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Report No: PAD3872

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 347.1 MILLION
(US$500 MILLION EQUIVALENT)

TO THE

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

FOR THE

ACCESS TO DISTRIBUTED ELECTRICITY AND LIGHTING IN ETHIOPIA (ADELE) PROJECT

March 8, 2021

Energy and Extractives Global Practice
Eastern and Southern Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective January 31, 2021)

Currency Unit =	Ethiopian Birr (ETB)
US$1 =	ETB 39.48
US$1 =	SDR 0.69

ETHIOPIAN FISCAL YEAR
July 8 – July 7

ABBREVIATIONS AND ACRONYMS

A/RAP	Abbreviated/Resettlement Action Plan
ACC	Agricultural Commercialization Cluster
ACE	Africa Clean Energy Program
ADELE	Access to Distributed Electricity and Lighting in Ethiopia
AML	Anti-Money Laundering
AWPB	Annual Work Plan and Budget
BOM	Board of Management
CAPEX	Capital Expenditures
CAR	Capital Adequacy Ratio
CBE	Commercial Bank of Ethiopia
CBS	Core Banking System
CEO	Chief Executive Officer
CFT	Combating the Financing of Terrorism
COVID-19	Corona Virus 2019
CPAR	Country Procurement Assessment
CPF	Country Partnership Framework
CRMD	Compliance and Risk Management Directorate
DA	Designated Account
DBE	Development Bank of Ethiopia
DFI	Development Finance Institution
DFID	United Kingdom's Department for International Development
DoE	Directorate of Electrification
EEA	Ethiopian Energy Authority
EEP	Ethiopian Electric Power
EEU	Ethiopian Electric Utility
EFY	Ethiopian Fiscal Year
EIB	European Investment Bank
EIRR	Economic Internal Rate of Return
ELEAP	Ethiopia Electrification Program
EMC	Executive Management Committee
EnDev	Energizing Development

ENREP	Electricity Network Rehabilitation and Strengthening Project
EPC	Engineering, Procurement, and Construction
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESMAP	Energy Sector Management Assistance Program
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ESRM	Environmental and Social Risk and Impacts Management
ETB	Ethiopian Birr
EU	European Union
FAS	Fund Administration Support
FDI	Foreign Direct Investment
FEACC	Federal Ethics and Anti-Corruption Commission
FI	Financial Intermediary
FIG	Financial Institutions Group
FIRR	Financial Internal Rate of Return
FM	Financial Management
FPPPAA	Federal Public Procurement and Property Administration Agency
GAAP	General Accepted Accounting Principles
GBV	Gender-Based Violence
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIS	Geographic Information System
GIZ	German Agency for International Cooperation (*Gesellschaft für Internationale Zusammenarbeit*)
GoE	Government of Ethiopia
GOGLA	Global Off-grid Lighting Association
GRM	Grievance Redress Mechanism
GTP	Growth and Transformation Plan
HRHuman ResourcesIAP	Internal Audit Process
ICB	International Competitive Bidding
ICT	Information and Communication Technology
IDP	Internally Displaced Person
IEC	International Electrotechnical Commission
IFC	International Finance Corporation
IFR	Interim Financial Report
IFRS	International Financial Reporting Standards
IPF	Investment Project Financing
IPR	Independent Procurement Review
IT	Information Technology
IVA	Independent Verification Agent
KPI	Key Performance Indicator
LC	Letter of Credit

LLP	Loan Loss Provision
LMP	Labor Management Procedure
M&E	Monitoring and Evaluation
MAPS	Methodology on Assessment of Procurement Systems
MAS	Manufacturing Agribusiness and Services
MFI	Microfinance Institution
MoF	Ministry of Finance
MoWIE	Ministry of Water, Irrigation and Energy
MSEs	Micro and Small Enterprises
MST	Minimum Subsidy Tender
MTF	Multi-Tier Framework
MV	Medium-Voltage
NBE	National Bank of Ethiopia
NCB	National Competitive Bidding
NDC	Nationally Determined Contribution
NEP	National Electrification Program
NPL	Non-performing Loan
NPV	Net Present Value
O&M	Operation and Maintenance
OGS	Off-Grid Solar
OGU	Off-Grid Unit
OHS	Occupational Health and Safety
PAD	Project Appraisal Document
PAP	Project-Affected Person
PAYGo	Pay-as-you-go
PBG	Performance-Based Grant
PCB	Polychlorinated Biphenyl
PDO	Project Development Objective
PEFA	Public Expenditure and Financial Accountability
PFI	Participating Financial Institution
PFM	Public Financial Management
PIU	Project Implementation Unit
PMO	Portfolio Management Office
POM	Project Operations Manual
PPIAF	Public-Private Infrastructure Advisory Facility
PPE	Personal Protective Equipment
PPP	Public-Private Partnership
PPSD	Project Procurement Strategy for Development
PSNP	Productive Safety Net Program
PUE	Productive Use Equipment
PV	Photovoltaic
RBF	Results-Based Financing
REACC	Regional Ethics and Anti-Corruption Commission
REF	Rural Electrification Fund
RoaA	Return on Average Assets
RoaE	Return on Average Equity

RPF	Resettlement Policy Framework
RPP	Revenue Protection Program
RPPPAA	Regional Public Procurement and Property Administration Agency
SA	Social Assessment
SBD	Standard Bidding Document
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SH	Sexual Harassment
SHS	Solar Home System
SMEs	Small and Medium Enterprises
SMEFP	Small and Medium Enterprise Finance Project
SNNPR	Southern Nations, Nationalities, and Peoples' Region
SOB	State-Owned Bank
SOE	State-Owned Enterprise
STDs	Sexually Transmitted and Communicable Diseases
STEM	Science, Technology, Engineering, and Mathematics
STEP	Systematic Tracking of Exchanges in Procurement
TOR	Terms of Reference
TOU	Time of Use
UEAP	Universal Electricity Access Program
USAID	United States Agency for International Development
VSLA	Village Savings and Loan Association
WEDP	Women Entrepreneurship Development Project
WMP	Waste Management Plan
WTP	Willingness to Pay

Regional Vice President: Hafez M. H. Ghanem

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DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Ethiopia	Access to Distributed Electricity and Lighting in Ethiopia	
Project ID	**Financing Instrument**	**Environmental and Social Risk Classification**
P171742	Investment Project Financing	Substantial

Financing & Implementation Modalities

[ ] Multiphase Programmatic Approach (MPA)	[ ] Contingent Emergency Response Component (CERC)
[ ] Series of Projects (SOP)	[ ] Fragile State(s)
[ ] Performance-Based Conditions (PBCs)	[ ] Small State(s)
[✓] Financial Intermediaries (FI)	[ ] Fragile within a non-fragile Country
[ ] Project-Based Guarantee	[ ] Conflict
[ ] Deferred Drawdown	[ ] Responding to Natural or Man-made Disaster
[ ] Alternate Procurement Arrangements (APA)	[ ] Hands-on Enhanced Implementation Support (HEIS)

Expected Approval Date	Expected Closing Date
29-Mar-2021	31-Mar-2027

Bank/IFC Collaboration

No

Proposed Development Objective(s)

The development objective is to increase access to reliable electricity for households, social institutions, and enterprises in Ethiopia.

Components

Component Name	Cost (US$, millions)

1. Network strengthening for improved reliability of supply in urban areas	100.00
2. Solar-hybrid mini grids for rural economic development	270.00
3. Solar home systems for households (HHs), small-holder farmers and small businesses	50.50
4. Standalone solar systems for health and education facilities	55.00
5. Capacity building, technical assistance and implementation support	24.50

Organizations

Borrower:	Federal Democratic Republic of Ethiopia
Implementing Agency:	Ministry of Water, Irrigation and Energy Ethiopia Electric Utility Development Bank of Ethiopia (DBE)

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	500.00
Total Financing	500.00
of which IBRD/IDA	500.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Development Association (IDA)	500.00
IDA Credit	500.00

IDA Resources (in US$, Millions)

	Credit Amount	Grant Amount	Guarantee Amount	Total Amount
Ethiopia	500.00	0.00	0.00	500.00
National PBA	500.00	0.00	0.00	500.00

Total	**500.00**	**0.00**	**0.00**	**500.00**

Expected Disbursements (in US$, Millions)

WB Fiscal Year	2021	2022	2023	2024	2025	2026	2027
Annual	0.00	50.00	100.00	150.00	100.00	50.00	50.00
Cumulative	0.00	50.00	150.00	300.00	400.00	450.00	500.00

INSTITUTIONAL DATA

Practice Area (Lead)

Energy & Extractives

Contributing Practice Areas

Finance, Competitiveness and Innovation

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	High
2. Macroeconomic	Substantial
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Substantial
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	High
7. Environment and Social	Substantial
8. Stakeholders	Moderate
9. Other	Moderate
10. Overall	Substantial

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

[ ] Yes [✓] No

Does the project require any waivers of Bank policies?

[ ] Yes [✓] No

Environmental and Social Standards Relevance Given its Context at the Time of Appraisal

E & S Standards	Relevance
Assessment and Management of Environmental and Social Risks and Impacts	Relevant
Stakeholder Engagement and Information Disclosure	Relevant
Labor and Working Conditions	Relevant
Resource Efficiency and Pollution Prevention and Management	Relevant
Community Health and Safety	Relevant
Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant
Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Relevant
Cultural Heritage	Relevant
Financial Intermediaries	Relevant

NOTE: For further information regarding the World Bank's due diligence assessment of the Project's potential environmental and social risks and impacts, please refer to the Project's Appraisal Environmental and Social Review Summary (ESRS).

Legal Covenants

Sections and Description

The Recipient shall, in accordance with Section IV.1 of Schedule 2 to the Financing Agreement:
(a) cause EEU (through its EEU's off-grid unit) to carry out an operational and financial assessment of the sustainability of the solar systems installed under Part 4 of the Project; and
(b) at least 3 months before the Closing Date, furnish to the Association, a time-bound action plan for the operation and maintenance of solar systems installed in health, education and cold storage facilities under Part 4 of the Project, said plan to be prepared in accordance with terms of reference approved by the Association, including the results of the assessment carried out pursuant to paragraph (a) above.

Sections and Description
The Recipient, through MoWIE shall furnish to the Association a time-bound action plan for capacity building, prepared in accordance with terms of reference satisfactory to the Association, for oversight and implementation of the National Electrification Program, and implementation of such plan as approved by the Association in accordance with Section I.A.4 of Schedule 2 to the Financing Agreement.

Conditions

Type	Description
Effectiveness	The Recipient, DBE and EEU, each has adopted the Project Operation Manual ("POM") prepared by the Recipient and approved by the Association in accordance with Sections I.B.1 and I.B.2 of Schedule 2 to the Financing Agreement.
Type	Description
Effectiveness	The DBE Subsidiary Agreement has been executed on behalf of the Recipient and DBE, and the DBE Subsidiary Agreement has been duly authorized by the Recipient and DBE and is legally binding upon the Recipient and DBE in accordance with its terms in accordance with Section 5.01(b) and Section I.C.2 of Schedule 2 to the Financing Agreement.
Type	Description
Effectiveness	The EEU Subsidiary Agreement has been executed on behalf of the Recipient and the Project Implementing Entity, and the EEU Subsidiary Agreement has been duly authorized by the Recipient and EEU and is legally binding upon the Recipient and EEU in accordance with its terms in accordance with Section 5.01(c) and Section I.B.7 of Schedule 2 to the Financing Agreement.
Type	Description
Effectiveness	The Recipient, through EEU, has prepared in accordance with terms of reference satisfactory to the Association, a time-bound staffing plan for the recruitment of the following at each of EEU's eleven (11) regional offices to ensure compliance with the ESCP: at least one (1) environment expert, one (1) social expert, and one (1) occupation, health and safety expert in accordance with Section 5.01(d) to the Financing Agreement.
Type	Description
Disbursement	Under Category (2), no withdrawal shall be made unless and until EEU has recruited or appointed the OGU Additional Staff, under terms of reference acceptable to the Association

	in accordance with Section III.B.1(b) of Schedule 2 to the Financing Agreement.
Type Disbursement	Description Under Category (3), no withdrawal shall be made unless and until the Recipient, through EEU has: (i) adopted the EEU Manual after its approval by the Association; (ii) entered into a competitively procured contract for transaction advisory support and based terms of reference approved by the Association; (iii) implemented, in a manner satisfactory to the Association, actions set out in the Environment and Social Management System Capacity Assessment and Action Plan; and (iv) until EEU has recruited or appointed the OGU Additional Staff, under terms of reference acceptable to the Association in accordance with Section III.B.1(c) of Schedule 2 to the Financing Agreement.
Type Disbursement	Description Under Category (4), no withdrawal shall be made unless and until the Recipient: (i) has adopted the MoWIE Manual after its approval by the Association; (ii) has entered into a competitively procured contract for fund administration support and based terms of reference approved by the Association; and (iii) has established the Environment and Social Management System in accordance with Section III.B.1(d) of Schedule 2 to the Financing Agreement.
Type Disbursement	Description Under Category (5), no withdrawal shall be made unless and until the Recipient: (i) has adopted the DBE Manual after its approval by the Association; and (ii) has established the Environment and Social Management System in accordance with Section III.B.1(e) of Schedule 2 to the Financing Agreement.
Type Disbursement	Description Under Category (6), no withdrawal shall be made unless and until EEU has recruited or appointed the OGU Additional Staff, under terms of reference acceptable to the Association in accordance with Section III.B.1(b) of Schedule 2 to the Financing Agreement in accordance with Section III.B.1(f) of Schedule 2 to the Financing Agreement.

I. STRATEGIC CONTEXT

A. Country Context

1. **Located in the Horn of Africa, Ethiopia is a populous and diverse country, with significant potential to reap the demographic dividend.** With an estimated population of over 115 million[1], out of which more than 80 percent live in rural areas, Ethiopia is the second most populous country in Sub-Saharan Africa. The country is a land of 76 nationalities and peoples, with roughly 76 languages spoken. It is undergoing a fast demographic transition with a rapidly rising working-age population that presents both opportunities and challenges.

