governing the country's public procurement.

Procurement and Contract Management Risks

5. The main challenges associated with EEP's performance on procurement and contract management include the following: (a) EEP is in the process of updating and customizing EEPCo's procurement manual and therefore lacks a legally binding procurement document (guideline). As EEP's procurement system is not necessarily governed by FPPA procedures, there is no certainty on the legal ground of the procurement decisions taken by EEP management; (b) EEP decision making process is lengthy and cumbersome. Both the Chief Executive Office and Board of Directors are involved in procurement decisions in addition to management and the committee established for endorsing tenders. As result, there is no authority providing independent oversight and handling complaints; (c) the decision making process is too lengthy, mostly because of the lack of delivery standards at the institutional level; and (d) although EEP is one the public agencies with the largest volume of procurement, not enough attention had been paid to strengthening its procurement and contract management capacity.

6. Based on the information available and EEP's performance in handling procurement under ENREP, EEP's procurement risk is high.

7. Going forward, it is imperative that the long delayed procurement manual is finalized and endorsed as legal procurement document for EEP. Also, the AF provides an opportunity for modernizing EEP's institutional procurement system and make it acceptable to all financiers as Alternative Procurement Arrangement to be used for implementing investment projects.

Supervision Plan

8. The project will be subject to full on site supervision, at least twice per year on the basis that the current procurement risk assessment remains high. After each supervision, the risk will be measured and recalibrated as needed. Supervision activities will include: assessment of compliance with the agreed procurement arrangements; review of Procurement Plan's implementation; post procurement reviews, and contract implementation management effectiveness. The Bank procurement team will participate in project supervision missions as appropriate and assist the client in managing procurement and implementation of high-value and complex contracts.

9. An Initial Procurement Plan for the AF activities is presented below using the simplified format. This will be further elaborated using the detailed Procurement Plan format.

Table 4.1 Initial Procurement Plan for Works and Goods

| No. | Contract (Description) | Estimated Cost (US\$, millions) | Procurement Method | P-Q | Domestic Preference (Yes/No) | Review by Bank (Prior/Post) | Expected Bid Opening Date |
|-----|--|---------------------------------|--------------------|------|------------------------------|-----------------------------|---------------------------|
| 1 | Construction of three (3) 230kV transmission lines (3 lots) | 45 | ICB | Post | No | Prior | November 15, 2016 |
| 2 | Expansion of three (3) existing substations and construction of three (3) new 230/kV substations (one package) | 40 | ICB | Post | No | Prior | November 15, 2016 |
| 3 | Supply of distribution material and SCADA system installation (4lots) | 30 | ICB | Post | Yes | Prior | December 15, 2016 |
| 4 | Supply of concrete poles | 10 | ICB | Post | Yes | Prior | December 30, 2016 |
| 5 | Supply of transformers | 2 | ICB | Post | Yes | Prior | December 25, 2016 |
| 6 | Installation of Distribution networks for 3 North-West Regions towns | 4 | NCB | Post | No | Prior | January 31, 2017 |
| 7 | Installation of Distribution networks for 3 South East Regions towns | 4 | NCB | Post | No | Prior | January 15, 2017 |
| 8 | Supply of goods for 8+6 towns connection program (service cables + accessories) | 25 | ICB | Post | Yes | Prior | October 15, 2016 |
| 9 | Supply of 150,000 energy meters | 2 | ICB | Post | Yes | | September 15, 2016 |
| 10 | Works for 8 towns connection program (6+8 lots) | 5 | NCB | Post | No | Prior | February 16, 2017 |
| 11 | Hardware for tracking /monitoring system for DBE | 0.15 | ICB | Post | No | Prior | September 1, 2016 |

Table 4.2. Initial Procurement Plan for Consultancy Services

| No. | Description of Services | Estimated Cost (US\$, millions) | Selection Method | Review by Bank (Prior/Post) | Expected Proposals Submission Date |
|-----|---|---------------------------------|------------------|-----------------------------|------------------------------------|
| 1 | Owner's Engineer for the Transmission component | 2.0 | QCBS | Prior | 07/30/2016 |
| 2 | Owner's Engineer for the Distribution component | 2.0 | QCBS | Prior | 07/30/2016 |
| 3 | ERP support Consultant (Individual) | 0.15 | IC | Prior | 05/15/2016 |