2. **Ethiopia's economy experienced strong, broad-based growth in the past decade as one of the world's fastest-growing economies.** This period of robust growth of about 10 percent was driven by large-scale public investment in infrastructure and energy, which was made possible by favorable commodity prices and international debt-relief efforts in the mid-2000s. Extreme poverty[2] declined from 55 percent in 2000 to 25 percent in 2018, one of the most impressive poverty reduction results recorded internationally. Primary enrollment rate quadrupled, child mortality rate halved, and the number of people with access to clean water more than doubled. Average life expectancy has increased by about one year annually since 2000 and is now higher than the averages for both Sub-Saharan Africa and low-income countries worldwide.

3. **Ethiopia's recent economic success has occurred in a context of modest structural economic transformation and private sector development.** Massive public infrastructure investment has been at the center of the country's economic strategy. The Government has sustained high levels of public investment which has driven strong growth in agriculture and services. Ethiopia was able to achieve a substantial expansion of energy, road, railway, and telecom infrastructure, financed by domestic and external public borrowing. Nevertheless, there has been relatively slow progress in the development of a vibrant private sector especially in manufacturing and modern services, growing indebtedness including in major state-owned enterprises (SOEs), and persistent inflation. The Government is shifting its focus to expand private sector participation to enhance economic dynamism and leverage financing and technical resources to achieve national social and economic growth targets under 10-Year Perspective Plan.

4. **Despite the progress, Ethiopia remains among the 20 poorest countries in the world, with a per capita income of US$772 (2018).** Vulnerability to return to poverty remains high, especially for those engaged in rural livelihoods depending on rain-fed small-scale agriculture. In addition, Ethiopia hosts more than 920,000 refugees, primarily from neighboring Somalia, Sudan, South Sudan, and Eritrea, and the number of internally displaced persons (IDPs) has risen from 1.6 million to 2.8 million since the beginning of 2018. Access to education has increased, but only 57 percent of children starting first grade will complete ninth grade. With regard to gender-based disparities, Ethiopia has made some significant improvements. The Global Gender Gap report of 2020 ranked Ethiopia 82 out of 149 countries, with an improvement of 35 positions compared to 2018. Nevertheless, significant and deeply engrained

[1] United Nations. 2020. "World Population Dashboard, Ethiopia." January 2021, https://www.unfpa.org/data/world-population/ET

[2] Extreme poverty is measured at the international poverty line of US$1.9 per day in 2011 purchasing power parity terms. The 2018 poverty rate is based on Macro Poverty Outlook 2018, World Bank.

disparities remain, and a combination of cultural norms and socioeconomic inequality greatly increases the risks faced by women in terms of their well-being. The country is particularly lagging in terms of economic participation and educational attainment where the rank is 125 and 140, respectively. Addressing gender inequalities in terms of access to education and decision-making, rights, unpaid labor, land, and productive resources is a crucial ingredient for economic growth in the country.[3]

5. **While the extent of the impact currently remains unclear, the COVID-19 pandemic will likely have implications on the livelihoods of poor households and economically affect those living in urban and rural Ethiopia.** On the external side, the COVID-19 crisis has affected exports, remittances, and foreign direct investment (FDI). While merchandise export value grew by 12 percent (year on year) in FY2020, this is the result of the pre-COVID-19 performance, as exports of goods have dipped in recent months. Meanwhile, private transfers and FDI declined by 10.2 percent and 19.8 percent, respectively, during FY2020. Domestically, containment measures and transport disruptions have affected people and firms, which have reportedly experienced income losses, affecting private consumption and investment. Employment rates plunged in the early days of the pandemic, with 14 percent of respondents in a recent survey losing their job at the beginning of the outbreak. Driven by food prices, inflation continued trending up, reaching 24.6 percent in July 2020, although the upward trend was observed even before COVID-19.

6. **The macroeconomic impact and reduction in government revenue will put pressure on its provision of social services.** In response to the observed and anticipated COVID-19 impacts, monetary policy has been relaxed to provide liquidity to commercial banks and facilitate the reprofiling of loans for creditors under difficulties. Reserve money grew by 22.8 percent in FY2020, against a pre-COVID-19 target of 12.5 percent, supporting those liquidity injections as well as financing to the government. Tax revenue is estimated to have declined from 10 percent of gross domestic product (GDP) in FY2019 to 8.6 percent of GDP in FY2020, as collections of corporate income tax and value added tax, among others, falter. Meanwhile, recurrent expenditure increased by 1.5 percent of GDP in FY2020, driven by the increase in the COVID-19-related expenses (including health care and food security support during the crisis). Reflecting the significant disruptions in economic activity caused by the COVID-19 contention measures, as well as the weakening of household income and demand, the growth forecasts for FY2020 and FY2021 have been reduced to 2.3 percent and 0 percent, respectively.

7. **Ethiopia aims to achieve a rapid and inclusive economic growth setting the country on a path to prosperity in the coming ten years according to its 10-year perspective plan.** The energy sector – particularly universal electrification is a pivotal driver to achieving Ethiopia's economic reform agenda and is at the core of its poverty reduction targets. Adequate, affordable, and reliable access to electricity is vital to enable a structural transformation of Ethiopia's economy and society, including aspirations around domestic manufacturing capacity adequate for local needs and exports, industrial parks, entrepreneurship, information and communication technology (ICT), and financial sectors.

[3] Estimates indicate that reducing basic gender inequalities in education and the labor market could increase the annual GDP growth in Ethiopia by around 1.9 percentage points—which would be an important contribution to poverty reduction given the elasticity of growth to poverty reduction. World Bank. 2009. "Ethiopia: Unleashing the Potential of Ethiopian Women – Trends and Options for Economic Empowerment." World Bank, Washington, DC.

B. Sectoral and Institutional Context

8. **Ethiopia's power sector is underpinned by a broad policy, legal, and strategic framework and structured by the National Energy Policy (2013).** The Ministry of Water, Irrigation and Energy (MoWIE) oversees, plans, coordinates, and monitors overall energy development. In 2013 (through the Council of Ministers Proclamation No. 302/2013), the vertically integrated utility, Ethiopian Electric Power Corporation, was unbundled 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 customer services. The proclamation also established a regulatory agency, the Ethiopian Energy Authority (EEA), responsible for developing effective rules, directives, and standards for the sector.

9. **Ethiopia has invested substantial resources in expanding generation capacity and grid network.** As a result, installed generation capacity has quadrupled within a decade from around 1,100 MW in 2009 to 4,512 MW in 2020 (90 percent hydro), the third highest available generation capacity in Sub-Saharan Africa after South Africa and Nigeria. The Government of Ethiopia (GoE) is also advancing efforts to diversify its energy mix with wind, solar, and geothermal sources to complement the large hydropower base and to mitigate vulnerability to fluctuations in rainfall. Given its massive clean energy reserves, Ethiopia aims at becoming a power hub in East Africa and a cornerstone of the regional power market and of the East African Power Pool. In addition, substantial investments in grid expansion have led to the extension of the medium-voltage (MV) network to about 60 percent of towns and villages in the country. In 2005, the GoE launched the Universal Electricity Access Program (UEAP) to provide grid-based electrification to rural towns and villages. UEAP ranks among the most successful grid electrification programs in Africa, having expanded the electricity grid to about 6,000 towns and villages from 667, between 2005 and 2015. As a result, 90 percent of the population lives in close vicinity (5–10 km) to the MV network.

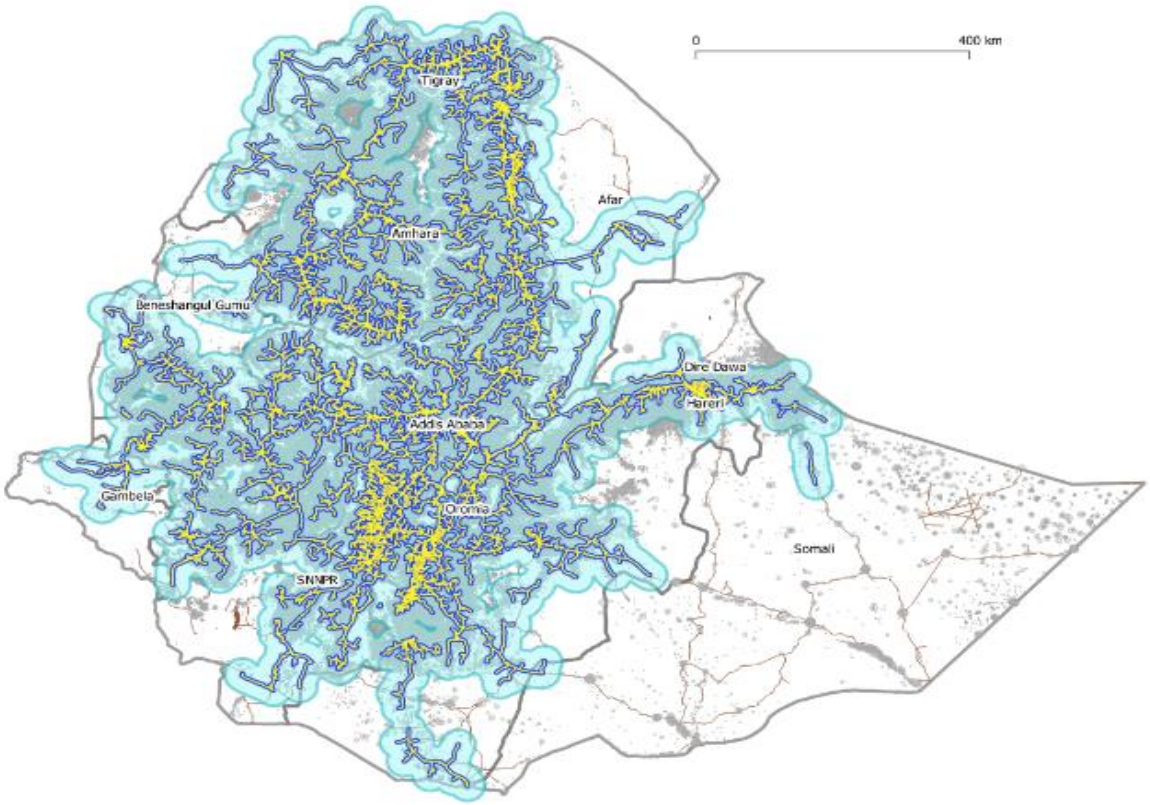
Ethiopia reports the third highest electricity access deficit in Sub-Saharan Africa

10. **The greatest access deficits are found in rural and deep-rural areas.** About 96 percent of urban households are connected to the grid (99.9 percent in Addis Ababa), while only 27 percent of rural households have access to electricity services. The highest deficits are experienced in deep-rural areas (beyond 25 km from the existing grid), where 5 percent of people have access to electricity; followed by rural areas (between 2.5 km and 25 km from the grid), with 5–10 percent of access; and the peri-urban areas (within 2.5 km from existing MV lines), where 20 percent of people have access.

11. **In 2017, Ethiopia launched the National Electrification Program (NEP) to address the challenge of low electrification rate that remained at odds with these infrastructure achievements.** Despite the success of the UEAP in connecting towns and villages, last-mile connections across the country did not keep pace (20 percent access in 2015). The NEP, which sets a target of universal electrification by 2025, presents an integrated approach of grid and off-grid solutions, building on UEAP's achievements on grid expansion and placing greater focus on service delivery and last-mile electrification for households, public institutions, and industries. The overall financing requirements of NEP amount to US$6 billion (US$3.2 billion for grid, US$2.5 for off-grid, and US$0.5 billion for technical assistance component) expected to come from government contribution and syndication through development partners and private sector resources.

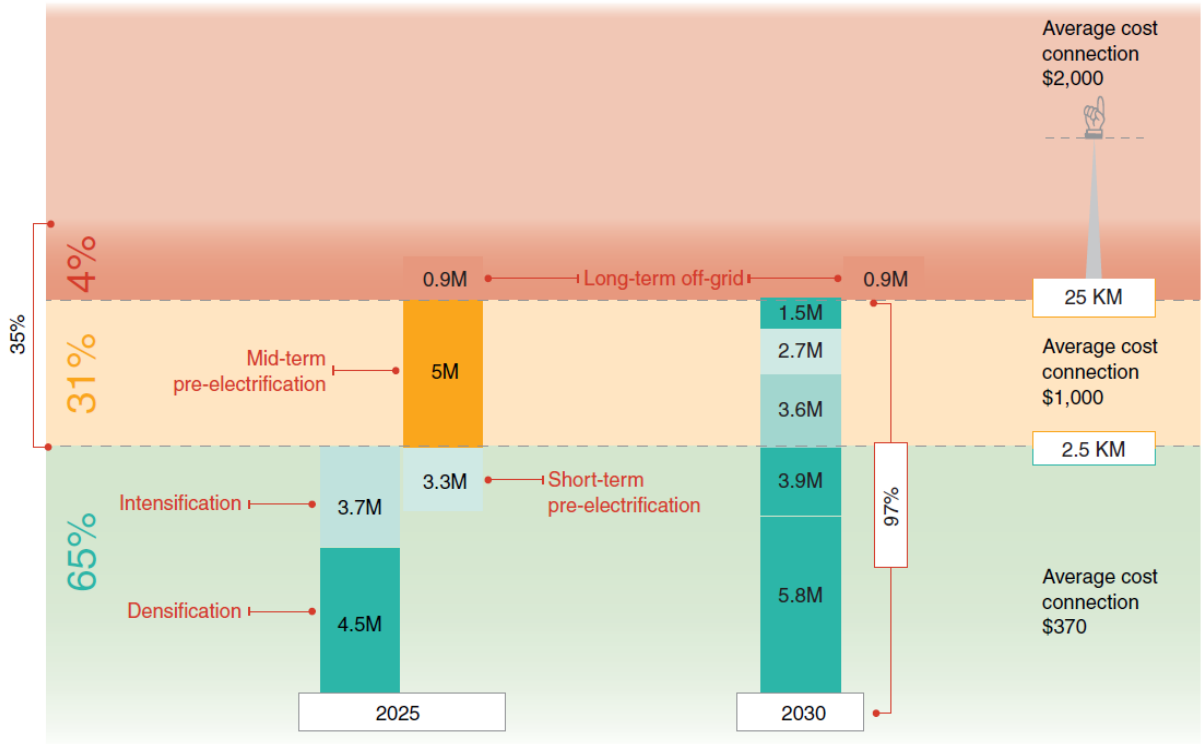
12. **In 2019, the GoE launched the NEP 2.0, an updated full-fledged off-grid program to reach 35 percent of the population by 2025 through public and private efforts, leveraging the latest technical and analytical inputs.** The geo-spatial analysis (Figure 1) conducted for the country identifies the least-cost technology solution by location and over time, indicating the progressive extension of the grid footprint and simultaneously the pockets for off-grid: (a) short-term pre-electrification solution for 3.3 million households, for which the grid, the least-cost option, will not become available by 2025; (b) midterm pre-electrification for about 5 million target beneficiaries residing between 2.5 km and 25 km away from the existing grid and expected to be connected to the grid by 2030; and (c) long-term off-grid/deep-rural solutions for about 1 million households. Based on this, off-grid solutions are expected to provide services to 35 percent of the population while acknowledging possible short-term electrification solutions for those households and communities waiting to get a grid connection by 2025, for a total of 9 million connections (Figure 2). In addition, the NEP 2.0 also operationalized the Multi-Tier Framework (MTF) survey for the first time, with a customer-centric approach to access and identification of the most appropriate technology solutions, in space and time, based on electricity needs (demand) in combination with geographic information system (GIS) tools. The NEP 2.0 also introduces the minimum subsidy tender (MST) concept, which uses a competitive bidding process to support private sector enterprises that can cost-effectively provide off-grid electricity services. The NEP 2.0 also contains an embedded commitment and strategy on closing gender gaps on off-grid value chains related to women entrepreneurs in creating jobs and as consumers.

Figure 1. Geo-spatial Map of Ethiopia



Source: NEP 2.0.

Figure 2. The NEP Integrated Grid and Off-Grid Components



Source: NEP 2.0.

Challenges remain in the rapid scale-up of electricity access

13. **Inadequate load planning and deterioration of reliability and quality of grid supply.** Even in the city of Addis Ababa, due to rapid increase in demand and inadequate load planning, the grid network witnesses high burnout of transformers, breach of thermal limits of conductors, and frequent failure of protection equipment. Increased load on the electrical system is also caused by natural population growth, economic development, and a propensity to shift toward electricity from other energy sources owing to the low electricity tariffs. This phenomenon results in poor electricity supply not only in Addis Ababa but in most regional towns. In Ethiopia, 57.6 percent of grid-connected households face 4–14 outages a week, and 2.8 percent of households face more than 14 outages a week.[4]

14. **A downward trajectory in sector financial viability until 2018.** Over the past decade, continued reliance on publicly financed power sector investments pushed the electricity sector to its financial limits. The two main financial challenges were (a) an eroding revenue base, due to electricity tariffs remaining nominally constant for over a decade; and (b) overreliance on short-term domestic debt to finance long-term infrastructure. At the end of FY2018, average consumer tariffs stood at about US$0.02 per kWh, while the cost of service reached US$0.07 per kWh. Meanwhile, the level of EEP's debt reached US$10.8 billion (11.5 percent of GDP), mainly from investment in large generation projects that have yet to start commercial operations. In the last three years, the GoE has taken successive concrete steps toward

[4] World Bank. 2018. "Ethiopia: Beyond Connections - Energy Access Diagnostic Report Based on the MTF." World Bank, Washington, DC.

improving financial sustainability of the power sector: (a) approval of a four-year electricity tariff reform in 2018, (b) adoption of a phased debt restructuring plan, and (c) the creation of a power sector reform road map.

15. **The off-grid stand-alone market, while active, faces a number of barriers to reach rural areas.** Ethiopia has an active off-grid solar (OGS) market with close to 10 companies operating and more than 1 million products sold in 2019.[5] While the recent growth and massive demand are impressive, the market remains behind its potential. Due to a number of barriers, OGS companies have not been able to penetrate rural and deep-rural areas and the market for larger systems is underdeveloped due to (a) lack of efficient physical and digital infrastructure (roads, digital network, and payments systems) and distribution channels to deliver services to the most remote, underserved areas; (b) insufficient financing options for consumers and value chain players; (c) business, licensing, and investment regulations limiting the development of off-grid solutions, affecting both mini-grids and pay-as-you-go (PAYGo) business models that have successfully scaled up access elsewhere in East Africa; (d) intermittent market supply due to limited access to foreign exchange for import; and (e) technical and institutional capacity constraints at the utility and ministry levels on planning and implementation. As a result, end-user prices of stand-alone solar solutions in Ethiopia are among the highest in the region. The market potential for OGS products, however, is enormous. A demand assessment carried out during project preparation found that over 11 million households, which currently have no access to the grid or a solar system, would have demand for an OGS system if it came with consumer financing options. Resolving the abovementioned market barriers would therefore open a path to fast-track electricity access expansion in rural areas.

16. **The mini-grid ecosystem in Ethiopia remains nascent with few private players and limited success with business models.** Local companies struggle with sufficient access to finance; companies that have demonstrated rapid scale in other markets were restricted from entering the Ethiopian market; and productive use of electricity solutions such as water pumping and irrigation have not yet found inroads into the market. In addition, until recently, regulations were missing that provided clarity on tariff aspects, licensing requirements, quality of service benchmarks, and technical standards, all key to promoting private sector involvement and commercial investment in the sector. Major progress has recently been made in this regard. The World Bank has supported the EEA in developing a mini-grid directive, which was adopted in November 2020. The new directive provides the necessary clarity on licensing, tariff setting, and technical and service standards as well as grid encroachment. Further, the EEA has developed a mini-grid tariff spreadsheet tool that calculates cost-reflective tariffs for mini-grids, considering subsidies and allowing for a variety of tariff structures (for example, time of use [TOU] rates and different tariffs for different customer classes).

The proposed Access to Distributed Electricity and Lighting in Ethiopia (ADELE) project is a continuation of the World Bank's long-term support toward universal energy access in Ethiopia backed by a geo-spatial plan and robust data analytics

17. **The World Bank is supporting the first phase of the NEP, especially the expansion of last-mile grid connections through the Ethiopia Electrification Project (ELEAP, P160395) since 2018.** The program is financing over 1 million grid connections, with EEU as the key implementing agency. ELEAP supports the first phase of the NEP's grid rollout and targets last-mile connections to households near EEU's existing

[5] GOGLA (2019): Global Off-Grid Solar Market Report H2 2018 and Lighting Global Country Deep Dive, December 2019.

network infrastructure. It also provides financing for demonstration of 12 mini-grids. In addition, institutional capacity has improved through the implementation of planning systems, the allocation of budget across the key functions in the utility, the creation of dedicated teams, and an M&E framework at both the ministry and utility levels. A flagship five-year gender and citizen engagement program is in implementation under EEU's leadership, which is showing progress on women's labor force participation in the workforce and in leadership, policy gaps around sexual harassment mitigation and response, and childcare provision.[6] For example, EEU has increased its footprint of female employees from 20 percent to 24 percent over the past two years, culminating in over 750 more female employees at the utility (November 2020 Human Resources [HR] data). Earlier identified bottlenecks with regard to health and safety were also significantly improved through the program, putting the utility in an adequate position to continue to lead the grid connection program.

18. **The proposed ADELE project will support the government's poverty reduction and social and geographic inclusion efforts.** The project will support off-grid electrification benefiting deep-rural and rural areas, in alignment with the NEP 2.0 vision, primarily toward off-grid electrification in deep-rural and rural areas targeted at social and geographical inclusion. The project will particularly target those households that were left behind in previous electrification initiatives. The project will expand the geographic footprint of electrification into underserved areas by leveraging decentralized renewable energy technologies, in particular solar photovoltaic (PV) mini-grids and individual OGS system for both household and productive use. Larger population centers, especially those with productive use potential, will be targeted for mini-grids. The mini-grids supported under the project will be located far away from the grid, targeting more rural, remote, and poorer communities. The financing under this project will bridge the gap between affordability levels of rural mini-grid customers and the costs of the developers.

19. **The OGS technologies will offer modular and flexible solutions for households that cannot be reached by the grid or mini-grids and will include special targeting for the poorer geographic regions and vulnerable populations.** Most households with access to Tier 1 and above solar products live in populated areas, but penetration is relatively low further from the grid, where the population density is lower, and companies and microfinance institutions (MFIs) may have difficulty serving customers. At the same time, lower OGS market penetration coincides with higher vulnerability of households. Particularly Benishangul-Gumuz, Gambella, Somali, and Afar are underserved. Together with parts of Oromia; Tigray; Southern Nations, Nationalities, and Peoples' Region (SNNPR); and Amhara, they form the 'lowlands', home to particularly vulnerable communities. The project will provide specific incentives for companies to target these poorer, underserved areas through results-based financing (RBF), which will increase availability and affordability of OGS systems for households, farmers, and microenterprises in these regions. Through the RBF support and parallel technical assistance, the project will promote innovative technical, business, and financial solutions to improve physical and digital infrastructure for service delivery and further enhance affordability and inclusion. The proposed project has a strong focus on closing the gender gap in the energy sector and increasing the percentage of women participating in the mini-grid sector and off-grid technology value chain.

20. **The proposed ADELE project is financing critical inputs to the COVID-19 pandemic national response by focusing on provision of electricity connections to health clinics and schools.** Health care

[6] For more information, see Ethiopia Broadens Opportunities for Women in the Energy Sector https://www.worldbank.org/en/news/feature/2020/02/03/ethiopia-broadens-opportunities-for-women-in-the-energy-sector.

facilities are at the forefront of fighting the pandemic, and reliable electricity is necessary to power equipment to save lives. Moreover, COVID-19 testing centers would also need electricity to test and trace affected patients, and COVID-19 vaccine distribution will require reliable cold chain, which requires electricity. Since access to reliable electricity connection is a necessary condition for lifesaving prenatal services provided by rural health care centers, this support will have a greater impact in contributing to the GoE's effort of reducing maternal and child mortality. Furthermore, distance learning during such crises needs to be supported by electrified households, thus emphasizing the role of electricity in providing quality education. In post-COVID-19 context, reliable electricity service is needed at health clinics for sustainable and effective service provision by the health system. Similarly, electricity is needed in schools to leverage e-teaching solutions and to run computers and other equipment.

21. **The proposed project will support delivery of energy services to enable productive use in rural and deep-rural areas, thus contributing to building back better in the post-COVID recovery.** The delivery of energy services through off-grid solutions will include a targeted support for productive and income-generating activities in agriculture (that is, irrigation, cold chain, and processing) and commercial sectors. This will contribute to improving the livelihoods of fragile and vulnerable communities and increasing food security. New supply chains that will be created in rural areas and innovative business models, such as PAYGo, combining product distribution with consumer financing, will improve the physical, digital, and financial infrastructure of poor and vulnerable communities and create opportunities for women and youth, disproportionately affected by unemployment and lack of productive opportunities. In addition, sustainable electricity access for health facilities and schools will help build human capital. Overall, provision of sustainable, reliable, and affordable electricity to households, farmers, and public institutions will increase their resilience to climate and other future shocks.

22. **The proposed project is underpinned by programmatic data analytics supported by the Energy Sector Management Assistance Program (ESMAP), Public-Private Infrastructure Advisory Facility (PPIAF), Africa's Green and Climate Resilient Development Trust Fund (AGREED2.0), and the Climate Resilience Facility.** Various sector studies have influenced the design of this project including (a) a geo-spatial analysis to determine where off-grid solutions are least cost and identify locations that could benefit from off-grid systems as pre-electrification solutions; (b) an energy access diagnostic report based on the MTF to establish the baseline of energy access in Ethiopia and harmonize understanding of electricity access and varying levels of service possible; (c) technical assessments for the different technologies (mini grids, solar home systems [SHSs], productive appliances, and stand-alone solar systems) focusing on mapping current status of supply and demand, current regulatory and policy environment, and potential for investment support; (d) market and affordability assessment that have been completed to inform the design of financial schemes to incentivize private participation in rural and deep-rural mini-grid and off-grid electrification, including analyses covering key productive and income-generating appliances; and (e) technical assistance to the GoE under development to advance key off-grid market-enabling activities including mobile payments and investment policies and regulations.

23. **The proposed project features multiple innovations that leverage technologies to generate data for more informed decision-making and monitoring.** Least-cost electrification planning tools and algorithms are used to drive investment decisions to support efficiency of allocation of public resources, leveraging of private resources, and maximization of development impact. The project will also leverage specialized software for development of mini-grids, which, among others, enable a data-driven development of a portfolio of suitable mini-grid sites, based on a set of economic parameters and

potential for productive uses. A tracking and monitoring platform is being developed to enable MoWIE to track and monitor progress of key performance indicators (KPIs) for efficiency, effectiveness, and progress against the off-grid (including mini-grid and public facilities) electrification program targets and for course adjustments as and when necessary and take timely actions if needed. This is informed by experiences, in Ethiopia and abroad, in establishing tracking capacity for off-grid and mini-grid electrification (including Development Bank of Ethiopia [DBE], Carbon Initiative For Development, and others). Support for innovative PAYGo business models further leverages synergies with digital development and contributes to improved financial inclusion while also providing opportunities for generating more nuanced data on the use and impact of OGS products.

C. Relevance to Higher Level Objectives

24. **The proposed operation is consistent with Ethiopia's Country Partnership Framework (CPF, Report No. 115135-ET) 2018–2022 and supports the World Bank's approach to addressing the pandemic's impact.** The CPF remains valid, and adjustments have been made to meet the challenges posed by COVID-19. Its areas of focus and objectives continue to provide a platform for implementing the World Bank Group global approach to addressing the impact of the pandemic. Support is being provided across four pillars, consistent with the overall World Bank Group approach:[7] (a) Saving lives; (b) Protecting poor and vulnerable people; (c) Ensuring sustainable business growth and job creation; and (d) Strengthening policies, institutions, and investments. World Bank Group support under these pillars is geared to three expected stages of crisis response: *relief*—emergency assistance to confront the immediate threat to public health, as well as short-term economic, financial, and social impacts; *restructuring*—strengthening health systems, restoring human capital, and pursuing economic reforms, debt resolution, and recapitalization of firms and financial institutions; and *resilient recovery*—exploiting new opportunities for more inclusive, resilient, and sustainable longer-term development.

25. **The proposed operation is directly linked to both the CPF and the COVID-19 response adjustments, contributing directly to the economic recovery phase of COVID-19.** First, the project helps achieve objective 1.2. Increased access to reliable energy supply, under focus area 1 of the CPF: Promote structural and economic transformation through increased productivity. The CPF explicitly includes a target to increase electricity access rate (including both on-grid and off-grid) to 50 percent by 2021. Universal access to energy is at the center of the socioeconomic development agenda, aiming to close the access deficit between urban and rural areas; electrify health and education centers; and power productive opportunities for smallholder farmers and business, commercial, and industrial users.

26. **The proposed operation promotes low-carbon renewable energy and will support the GoE's commitment to the Nationally Determined Contribution (NDC).** Ethiopia currently sources its grid electricity completely from renewable sources, overwhelmingly from hydroelectric power. Through its Climate Resilient Green Economy Strategy and NDC to the United Nations, the GoE is committed to further scale investment in renewable energy to expand electricity access in the country and beyond. The proposed operation will primarily support solar-based electrification, which contributes to Ethiopia's ambition for fully renewable-based energy system. It will also contribute to the delivery of the World Bank's new generation Africa Climate Business Plan by scaling the use of low-carbon renewable energy

[7] World Bank Group. 2020. "Saving Lives, Scaling-up Impact and Getting Back on Track: The World Bank Group COVID-19 Crisis Response Approach Paper." World Bank Group, Washington, DC.

and strengthen climate resilience through enhanced access to energy. The total climate co-benefits in this project amount to US$496.68 million (99.34 percent).

27. **The operation supports the government's economic reform agenda spelled out in the 10-year perspective plan by taking actions to achieve universal electricity access through improved service delivery on the grid and the rollout of the off-grid electrification program.** Adequate, affordable, and reliable access to electricity is vital to enable a structural transformation of Ethiopia's economy and society, including aspirations around domestic manufacturing capacity adequate for local needs and exports, industrial parks, entrepreneurship, ICT, and financial sectors. The proposed project will also contribute toward transformations that the GoE envisioned on gender equality. These goals include increasing women's benefit from micro and small enterprises (MSEs), increasing women's decision-making role, benefiting women from vocational education programs, increasing participation of and benefits for women in improving crop productivity, and improving maternal health.

28. **The proposed project also supports the World Bank Group's agenda on maximizing financing for development by providing a platform to attract private solutions to expand access.** NEP 2.0 calls for combined private and public efforts to deliver around 9 million off-grid connections by 2025, with an estimated investment requirement of US$6 billion. The public sector alone will not be able to deliver solutions and deploy investments at the pace and scale required to achieve universal access by 2025. Leveraging private participation in off-grid energy access is crucial to achieve the universal access target. The proposed project entails engaging in a policy dialogue with sector agencies to promote the creation of an enabling environment to bring in private sector capital and sustainable financing structures; to augment technical know-how; and to help improve the speed and reach of energy service delivery to households, smallholder farmers, economic centers, and social institutions (health and education centers). One-fifth of the project resources (US$100 million) are expected to be channeled to the private sector to support delivery of new or improved electricity services. The project will provide a platform for increased private sector participation and mobilization of at least US$100 million in private capital for mini-grids development and expansion of access to OGS systems. The mobilization of private capital will be monitored under the project.

29. **The proposed project also aligns with Ethiopia's goals to digitize the economy.** The GoE has released various plans, including the Digital Ethiopia 2025 strategy document, designed to encourage the adoption of digital tools and services. Electricity is fundamental to the rollout of many of these projects, as widespread digital technology relies on access to electricity. This project can serve as a key enabler of digitization by increasing access to electricity more widely. It will also take advantage of existing digitization efforts to expand access to electricity. Synergies will be pursued with relevant stakeholders in the technology, finance, and telecommunications sectors.

II. PROJECT DESCRIPTION

A. Project Development Objective

PDO Statement

30. The Project Development Objective (PDO) is to increase access to reliable electricity for households, social institutions, and enterprises in Ethiopia.

PDO Level Indicators

31. The PDO level indicators are as follows:

(a) People provided with new or improved electricity service (Corporate Results Indicator, Number).

(b) Enterprises provided with new or improved electricity service through mini grid and off-grid electricity solutions (Number).

(c) Institutions provided with new or improved electricity service through mini grid and off-grid electricity solutions (Number).

(d) Interruption frequency per 100 km MV network length per year in Addis Ababa (Number).

B. Project Components

32. **The project will increase access to new and improved electricity services for households, smallholder farmers, commercial and industrial users, and social institutions in urban, peri-urban, rural, and deep-rural areas through on-grid, off-grid, and mini-grid solutions by leveraging public and private delivery modalities.** The project has five components: (a) Network strengthening for improved reliability of supply in urban areas; (b) Solar-hybrid mini grids for rural economic development; (c) Solar home systems for households (HHs), small-holder farmers and small businesses; (d) Standalone solar systems for health and education facilities; and (e) Capacity building, technical assistance and implementation support. These five components provide a synergetic package of investments to ensure that reliable electricity services are made available to all Ethiopians regardless of their location and economic status. Component 1 will ensure that grid-connected urban households are receiving electricity services with adequate reliability and quality, while Components 2 and 3 will ensure that remote and poor households as well as farmers and small businesses in rural areas are able to access electricity services, provided through off-grid solutions (mini-grids or stand-alone off-grid systems). Component 4 will expand the benefits of electrification in communities by supporting improved delivery of education and health care services.

Component 1: Network strengthening for improved reliability of supply in urban areas (SDR 69.4 million, US$100 million equivalent)

33. **This component will improve the reliability of supply in Addis Ababa and 10 other regional capitals and selected zonal towns, where deficiencies in availability, quality, and reliability of supply**

remain a challenge. Electricity access rate for Addis Ababa is about 99 percent, while it exceeds 96 percent across all urban areas.[8] In the past few years, urban areas in Ethiopia have seen significant expansion of new connections. Further, with steady demand growth, higher electricity draw imposed on transformers and other infrastructure often exceeds originally designed and sanctioned load—leading to equipment damage and forced outages. As a result, the reliability of electricity supply in the urban areas needs to be strengthened. During the year 2019/20, EEU has estimated that in Addis Ababa, the average annual transformer failure rate stood at about 3 percent and MV lines interruptions frequency and duration at 882 in number and 2,103 hours, respectively. This component would address the network strengthening requirements to achieve higher reliability, quality, and duration of electricity supply, enabling electricity consumers to take full advantage of the benefits of electricity service. In Addis Ababa, the project will improve the power supply reliability with reduced transformer failure to 2 percent and improve the interruption frequency and duration of MV lines by 26 percent and 27 percent, respectively. For the 10 towns, transformer failure will be improved from about 3 percent to 2 percent. Interruption frequency and interruption duration will be improved on an average by 45 percent and 50 percent, respectively.

34. **The network upgrade and rehabilitation will include infrastructure investments in EEU's jurisdiction, including MV and low-voltage (LV) equipment as well as support for the Revenue Protection Program (RPP).** Activities under this component will focus on rehabilitation and expansion of more than 600 km of MV lines. They will also cover the rehabilitation of distribution network of 10 regional capitals and key zonal towns while also supporting the implementation of EEU's investments at the level of distribution transformers.[9] The RPP would help enhance the financial sustainability of the utility through the incorporation of different tools (including information technology [IT] software and creation of a metering control center) and definition, implementation, and enforcement of operational procedures to strengthen protection of EEU's revenues. This component will improve the availability, reliability, and quality of electricity supply; reduce technical losses; help address waiting list for new connections; and considerably reduce customer service complaints. Under component 1, focus will also be placed on building on the comprehensive EEU gender equality interventions currently supported under ELEAP, with a focus on women's employment and leadership, institutional policy reform (focused on HR), scholarship and skills development, and childcare.

Component 2: Solar-hybrid mini grids for rural economic development (SDR187.4 million, US$270 million equivalent)

35. **This component will finance the rollout of solar mini-grids along with battery storage and/or diesel backup.** The mini-grids supported under the project will be rolled out through a combination of public and private sector-led approaches based on a pipeline of prioritized sites pre-identified using geo-spatial planning. These are (a) EEU-operated mini-grids and (b) private sector-led demonstration projects operated by local and international private mini grid developers as well as cooperatives. During the first years of project implementation, and while the necessary regulatory and policy conditions for private sector-led models are in place, a utility-led delivery of mini grids (funded and operated by EEU) is expected to be the prevailing model. In addition to greenfield sites, investments will be made to hybridize the

[8] World Bank. 2018. "Ethiopia: Beyond Connections - Energy Access Diagnostic Report based on the MTF." World Bank, Washington, DC.

[9] Complementary investments are being implemented at the MV level through Electricity Network Rehabilitation and Strengthening Project (ENREP).

existing EEU-operated diesel-based mini-grids. It is estimated that with an average investment of around US$1,000 per connection, around 240,000 connections could be provided under this component, benefiting over a million people. The investments will also incorporate productive uses programs to stimulate rural economic growth alongside the delivery of first-time electricity services in the targeted geographical areas. Concrete actions on gender equality will be taken under this component focused on enhancing productive uses of energy for women-led businesses and closing gaps in opportunities for employment for women in the mini-grid sector across the EEU-led mini-grids and private sector-led pilot. Site-specific strategies on gender equality in productive uses will be developed and adopted at 50 mini-grid sites.

Sub-component 2.1: EEU-led mini-grids (SDR 150.6 million, US$217 million equivalent)

36. EEU will lead the engineering, procurement, and construction (EPC)/rollout of greenfield solar-hybrid mini-grids. New solar-hybrid mini-grids will be deployed by EEU through EPC and short-term (for example, three or six months) operation and maintenance (O&M) contracts. Upon conclusion of the short-term O&M period, the mini-grids would be operated either directly by EEU or under a follow-on long-term O&M contract. In addition, this subcomponent will include the hybridization of existing diesel-fueled mini-grids currently operated by EEU across Ethiopia (primarily in the Somali region). These mini-grids will be hybridized through the installation of a renewable power generation source (likely solar PV) and a battery backup at the selected sites, as well as, where appropriate, the upgrade of the distribution network and installation of updated meters and software. This is expected to improve the performance and reliability of the existing systems, reduce the overall levelized cost of energy (by reducing dependence on expensive diesel fuel), expand access to surrounding households as feasible, reduce the environmental impacts, and increase the sustainability of the systems.

Sub-component 2.2: Private sector-led mini-grid pilot (SDR 36.8 million, US$53 million equivalent)

37. In line with the goals and ambition set out in NEP 2.0, the subcomponent will support demonstration of different private sector-led approaches to leverage local and international private sector financing for mini-grid scale-up. The initial phase of the demonstration in the amount of US$10 million will test the following two approaches, implemented by EEU[10]:

- **MST.** The World Bank is supporting the government in the preparation of a long list of suitable sites based on data currently under collection on areas with high productive load potential across Ethiopia. These sites (for example, 25–50) will then be grouped into lots for the tender process. The bidders will bid based on the minimum subsidy amount needed to meet the difference between the developer's cost of system installation and O&M and the tariffs that can be charged based on consumers' affordability at the selected sites. For their part, the developers will need to put together their own debt and equity financing. Under this pilot, private developers will receive one-time capital expenditures (capex) subsidies, and they will own and operate the mini-grids. Bids will be evaluated based on detailed technical[11] and financial proposals, as part of which the companies will provide detailed

[10] After an initial phase of US$10 million and once REF is fully operational, remaining funds under this sub-component shall be managed by REF subject to the World Bank's due diligence process and World Bank management approval of a required project restructuring.
[11] This includes the business plan, commercial plan, and technical design of the proposed systems.

financial models showing the viability of their business models. The funding will be disbursed to the winning developers at predetermined performance milestones.

- **Performance-based grants (PBGs).** This approach could consist of a performance-based affordability gap financing amount per connection. EEU would invite interested mini-grid developers and cooperatives planning to deploy mini-grids—at any location of their choice—to submit organizational documentation which will be appraised, under terms, procurement (selection), and award procedure to be outlined in the Project Operations Manual (POM). After qualification of the organization, the proponent can submit mini-grid design proposals to receive the affordability gap financing amount. All funds will be awarded to the qualified developers/cooperatives after the installation and a predetermined period (for example, three months) of successful operation of the systems (upon verification by an independent verification agent [IVA]).

Component 3: Solar home systems for households (HHs), small-holder farmers and small businesses (SDR 35 million, US$50.5 million equivalent)

38. **This component will expand availability and affordability of OGS systems for households, smallholder farmers, and small businesses in rural areas, with a particular focus on deep-rural and other underserved areas.** This will be done through facilitating foreign currency to importers of quality-certified systems and providing local currency financing to cooperatives, OGS companies, distributors, and consumers to increase offering and adoption of quality OGS products in underserved areas on affordable terms.

39. **This component is expected to expand access to electricity for an estimated 750,000 households** for which SHSs represent the best option due to distance to the grid, population density, or demand loads. This component will provide financial support to increase and deepen supply and demand of products. On the supply side, the component will promote increased availability of products in the Ethiopian market supporting companies that can provide Lighting Global (and corresponding International Electrotechnical Commission [IEC] standards) quality-approved systems, commit to honor warranties for end consumers, provide after-sales servicing, and translate funding into new connections. On the demand side, this component will support consumer-financing schemes, such as PAYGo, to expand financing options for end consumers. This will help boost affordability of OGS services, especially in rural and deep-rural areas, where consumers' purchasing power is constrained. This component will provide (a) targeted RBF to pre-qualified market players supporting development of robust and sustainable supply chains in deep rural areas and (b) financing in the form of foreign exchange for import of systems and will support the provision of local currency loans for working capital and consumer financing.

40. **The delivery of OGS services, including location of customers, will be closely monitored through an electronic tracking platform.** Off-grid systems procured and distributed under the component will be equipped to allow for their effective tracking and location, to facilitate monitoring and evaluation (M&E) of the effectiveness of the approach to foster electrification in deep-rural areas. Participating businesses, as part of the financing agreement, will be required to submit products and (limited) load demand and usage pattern data to a tracking application, which will be supplemented by location data for the equipment. The aggregated collected data will allow to identify, among others, load demand for suitable

electrification and distribution planning as well as allow the fine-tuning of the targeting efforts for further policy interventions.

Sub-component 3.1: Incentivizing market expansion into deep-rural areas and innovation (SDR 6.9 million, US$10 million equivalent)

41. **This sub-component, implemented by MoWIE, will set up an RBF facility, offering competitively awarded incentives to OGS companies and cooperatives, with a focus on deep-rural areas.** The RBF is expected to contribute to a faster and deeper penetration of off-grid energy solutions by supporting scale and expansion in areas that would otherwise be too hard and costly to reach. The RBF payments will partially offset the initial costs and risks associated with OGS companies expanding their operations and setting up their sales and service infrastructure in new regions, thereby incentivizing the private sector to serve more rural and underserved areas. Overall, the RBF will help cover recruitment and training of new sales agents, development and improvement of supply chains, acquisition of new customers and marketing, and development of sustained and extended after-sales service capacity. The RBF will also support capacity building of new market entrants in rural distribution, such as cooperatives, and scale-up and expansion of innovative business models, such as PAYGo, combining product distribution with consumer financing. Support will also be provided in sourcing and aggregating demand for distributors, particularly cooperatives, to reduce transaction costs.

42. **The performance under the RBF will be measured by the number of verified connections in designated areas.** Participants will be required to submit claims with (limited) consumer information, to be verified by an IVA. The threshold amount of the incentive will vary per system size and household location, granting higher incentives to those companies or cooperatives that are serving households located in deeper rural areas and selling products offering more service to the customer, potentially with a dedicated line to promote OGS productive use appliances. The focus of the RBF will be on underserved regions, such as the 'lowland' regions, which have a high degree of vulnerability and lack of infrastructure, and underserved populations, such as women business owners in these areas. The RBF might be extended to subsidize end user prices in a later stage of the project if additional affordability enhancements are needed for particular consumer segments, such as extremely poor and vulnerable households. The terms and procedures of the RBF, including detailed information with regards to (a) geographical areas for RBF deployment; (b) selection criteria for identification and technical evaluation of cooperatives and private sector operators; (c) financial incentive schemes and procedures; and (d) monitoring and evaluation criteria for SHS deployments and operations will be detailed in the sub-component specific POM adopted by the steering committee.

Sub-component 3.2: Access to finance to increase off-grid solar penetration (SDR 28.1 million, US$40.5 million equivalent)

43. Enterprises operating in the off-grid market require access to (a) foreign exchange funding for the import of off-grid energy systems and (b) working capital financing for day-to-day operations like the establishment and expansion of the supply chains, funding of operations and logistics, and financing of the value chain. Financing is also needed for consumers, especially in rural and deep-rural areas where consumers' purchasing capacity is a constraint. End user financing can also drive the uptake of bigger systems that provide a wider range of electricity services and can power income-generating activities.

Therefore, companies and MFIs also need capital for the provision of consumer financing via supplier financing or PAYGo business models or micro-loans to households and businesses.

44. **The access to finance facility, implemented by the DBE[12], will have three windows:** (a) foreign exchange for the import of off-grid systems, particularly off-grid systems Tier 1 and above and solar-powered productive use equipment (PUE), which will be financed directly through the project; (b) local currency for working capital provided to businesses along the OGS value chain and consumer financing for end user households, smallholder farmers, and small businesses; and (c) a risk-sharing mechanism for partial loan guarantees to reduce credit constraints driven by the commercial banks' significant risk aversion to lend to the off-grid market and a traditionally strong focus on (immovable) collateral and high coverage ratios in their lending decisions. The local currency window and risk-sharing mechanism will be funded by reflows from the transactions in the foreign exchange window. The financing facility would be structured as an apex (wholesale) arrangement with resources channeled through eligible participating financial institutions (PFIs) to maximize the outreach of the project component and the sustainability of the intervention by availing resources in a commercial manner through the broadest group of financial institutions, to attend to the widest set of enterprises in the OGS value chain and end consumers in rural areas.

45. **The foreign exchange window will provide access to foreign currency funds for the import of quality-certified off-grid systems and components,** particularly off-grid solar systems Tier 1 and above and solar-powered PUE**.** The project seeks to address the shortage of foreign currency for the import, and correspondingly domestic supply, of OGS systems by providing dedicated foreign currency resources. This window will provide importers access to foreign currency funds to underwrite the issuance of Letter of Credit (LC) for the import of OGS systems and components that comply with IEC quality standards.

46. **The local currency window will provide working capital for OGS market players and support consumer financing options for end users including households, smallholder farmers, and small businesses.** Eligible financing under the local currency window will include funding for the distribution, sale, consumer-side financing, maintenance, and recycling of quality-certified off-grid systems, as well as the acquisition of such systems by end users. Borrowers will have to be formal businesses in compliance with all applicable registration and formalization requirements and an established track record. Criteria for eligible PFIs and OGS market players will be detailed in the POM. Provided eligibility criteria are met, the credit risk and decisions on credit conditions will rest solely with the granting PFI. The local currency window will be funded with reflows from the transactions of the foreign exchange window.

47. **The risk-sharing window will enhance access to and reduce the costs of financing for businesses, particularly women-owned enterprises, by providing default coverage for loans to OGS companies.** Access to financing for OGS companies is constrained by the financial sector's risk aversion to attend to the off-grid sector and their long-standing preference to secure business lending with immovable collateral, principally real estate. This limits access in particular for emerging solar businesses and women-owned companies, with lesser access to collateral. The risk-sharing fund will provide partial loan guarantees for loans extended by eligible PFIs to businesses in the OGS value chain to supplement

[12] After an initial phase of US$10 million and once REF is fully operational, remaining funds under this sub-component shall be managed by REF subject to the World Bank's due diligence process and World Bank management approval of a required project restructuring.

collateral coverages. For approved operations, the fund would assume a limited first-loss guarantee, allowing a wider set of businesses access to finance. The risk-sharing facility will be funded as required with reflows from the transactions of the foreign exchange window.

48. **This sub-component builds on the experience with the foreign exchange and local currency credit line for OGS products under the World Bank's ENREP, currently managed by DBE.** The credit line under ENREP has played a critical role in unlocking supply of quality-verified solar products. The new facility incorporates lessons from ENREP, such as loan disbursement transparency, ensuring product traceability and the need for increased participation from financial intermediaries (FIs) to widen and deepen sector access to finance. The facility design ensures adequate credit risk assessments and market principles in credit origination, lending decisions, administration, and recovery processes as well as competitive approaches in the pricing of resources, at each intermediation step. Furthermore, the design of the facility ensures that the financing framework for the project fits into the larger financial market context and limits the potential for distortions.

Component 4: Standalone solar systems for health and education facilities (SDR 38.2 million, US$55 million equivalent)

49. **This component, implemented by EEU, will finance the supply and installation of stand-alone solar systems for health and education facilities identified under the NEP 2.0.** The project will target health centers and secondary schools that are located in underserved and remote rural areas and are identified as priority by MoWIE, in coordination with federal and local education, health, and energy agencies. Depending on the availability of resources, primary schools, health posts, and other types of public facilities could be included if the federal and regional governments determine them as priority.

50. **Around 1,400 secondary schools and health centers will be electrified using stand-alone solar systems.** ADELE, in combination with grid electrification, can lead to 100 percent electrification of secondary schools and 85 percent electrification of health centers. The systems installed in secondary schools are expected to provide basic electricity services such as targeted lighting, charging of electronics such as phone and computers, electricity for laboratories, and possible use of television, among others. Meanwhile, the systems installed in health centers will provide electricity for lighting in maternity wards, main buildings, and residences; vaccine refrigeration; and operation of critical medical and office equipment.

51. **The sizing of the systems will be determined based on technical assessments of the electrification needs of each facility**, which will be financed by the project and completed before supply and installation. O&M of the systems will be critical to ensuring operational sustainability. It is envisaged that private sector contractors will be engaged for the long-term O&M of the systems with the option to renew these contracts and deploy remote monitoring to track system performance. Key focus for gender equality will be around skills development and job creation for women around the solar stand-alone system installation and maintenance for public institutions. EEU and MoWIE will develop and adopt a road map which will set out the strategy for closing the gaps in opportunity for skills development and jobs for women in the solar sector.

52. **The component will harness synergy with GoE's COVID-19 vaccine rollout.** In the wake of COVID-19 and the imminent need for the distribution of vaccines, reliable cold chains are critical to ensure that

vaccines are transported and stored at defined temperatures before being administered. In this context, the component will also support the electrification of facilities where vaccines are stored at the national, regional, district, and sub-district level, in line with the GoE's vaccine rollout strategy currently being developed.

Component 5: Capacity building, technical assistance, and implementation support (SDR 17.1 million, US$24.5 million equivalent)

53. This component will finance various sector studies and technical assistance, capacity-building, and implementation support activities to ensure EEU, MoWIE, DBE, EEA, the local and international private sector, cooperatives, mobile network operators, financial institutions, and other sector stakeholders have adequate technical, planning, and operational capacity to implement the electrification program. This component will also finance activities aimed at (a) technical assistance and support for establishing and strengthening a functional Environmental and Social Management System (ESMS) for EEU, MoWIE, and DBE; (b) environmental and social capacity building, staffing/consultants, assessments, procedures, and guidelines; (c) undertaking of annual environmental and social performance review and environment, social and safety audit; (d) support for the implementation of the Stakeholder Engagement Plan (SEP) including increasing community awareness of social, environmental, and safety impacts of subprojects and strengthening the grievance redress mechanism (GRM); and (e) monitoring and reporting of environmental, social, health, and safety. The project will support general sector studies and technical assistance as they become relevant to the sector and the implementation of ADELE. Activities under this component will be closely coordinated with existing donor initiatives in the sector.

Sub-component 5.1: Enhancing EEU's institutional, technical, and planning capacity (SDR 8.3 million, US$12 million equivalent) – implemented by EEU

54. Technical assistance will be provided to support EEU in actively and effectively managing the implementation of the electrification program under ADELE, both on-grid and off-grid, for the duration of this project, with the aim of creating longer-term capacity and sustainability. EEU will play a key role in the implementation of ADELE as the implementing agency for components 1 (on-grid reliable access), 2 (solar-hybrid mini-grids for rural economic development), and 4 (electrification of health and education facilities). Therefore, ADELE includes a substantial technical assistance program in support of EEU to strengthen its institutional setup and technical capacity to implement the project and continue to play a leading role in electrification beyond the life of the project. This may include support for mini-grid pipeline development through pre-investment activities such as geo-spatial assessments, pre-feasibility studies, mini-grid site validations and verifications for PUE and consumptive use of energy, business plan development, and safeguards assessments, as well as support for the design of interventions such as productive use stimulation activities and energy demand stimulation through appliance financing schemes that enhance the sustainability of mini-grid and off-grid investments. Technical assistance will also be provided for strengthening a functional ESMS, building safeguards capacity, undertaking annual audits, strengthening the GRM system, and monitoring and reporting. In addition, based on the new Digital Ethiopia 2025 strategy, technical assistance shall be provided to digitize OGU's tendering and procurement system. The technical assistance includes but is not limited to procurement of software systems, training, and integration with EEU's ERP systems. EEU OGU also envisions to utilize technical assistance to establish an excellence center where it can test mini-grid systems and subsystems.

Sub-component 5.2: Enhancing MoWIE's monitoring and technical capacity (SDR 7.7 million, US$11 million equivalent) - implemented by MoWIE

55. This sub-component will support capacity strengthening of MoWIE to establish a functional Rural Electrification Fund (REF) within MoWIE and to oversee the efficiency and effectiveness of ADELE in general and specifically to increase its capacity as implementing agency for sub-component 3.1. This will be done through the establishment of enhanced technical and management capacity, strengthening of tracking systems and capabilities, and support in advancing required regulatory and institutional reforms to support private sector participation in the off-grid sector. Activities will include technical assistance for the onboarding of off-grid technical and operational experts to strengthen project implementation and monitoring and procurement of an experienced fund administration support (FAS) firm and an IVA, in support of implementation of sub-component 3.1. This will include training and knowledge transfer to build MoWIE's capacity, particularly with regards to establishing the REF within MoWIE that will, once fully operational, manage funds and implement rural electrification projects. Technical assistance will also be provided for strengthening a functional ESMS, building safeguards capacity, undertaking annual audits, strengthening the GRM system, and monitoring and reporting. This sub-component also entails an extensive capacity building support to other relevant sector stakeholder, particularly EEA. Finally, relevant sector studies and background technical analyses are also included, such as periodic review of mini-grid regulations in light of experience with implementation and assessment of potential for local assembly and/or manufacturing of mini-grids components as part of support for local supply chain development.

Sub-component 5.3: Enhancing the financial sector's capacity to provide financing to the off-grid energy sector (SDR 1.1 million, IDA US$1.5 million equivalent) implemented by DBE.

56. This sub-component will support the provision of technical assistance to DBE[13], PFIs including commercial banks and MFIs, and other financial sector stakeholders to enhance their role providing financing opportunities for the OGS energy sector. Activities include support for DBE in strengthening its apex operation, in areas such as risks management and M&E and in design, setup, and operation of the three financing windows to be offered under the facility. The sub-component will also support capacity building for DBE and PFIs to ensure they have a solid understanding of the OGS market, can appraise the risk of the industry appropriately, and subsequently offer adequate terms and conditions to borrowers. Technical assistance will also be provided for strengthening a functional ESMS, building safeguards capacity, undertaking annual audits, strengthening the GRM system, and monitoring and reporting.

57. This component will also support the delivery of a comprehensive strategy focused on enhancing gender equality in the off-grid sector at the enterprise, employee, and customer levels. Through this strategic plan (being prepared with ESMAP and PPIAF funding), this activity will investigate the main challenges affecting women's participation in the OGS market and provide solutions. EEU, MoWIE, and DBE will lead the operationalizing of the strategy. Focus areas will include enhancing productive uses of energy for women business owners and farmers; increasing access to finance for women entrepreneurs to operate in the off-grid sector and women business owners to adopt off-grid technologies; building the capacity of PAYGo providers to develop customer-centric models for female consumers; improving capacity of lenders to understand how to target the women's segment in the sector; building the capacity

[13] Once REF is fully operational, remaining funds under this sub-component shall be managed by REF subject to the World Bank's due diligence process and World Bank management approval of a required project restructuring.

of women entrepreneurs through training, networking, and mentoring; facilitating job creation and livelihood opportunities for women in the mini-grid and off-grid solar sector; and enhancing collection of sex-disaggregated data. See annex 7 for full details on targeted interventions.

58. This component will support consumer awareness and citizen engagement activities, to be led and implemented by EEU, MoWIE, and DBE and designed in close coordination with mini-grid and off-grid sector key stakeholders. These activities will focus on empowering energy consumers by creating increased awareness about the benefits of solutions including productive uses of energy and enhanced understanding about the types of products and services available, technical features and quality standards, potential uses, and consumer rights and maintenance issues.

59. This component will also support a continued improvement of the enabling environment for a well-functioning OGS market in Ethiopia. The project will support a suite of sector studies and technical assistance activities to continue to strengthen the market for off-grid energy solutions, including, but not limited to, the following:

- Support to cooperatives and private sector players that wish to enter the OGS market and act as last-mile distributors. This will include, but is not limited to, training on OGS products, business models, and opportunities to engage in the sector.
- Capacity building for EEU, Cooperatives, OGS companies, and other relevant stakeholders to implement digital tools and services in both on-grid and off-grid electrification, including digital payments, business models innovation (including PAYGo), network connectivity, advanced metering infrastructure, data collection, data analysis, and modern e-waste practices.
    - **On-grid.** A firm will be contracted to create a technology road map to strengthen the capacity of EEU and other relevant stakeholders. The firm will help EEU implement digital tools and services to improve bill collection capacity, reduce collections costs, and lay the groundwork for scaled service delivery.
    - **Off-grid.** OGS products, and especially PAYGo solar products, have shown promise as a ‘first use case’ with potential to help scale digital and digital financial services in the Ethiopian economy. A firm will assess opportunities to work with existing financial inclusion and digitization efforts, including mobile money and mobile network rollouts. The firm will work with relevant stakeholders in the financial inclusion and digitization space to ensure maximum efficiency in the reach of electrification, digital financial services, and telecommunications connections to rural areas. Activities could include trainings for cooperatives and OGS companies to implement digital and digital financial tools and services, workshops with mobile network providers, and other related activities.
- Skills development program to create local capacity to install and maintain solar systems, including mini-grids, stand-alone systems, and SHSs.

Project cost and financing

60. The total project cost is estimated at US$500 million. The breakdown of project costs by component and total financing is presented in Table 1.

Table 1. Project costs and financing (in US$, millions)

Components and Subcomponents	IDA Financing
Component 1: Network strengthening for improved reliability of supply in urban areas	**100**
Component 2: Solar-hybrid mini grids for rural economic development	**270**
Subcomponent 2.1: EEU-led mini-grids	217
Subcomponent 2.2: Private sector-led mini-grid pilot	53
Component 3: Solar home systems for households (HHs), small-holder farmers and small businesses	**50.5**
Subcomponent 3.1: Incentivizing market expansion into deep-rural areas innovation	10
Subcomponent 3.2: Access to finance to increase off-grid solar penetration	40.5
Component 4: Standalone solar systems for health and education facilities	**55**
Component 5: Capacity building, technical assistance, and implementation support[14]	**24.5**
Subcomponent 5.1: Enhancing EEU's institutional, technical and planning capacity	12
Subcomponent 5.2: Enhancing MoWIE's monitoring and technical capacity	11
Subcomponent 5.3: Enhancing the financial sector's capacity to provide financing to the off-grid energy sector	1.5
Total	**500**

C. Project Beneficiaries

61. ADELE's main beneficiaries are households, smallholder farmers, small businesses, commercial and industrial users, and health and education facilities in the peri-urban, rural, and deep-rural areas serviced through grid and off-grid solutions leveraging public and private delivery modalities.

62. **Component 1 will benefit urban households, businesses, industry, hospitals, international organizations, water supply system, government establishments, and the general public (from improved public lighting) in the city of Addis Ababa as well as 10 regional capitals and key zonal towns.** These investments will be instrumental to enhance Addis Ababa and other cities' street lighting related to public safety. Improved availability, reliability, and quality of power supply would enable higher economic productivity, improved civic administration, and greater comfort for people at large and also help establish Ethiopia as a more attractive investment destination, leading to faster economic growth and development.

63. **Component 2 will benefit rural communities by providing access to electricity for households, businesses, and commercial and industrial users through solar-hybrid mini grids.** It is estimated that the component will provide access to grid-level electricity to an estimated 240,000 households (that is, around 1.2 million people) and 11,500 business, commercial, agricultural and industrial users.

[14] This includes program management costs.

64. **Component 3 will directly benefit approximately 750,000 households (that is, around 3.75 million people) by providing access to off-grid energy solutions such as SHSs and income-generating appliances.** Out of these, around 120,000 systems (~16 percent) will be used in support of small businesses getting access to electricity for lighting and productive uses.

65. **Component 4 will benefit health and educations centers with access to sustainable and reliable electricity.** It is expected that 400 health centers and 1,000 schools will be electrified through stand-alone solar systems.

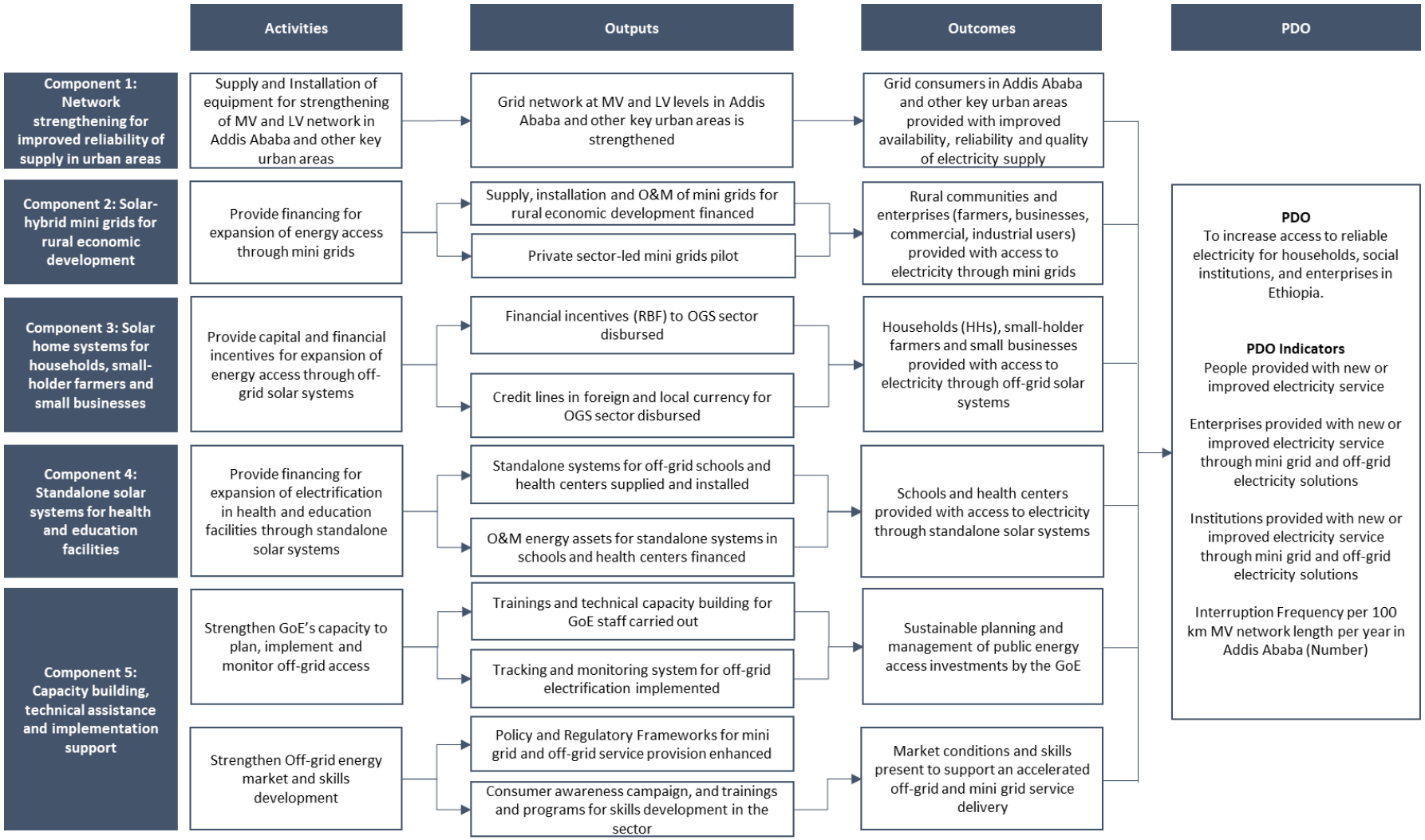
66. **Sector institutions, especially MoWIE, REF, EEU, and EEA, will also benefit from the activities under component 5 providing capacity building, technical assistance, and implementation support.** These activities are expected to improve their planning, technical, fiduciary, and institutional capacity to deliver and support the electrification agenda in Ethiopia, beyond the timeline under the proposed ADELE. Furthermore, DBE and the PFIs will be strengthened and their capacity enhanced to adequately serve the OGS value chain, particularly small and medium enterprises (SMEs), rural businesses, and rural consumers. The inclusion of technical assistance on gender equality will enable the financial institutions to enhance their servicing capacity and targeting of women-led businesses and women consumers.

67. Providing households, public institutions, and enterprises with off-grid access to energy has the potential to promote gender equality, create employment and business opportunities for women, and improve quality of key social services in health and education, and potentially their outcomes. The project has focused areas of intervention on gender and citizen engagement to ensure women get access to quality, reliable, and affordable off-grid household energy and public lighting to reduce energy poverty and give women and men additional income-earning and skills development opportunities. The primary focus in terms of beneficiaries under the gender equality work includes (a) women-owned businesses that will be supported on enhancing their productive uses of energy and/or gain access to finance and business support to grow their enterprises; (b) energy enterprises operating in Ethiopia that will be provided with technical assistance to enhance their operations and enable them to provide products and services to female consumers; and (c) university students or female employees/professionals that will benefit from interventions such as enhancing skills development and enhancing work environments, including key energy institutions and private sector firms that will attract female talent for their business operations.

D. Results Chain

68. **The theory of change underpinning the proposed ADELE project is presented in Figure 3.** The proposed project aims to increase access to electricity for households, social institutions, and enterprises in Ethiopia through financing of investments in network strengthening, off-grid stand-alone systems and mini-grids, and activities to support the development of a market-enabling environment to crowd in private sector participation. Furthermore, the proposed operation will provide capacity enhancement and implementation support to the GoE and key energy agencies for sustainable planning, rollout, and management of access programs.

Figure 3. Theory of change of the proposed ADELE



Source: World Bank staff.

E. Rationale for Bank Involvement and Role of Partners

69. **The World Bank has been a long-standing and strategic partner to the GoE in the energy sector development.** The World Bank is supporting the energy sector in Ethiopia along the value chain as well as in the ambitious energy sector reform program. Notably, the World Bank is already supporting the implementation of the NEP through ELEAP, focusing on densification of grid connections, under the universal access to energy targets. The proposed operation will complement the existing operations to enable the Government to implement a truly integrated approach to electrification combining both grid and off-grid electrification. The World Bank has a productive and constructive ongoing dialogue and relationship with the GoE and energy sector agencies (most notably EEU, EEA, and MoWIE), adding value to the existing program and bringing additional resources and tools to increase the GoE's capacity to deliver an integrated electrification program.

70. **The World Bank's global experience in supporting access programs has been deployed in the design of the project.** Achievements from the successful implementation of the ongoing World Bank-supported operations in energy access also provide a strong background upon which to prepare the proposed operation. Particularly, the World Bank's involvement can, under a holistic and data-driven approach (a) ensure that the off-grid electrification program design and corresponding policy reform reflect principles of sustainability, (b) support best-practice analytics and technical inputs such as MTF and geo-spatial least-cost electrification planning, (c) enable pooling of resources from diverse donors for access expansion, (d) advise on effective competitive procurement processes that provide added benefit during project implementation, (e) draw on global experiences in utility-driven off-grid electrification planning and management to support the design of a robust program, and (f) provide technical support on gender issues in the energy sector with a proven track record in Ethiopia.

71. **Availability of concessional financing from the World Bank would allow for strategic deployment of resources to provide de-risked opportunities and catalyze private financing.** Through approaches like private sector-led and tender-based financing modalities to bridge the affordability gap, IDA concessional resources will enable the GoE to present de-risked opportunities for the private sector to participate as financiers, operators, and contractors. These resources are fundamental to make these opportunities viable, attract private sector technical and financial expertise, and mobilize participation from other donors and investors to support the GoE's universal access vision. In addition, public funding provided through credit lines and performance-based funding under component 3 is supporting the acceleration of an OGS market by providing financial resources that are currently not available or very limited, allowing these companies to import systems, serve new customers, and develop new business models to serve them more efficiently. This approach is underpinned and informed by the off-grid electrification program, NEP 2.0.

72. **Ethiopia's active development partner community's engagements in energy access are coordinated with World Bank-supported projects.** The Energizing Development (EnDev) program implemented by the German Agency for International Cooperation (*Gesellschaft für Internationale Zusammenarbeit*, GIZ) promotes household electricity through hydro and micro-power plants, funds the hardware costs for solar-based electrification of public institutions, and supports improved cookstove solutions. A key focus area for EnDev is the provision of training for technicians. In addition, GIZ is also actively supporting cooperative-led mini-grid development models. United Kingdom Department for International Development's Africa Clean Energy (ACE) program's technical assistance facility focuses on

improving the policy and regulatory environment and strengthening the national industry association, including quality assurance support. Power Africa is present in Ethiopia with transaction advisors that provide technical assistance to companies partnering with the program. Furthermore, the United States Agency for International Development (USAID) is providing technical assistance to the regulator for the mini-grid directive. The Rockefeller Foundation is providing technical assistance to MoWIE to help determine PUE focused mini-grid business models through feasibility studies and follow-on pilot projects. Other development partners such as the European Investment Bank (EIB) and the Italian Investment Bank are considering furthering their financial support to the sector in Ethiopia focused on on-grid access expansion and mini-grids development.

F. Lessons Learned and Reflected in the Project Design

73. The project design builds on past energy access experiences in Ethiopia, especially ELEAP and ENREP. The design of the financing mechanisms has been, specifically, informed by experiences and lessons learned with the financing facility under the World Bank-funded ENREP as well as financing facilities under the Women Entrepreneurship Development Project (WEDP, P122764) and the Small and Medium Enterprise Finance Project (SMEFP, P148447). The credit line under ENREP has played a critical role in unlocking supply of quality-verified solar products but did not include any targeted mechanism for reaching deep-rural or other underserved areas. The new facility incorporates lessons from ENREP, such as the need to improve targeting of rural households, tracking products and impacts, deepening supply chain in rural areas, and leveraging alternative distribution channels in remote areas.

74. The project is also built on latest lessons from the energy access operations worldwide, and in Sub-Saharan Africa in particular, including the following:

- **Electricity access expansion is a long-term effort, and should follow a clear vision, established in a national electrification strategy, which aims at achieving universal electricity access, and is underpinned by least-cost geo-spatial electrification planning.** ADELE follows the government's national electrification strategy as established in the 2017 NEP and updated in 2019 NEP 2.0. The government strategy is based on geo-spatial planning and integrates grid, mini-grid, and off-grid technologies with the goal to achieve universal electricity access by 2025. The project's design responds to the investment needs identified in the NEP and NEP 2.0, and investment decisions follow geo-spatial least-cost analysis.
- **The fastest electrifying countries have pursued parallel and coordinated paths for grid and off-grid electrification.** The NEP 2.0 was adopted by the government with the objective to accelerate mini-grid and off-grid electrification, to achieve 35 percent penetration of mini-grid and off-grid solar connections by 2025, following the already launched grid electrification program (supported by the World Bank's ELEAP). ADELE provides support to all technologies, supporting reliability of grid connections and massive scale-up of mini-grids, and continued support to expand OGS markets, with the focus on more remote and poorer regions.
- **Reliability and quality need to be a prime consideration in energy access operations.** Reliability is at the core of ADELE's design. Component 1 complements ELEAP's grid extension activities by supporting grid reinforcement to ensure that grid expansion is not carried out at the expense of reliability and quality of service. Mini-grids will be designed to

provide reliable 24-7 service, with corresponding technical and service standards. Only Lighting Global/Verasol-verified OGS products will be eligible for the project's support, and the project will also incentivize and monitor the provision of after-sales services.

- **Energy access business models need to adapt to the countries' conditions and to the extent possible build on existing structures and emerging positive experiences while also correcting past weaknesses and pushing boundaries for increasing pace, reducing costs, and achieving impact and sustainability.** ADELE builds on existing experience but provides an opportunity for further improvements and innovations. For component 2, the project will support EEU to scale up its emerging experience with bidding out EPC contracts and operating solar PV/battery storage mini-grids. But the project will also introduce an innovation that will complement public sector mini-grids with private sector approach, leveraging private sector investment and know-how and following public-private partnership (PPP) modalities successfully applied in other countries. Component 3 design follows the tested credit line approach, housed at DBE, which has been supported by ENREP, but also integrates lessons learned from this project by opening up the credit line to all eligible commercial banks through an apex approach, adding a tracking mechanism to monitor the impact, and complementing the working capital window with the RBF, which will allow increased targeting of OGS electrification to underserved regions and poorer households. Component 4 builds on past efforts to use OGS technologies to electrify health care and education facilities but will provide additional measures for increasing sustainability through setting up long-term O&M arrangements.
- **Given the high investment requirement to achieve universal electricity access, private sector financing should be leveraged where feasible, in particular in mini-grid and off-grid solar electrification.** RBF (or performance-based financing) has been found an effective mechanism for leveraging private sector investment, innovation, and efficiencies. Components 2 and 3 expect to leverage additional private sector investments and will apply performance-based financing.
- **Support for productive use should be streamlined into energy access operations.** Components 2 and 3 will include specific incentives, complemented by the technical assistance activities in component 5, to make energy-efficient and productive appliances more available and affordable for the users and to leverage electricity for productive activities, in particular in agriculture. Component 5 will support human capital building by improving services provided by health care and education facilities.

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

75. **The project will be implemented by MoWIE, REF, EEU, and DBE over six years.** MoWIE will provide overall oversight and coordination of the project. In proclamation No.317/2003, the GoE established the Rural Electrification Fund (REF) to spearhead the development of electricity services in rural areas under the MoWIE. Throughout implementation of ADELE, a functional REF directorate will be established, and its capacity strengthened that will subsequently takeover project implementation and

oversight of project implementation in some cases. The establishment and implementation of a capacity building plan of REF within MoWIE is a covenant in the project. In the meantime, a steering committee comprised by MoF, MoWIE, EEU, DBE and EEA will be in charge of project oversight. The steering committee led by the Minister of MoWIE will be responsible for the overall coordination and project oversight including (a) defining, jointly with the respective agency, the project areas based on technical and policy development priorities; (b) adopt the component specific program operational manuals; (c) resolving challenges requiring high-level intervention facing the project; (d) monitoring the implementation of the project; (e) consolidating information from agencies and reporting on the progress of implementation and evaluating the project; and (f) eligibility of PFIs based on per-capita equity and representative rural population penetration.

76. **EEU will be the implementing agency for Component 1.** It will be responsible for the design of network-strengthening investments based on analysis of maintenance records, future demand projections, and load flow studies. It will also be responsible for tendering and management of supply and installation contracts. Further, it will be responsible for periodic collection and reporting of system reliability information and other indicators. It will also implement initiatives to enhance collections by leveraging the equipment installed under ADELE for the RPP. The Steering Committee led by MoWIE's State Minister of Energy will oversee the overall component implementation.

77. **EEU will implement Component 2.** It will serve as the implementing entity and will be in charge of the day-to-day implementation of the EEU-led and PPP business models. It will prepare and execute the EPC tenders, oversee the construction and commissioning of the sites, and take over their long-term O&M (or alternatively hand them over to a long-term O&M contractor). For the PPP models, (a) as the implementing entity for the MST, EEU will collect the market intelligence for pre-selected sites, package it together with the tender bidding documents through the software platform, execute the tender, and disburse the grants against delivery/performance milestones, with support from an IVA and (b) as the implementing entity for the PBG, EEU will evaluate and select grant applicants and disburse the grants against delivery/performance milestones, with support from an IVA.

78. **EEU is establishing an Off-Grid Unit (OGU), which will be tasked with leading the rollout of the mini-grids under both subcomponents of component 2.** The OGU's activities will be twofold: on the one hand, it will be responsible for the development and operation of mini-grids and public institution solar systems (supported by component 4) owned by EEU, including system planning, tendering, and procurement. This task encompasses the site selection and allocation for the EPC greenfield projects and for either EEU-owned or some of the private sector mini-grid development. On the other hand, the OGU will be tasked with customer relationship management. Specifically, the responsibilities encompass the operation of a call center with advanced software support, tariff collection, and prepaid meters and mini-grid asset monitoring for all EEU-operated mini-grids and stand-alone systems. To fulfil these responsibilities, the OGU will be divided into two sub-units: (a) Planning and implementation and (b) Operation. It will be integrated into the existing structure of EEU, with the coordinators of the sub-units reporting to the Portfolio Management Office (PMO). The OGU will be financially separated (unbundled) from other EEU businesses. The establishment of the OGU has been approved by the EEU Board of Directors, and the recruitment of the OGU staff is under way.

79. The steering committee led by MoWIE will be tasked with the following responsibilities: (a) oversee the component implementation; (b) ensure equitable selection of sites identified by EEU; (c)

determine sites appropriate for public sector and/or private sector implementation of mini-grids based on site relevant business models; (d) review subsidy requirements for private sector operators; (e) advice on demand stimulation and promotion of electricity productive use; (f) review and update mini-grid financial and legal incentives and policies as needed; and (g) monitor and evaluate mini-grid deployments by public and private sector across the country with the support of an integrated software tool and report out on the progress of the component against milestones. Once REF is fully operational, component 2.2. shall be managed by REF subject to the World Bank's due diligence process and World Bank management approval of a required project restructuring.

80. **Component 3 will be implemented by MoWIE and DBE.** Sub-component 3.1 will be implemented by MoWIE with the support of a competitively selected firm and sub-component 3.2 will be implemented through DBE. For the subcomponent 3.1 RBF mechanism, MoWIE will engage an experienced firm to provide FAS and relevant capacity strengthening support for MoWIE, and its REF directorate. The firm providing FAS is required to possess (a) ability to appraise and assess business models, capacity, and proposals of OGS companies, including sometimes internationally operating solar businesses; (b) financial and organizational capacity and systems aligned with the need for timely feedback on operational and administrative issues, as well as timely disbursements of incentives considering the dynamic cash flow nature of the commercial solar sector; (c) deep understanding of Ethiopian market dynamics; (d) ability to provide technical assistance to companies participating in the RBF; and (e) ability for regular communication and socialization of the support with private sector companies to attract additional market entrants and build trust on support of the public sector to the private sector. The sub-component specific POM will detail (a) geographical areas for RBF deployment; (b) selection criteria for identification and technical evaluation of cooperatives and private sector operators; (c) financial incentive schemes and procedures; and (d) monitoring and evaluation criteria for SHS deployments and operations. While the REF is being fully established within MoWIE, the steering committee will adopt the POM and oversee the implementation of the sub-component. MoWIE will also engage an IVA. The IVA is required to be an independent and impartial player, have the capacity to carry out efficient and technically solid verification processes via phone and in person, and provide timely services.

81. For sub-component 3.2, DBE will be the implementing agency under an apex (wholesale lending) structure for the first phase of US$10 million before the REF takes over the function subject to the World Bank's due diligence process and World Bank management approval of a required project restructuring. DBE was assessed against the criteria put forward in the World Bank Operational Policy (OP) 10.00 and qualifies to be an intermediary for the credit line. The OP 10.00 assessment is summarized in annex 3. The DBE will be responsible for managing three distinct 'windows' under the sub-component, encompassing (a) the foreign exchange facility, (b) the second-tier funding facility aimed at financing eligible regulated FIs' lending in local currency to businesses and consumers in the OGS value chain, and (c) the credit risk-sharing facility. DBE will undertake individual risk assessments of the institutions, according to a specific due diligence methodology satisfactory to the World Bank's OP 10.00 criteria and to be set out in the POM to determine (a) eligibility of PFI, including based on per-capita equity and representative rural population penetration; (b) risk exposure limits, (c) pricing of funds, and (d) eligibility criteria for final borrowers. The steering committee will adopt the sub-component specific POM, oversee the implementation progress, and approve selection of FIs. Once REF is fully operational, component 3.2. shall be managed by REF subject to the World Bank's due diligence process and World Bank management approval of a required project restructuring.

82. **EEU will be the implementing agency for component 4, responsible for supply, installation, O&M, and ownership of the stand-alone solar systems.** EEU's OGU will procure and install the systems as well as manage the private sector O&M contractors for long-term O&M. EEU service centers will offer basic O&M services, thus complementing the O&M contractor. In the long term, it is envisaged that the O&M contracts will be funded through a combination of user fees collected from regional governments and resources from the Ministry of Finance (MoF). MoWIE will work in close coordination with EEU, regional governments, and education and health ministries. MoWIE will lead the creation of an inter-ministerial steering committee with representatives from EEU, Ministry of Health, and Ministry of Education to efficiently identify the institutions to be electrified under this component. Based on the existing geo-spatial analysis and aggregate demand assessment, MoWIE will work with each regional government and sectoral ministries through the steering committee to finalize the number, types, and locations of the beneficiary institutions. MoWIE will also be responsible for the M&E of project implementation progress and results indicators as well as progress toward achievement of the PDO.

83. **Technical assistance, capacity building, and implementation support will be provided under component 5, implemented by EEU, MoWIE, and DBE, respectively.** This component will finance various technical assistance including for social and environmental expertise, capacity building, prefeasibility and feasibility studies, including site validation and verifications and implementation support activities to ensure EEU, MoWIE, DBE, EEA, the local private sector, mobile network operators, financial institutions, and other sector stakeholders have adequate technical, planning, and operational capacity to implement the rollout of the electrification program. Activities under this component will be closely coordinated with existing donor initiatives in the energy space. Annex 1 provides a detailed table summarizing the implementation arrangements and responsibilities of various agencies under ADELE.

B. Results Monitoring and Evaluation Arrangements

84. **The results monitoring and evaluation arrangements under the project are aligned to the ones established under the NEP where monitoring and strategic oversight, together with policy guidance, and overall coordination rest with MoWIE.** The ministry, through its DoE, will coordinate, provide oversight, and monitor the effective and timely execution of the project. MoWIE will consolidate the project information as part of its oversight and general coordination role and will submit progress reports to the World Bank. The three project implementing agencies, MoWIE, DBE, and EEU, will be responsible for collecting and verifying data. The progress reports will be submitted on an annual basis for PDO indicators and on a semiannual basis for the intermediate indicators at the component level. The results framework section in this document specifies the results indicators for the project as a whole as well as for each of its components.

85. **The monitoring will be done through a secure, web-based, integrated data platform, which will be used to remotely monitor and verify progress and performance of the installed mini-grid and stand-alone systems.** A rigorous needs assessment has been undertaken during project preparation to ensure that the data platform procured will meet both government and implementation partner requirements for effective program management and oversight. The software platform, supported by the proposed ADELE, is expected to enable MoWIE and EEU to (a) review large volumes of data to verify the number of connections and systems deployed and determine the appropriate financing amounts; (b) simplify the process for the verification agents but include features to efficiently process connection data, track verified connections, and conduct audits; (c) view analytics about customer connection data in a clear and

easily manageable format; (d) when possible and feasible, automatically verify connections via smart meter application program interfaces. In addition to this monitoring functionality, this platform will be utilized to compile, standardize, analyze, and disseminate information to private sector applicants under the proposed private sector-led tender approach for mini-grids, as well as to collect key data related to development plans from private sector developers and cooperatives, evaluate project proposals, and validate mini-grid projects under both proposed private sector-led approaches—the MST and the PBG.

C. Sustainability

86. **The GoE has demonstrated strong commitment and ownership of the proposed project.** The project concept was developed under the GoE's leadership, as well as through an extensive consultative process that built upon the groundbreaking work conducted to develop the NEP involving other sector stakeholders, private sector, and development partners. As such, the project is aligned with the NEP and aims to enhance the enabling environment for electrification in a sustainable manner, supporting technical capacity and the right institutional and regulatory frameworks. Moreover, the project is considered by the GoE as the main driver behind the implementation of the NEP, which recognizes integrated electrification (grid and off-grid solutions) as an effective way to achieve universal access and identifies the private sector as a key partner for implementing this strategy.

87. **Sustainability of investments beyond the life of the project is at the core of project design.** Under component 1, investments in grid strengthening in Addis Ababa and other key urban areas will produce assets, such as MV lines, which will be owned, operated, and maintained directly by EEU. EEU will be responsible for securing adequate revenues to meet the cost of O&M of these assets, as well as amortizing the capex value of these assets through regulated tariffs paid by the consumers. Thus, the sustainability of assets will be ensured through the regulatory tariff mechanism. In addition, EEU will also benefit from reductions in technical losses and equipment burnout, as well as improved revenue collection from enhanced rollout of the RPP.

88. Under component 2, decisions around sites and business models will be made safeguarding the financial health of the utility, as a key sustainability factor. For the EEU-led business models, the component will support the procurement and installation of adequate, high-quality mini-grids and ensure the maintenance of the systems beyond the life of the project. For the private sector-led models, the project will provide financing to bridge the affordability gap and support financial sustainability of models deployed by private operators/cooperatives. In addition, EEU will ensure that private operators comply with quality standards and maintenance requirements as stipulated in their contracts.

89. Under component 3, the project design also includes key parameters for sustainability of the PDO, including (a) funding windows that are aligned with the NEP 2.0 strategy for off-grid electrification that could help attract additional funding from donors, private sector, and other sources; (b) capacity building of the GoE, REF, DBE, and PFIs to increase its capacity and experience to support market development; (c) enforcement of national quality standards for supported OGS products; (d) advancing of improvements in the regulatory framework and policy measures to accelerate private sector participation, especially of innovative models like PAYGo; and (e) development and implementation of community awareness campaigns on the benefits and availability of quality-verified off-grid equipment and services. Activities under component 5 support implementation of these key parameters.

90. Under component 4, the project focuses on ensuring sustainable capacity within EEU for installation and maintenance of stand-alone systems. To do so, the project will support EEU in establishing an OGU (also for component 2) to build the technical, procurement, and financial infrastructure for installation and O&M of stand-alone solar systems financed under this component. The dedicated unit would be well equipped to manage mini-grid and off-grid solutions in the long term. Moreover, to ensure operational sustainability, a private sector contractor will be engaged for at least five years (contract could be renewed) to perform O&M and train EEU personnel to subsequently govern O&M. Lastly, to ensure financial sustainability of EEU, O&M funding will be secured through a combination of resources from the MoF (including ADELE funds) and the beneficiary institutions. This accountability would ensure operational and financial sustainability beyond the project closure.

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic and Financial Analysis

91. For component 1, the project will finance the rehabilitation and expansion of more than 600 km of MV lines. The project will maintain high technical standards for equipment and parts in alignment with the technical requirements used by EEU and conforming national quality and technical standards.

92. For component 2, the project will maintain high technical standards for all equipment and parts. Both under the EEU-led and the private sector-led business models, the mini-grids will be built up to Ethiopia's grid code standard, to allow for future integration with the main grid when/if it reaches the mini-grid site, as specified in the mini-grid directive already adopted by EEA. It is expected that most mini-grids will use solar generation with battery storage and diesel backup generation. Other renewable technologies will be considered on a case-by-case basis. The mini-grids under the project will be required to have prepayment meters to mitigate revenue collection risk. The private developers/cooperatives deploying mini-grids under the project will also be expected to promote the use of energy-efficient appliances.

93. For component 3, the project will support quality-certified systems under Lighting Global standards, now IEC quality standards. The project will support systems Tier 1 (lanterns and multi-lighting systems) and above. Detailed technical specifications of the systems supported will be outlined in the POM, as a disbursement condition, and will be included in the financing agreements both for the performance-based financing and the financing facility windows.

94. For component 4, OGS PV and battery will be used with systems ranging from 2 kW to 5 kW in size. These systems will adhere to Lighting Global quality assurance guidelines. The technical specifications and bidding documents will reflect these technical standards. Remote monitoring will be used to track the performance of these systems and reduce the cost of O&M.

Economic Analysis

95. **An economic analysis has been carried out to assess the economic viability of the project.** The economic internal rate of return (EIRR) and net present value (NPV) of the project are calculated using a standard cost-benefit methodology. The economic evaluation is confined to the project activities that

generate quantifiable benefits for which an economic value can be clearly identified and measured. Notable benefits associated with investments under project components 1 through 4 include the reduction in unserved demand due to improved reliability of electricity supply (component 1), willingness to pay (WTP) for electricity access (components 2 and 3), avoided costs of electricity/lighting alternatives (components 2, 3, and 4), and avoided greenhouse gas (GHG) emissions and their associated benefits (components 2, 3, and 4). The detailed economic analysis is presented in annex 2.

96. **Overall, the project is economically viable with an NPV of US$409.28 million and an EIRR of 16.78 percent (Table 2).** These estimates are based on a discount rate of 6 percent. Inclusion of GHG mitigation benefits increases the project NPV to US$521.68 million and the project EIRR to 20.96 percent. A total of 3.75 million tCO_2e are avoided throughout the project's lifetime. The GHG emission reductions are due to the lower emission factor of SHSs, the mini-grids, and the institutional solar systems compared to diesel generation and traditional lighting sources. Most project activities will not directly emit GHGs due to the use of solar technologies. Only component 2, which includes backup diesel generators, involves CO_2 emissions. However, these additional emissions are minimal as the emission intensity of the electricity generated from the mini-grids is substantially lower compared to the emissions intensity of the alternative lighting sources. Sensitivity analysis on the project NPV is included in annex 2.

Financial Analysis

97. **The financial NPV of investments by EEU under components 1, 2, and 4 is US$123.20 million, at a financial internal rate of return (FIRR) of 15.7 percent.** Owing to differences in implementation arrangements, the financial analysis for the project has been carried out for components 1, 2, and 4 combined and separately for component 3. For EEU, which will strengthen and improve network reliability, install a set of mini-grids within component 2 under an EPC arrangement, and electrify secondary schools and health centers under component 4, the combined NPV is US$123.2 million at a discount rate of 10 percent (Table 2). The bulk of the positive NPV is contributed by distribution network investments under component 1, which have a positive NPV of US$163.36 million. This is achieved through an improvement in reliability, which will help meet unserved demand currently lost to interruptions. The investments in mini-grids and solar installations for schools and health centers result in a negative financial NPV as these investments are usually not financially viable on their own and require public financial support. The financial analysis for component 3 has been performed for households to assess if their savings from switching away from lighting alternatives will be sufficient to afford the SHS. The NPV for component 3 is US$1.55 million at a discount rate of 10 percent.

Table 2. Results of Economic and Financial Analysis

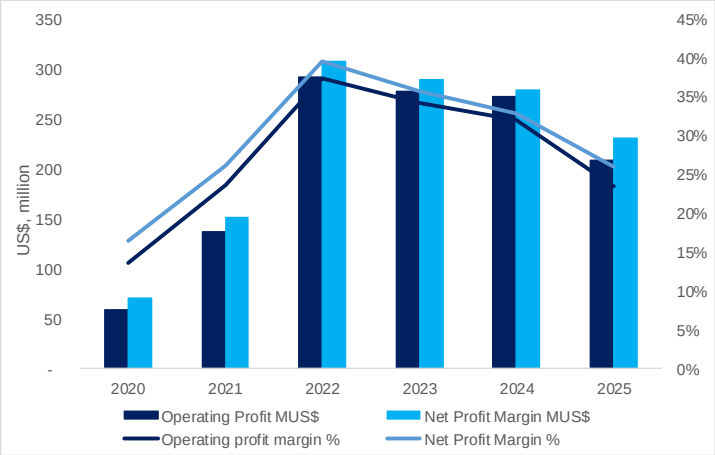
Economic Analysis	
EIRR (percent)	
EIRR (excluding GHG mitigation benefits)	16.78
EIRR (including GHG mitigation benefits)	20.96
NPV (US$, millions)	
NPV (excluding GHG mitigation benefits)	409.28
NPV (including GHG mitigation benefits)	521.68
Financial Analysis	
FIRR (percent)	
EEU total (Component 1, Component 2 Hybridization + EPC and Component 4)	15.71
Component 3	11.92
Composition of NPV (US$, millions)	
EEU total (Component 1, Component 2 Hybridization + EPC and Component 4)	123.20
Component 3	1.55

Utility Financial Analysis

98. **As a result of recent tariff reforms and due to favorable revenue-sharing arrangements, EEU has turned around its financial situation and is now a profit-making utility.** In September 2018, Ethiopia approved a four-year electricity tariff reform. EEU implemented the first two adjustments in December 2018 and December 2019. The first tariff adjustment in December 2018 resulted in raising FY2019 revenues substantially above operating costs and finance costs. As a result, after recording operating and net losses for three years in a row between 2016 and 2018, in 2019 (the last year for which full financials are available), EEU's revenues from electricity sales increased by 41 percent, and the utility recorded positive operating and net profit margins. With two installments of the tariff reform yet to be implemented, EEU's profitability is expected to be sustained in the future.

99. **EEU's financial situation is expected to remain stable, and absorbing investments under ADELE is not expected to have any substantial negative impact on EEU's profitability and cash flows.** With the implementation of the remaining two instalments of the tariff reform, and adjustment against exchange rate depreciation leading to average tariff of US¢6.5 per kWh in 2022, EEU will retain and improve its profitability, with both operating and net profit margins above 14 percent in the forecast period. Implementing the grid reliability improvements and the EPC segment of mini-grids will add a long-term liability of US$317 million for EEU. Given the concessional loan terms, EEU's surplus profits are expected to cover the additional debt burden. See annex 2 for a summary of EEU's forecasted financial statements.

Figure 4. EEU Profitability - Forecast



Source: World Bank staff analysis

B. Fiduciary

(i) Financial Management

100. A financial management (FM) assessment was conducted in accordance with the FM Manual for World Bank Investment Project Financing (IPF) Operations issued on February 10, 2017 and the supporting guidance note (February 28, 2017). The objective of the assessment was to determine whether the implementing entities of the project have adequate FM systems and related capacity which satisfies the World Bank's policy and the World Bank directive on IPF, to provide reasonable assurance that the proceeds of the financing are used for the purposes for which they are granted. The World Bank has conducted the assessment building on the lessons learned from the current World Bank-financed projects[15] at MoWIE, EEU, and DBE. It also included the identification of key perceived FM risks that may affect program implementation and proceeded to develop mitigation measures against such risks.

101. FM arrangements for the project will be based on the respective entities' FM systems. The budgeting, accounting, and internal control procedures will mostly rely on the entities' respective procedures. In addition, the POM and FM Manual are expected to be developed and submitted to the World Bank, which should be aligned as much as possible to the respective entities' procedural manuals. Each entity will prepare the project annual work plan and budget (AWPB) for the activities/components it implements, which will be included and approved as part of the entity budget. The implementing entities will notify their annual work plans and budgets to the World Bank and are expected to obtain 'no objection' from the World Bank. The regular budget execution reports and the interim financial reports (IFRs) as well as progress reports would be used for project budget monitoring. Each entity's existing accounting systems will be used which will be supplemented by memorandum of records as needed, and the existing FM staffing at the entities is adequate in managing the project FM issues apart from MoWIE, which should recruit/assign at least one senior accountant for this project. In addition, each entity will review its staffing capacity and, if deemed necessary, will explore the possibility of recruiting an additional

[15] ENREP (P119893) for DBE and ELEAP (P160395) for EEU and MoWIE.

accountant within six months of project effectiveness. The internal audit departments/directorates or unit of EEU, DBE, and MoWIE will include this project in their work program and conduct audit accordingly. As far as disbursements of project resources are concerned, all disbursement methods, that is, advances, reimbursement, direct payment, and special commitment are available. Each entity will open a segregated Designated Account (DA) at the National Bank of Ethiopia (NBE) managed by each entity to receive project funds. Local currency accounts will also be opened as needed. For the advance to the DA and for reimbursement methods, the project will use report-based disbursements using quarterly IFRs. Each implementing entity will prepare and submit quarterly unaudited IFRs for the project within 45 days of end of the quarter. The formats of the IFR for each entity is attached in the Disbursement and Financial Information Letter (DFIL) which will be agreed during negotiations. Each implementing entity will also have the project accounts audited on an annual basis by an independent external auditor acceptable to the World Bank and will submit the external auditor's annual report within six months of the fiscal year-end. In addition, as part of the financial audit, interim audit arrangements are envisaged at EEU and DBE. The audit terms of reference (TOR) will be agreed during negotiation.

102. **The project will inherit the various strengths of the country's public financial management (PFM) system and World Bank-financed projects**.[16] The introduction of International Financial Reporting Standards (IFRS) and SAP at EEU is expected to improve the budgeting, budget control, financial recording, and reporting. Sound internal control procedures are in place at DBE and MoWIE. However, the FM assessment notes weaknesses like delays in entity external audit reports especially at EEU and DBE and weak internal audit oversight, especially at MoWIE. In addition, internal controls weaknesses are noted at EEU as revealed in external audit reports, the recent reports of which are issued with a disclaimer opinion. Financial reporting from MoWIE is weak and delayed. There are delays in budget approvals at EEU and MoWIE. The nature of the project also poses risks related to property management and internal controls challenges in advance. As a result, the FM residual risk rating for the implementation of this project is considered Substantial.

103. It is the conclusion of the FM assessment that the project's FM arrangements meet the World Bank's minimum requirements under the World Bank policy and the World Bank directive on IPF and the FM Manual. An action plan has been developed to mitigate the risks identified (the detailed extracts of the FM assessment are included in annex 5).

(ii) Procurement

104. **Procurement activities under the project shall be carried out in accordance with the World Bank's Procurement Regulations for IPF Borrowers,** 'Procurement in IPF, Goods, Works, Non-Consulting, and Consulting Services', dated July 1, 2016, revised November 2017 and August 2018; 'Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants', revised as of July 1, 2016; and the provisions stipulated in the legal agreement.

105. **A Country Procurement Assessment (CPAR) was carried out in 2002 and updated in 2010.** Both the 2002 and 2010 CPARs highlighted several risk areas and inadequacies in the legal, institutional setup, and procurement practices of the country. A CPAR using a Methodology on Assessment of Procurement Systems (MAPS II) has been conducted in 2019/20, and a number of findings and recommendations were

[16] The current active/ongoing projects like ELEAP, ENREP, and WEDP.

provided. In parallel, the Federal Government's Public Procurement Proclamation of 649/2009 is being revised.

106. **A procurement capacity assessment of the implementing agencies, MoWIE, EEU, and DBE, was carried out as part of the project preparation.** The review included procurement systems such as procurement legislation, procurement organization and staffing, procurement strategies, procurement operations, procurement performance monitoring and measurement, and procurement control and oversight mechanisms. The assessment found that the implementing agencies, especially EEU, have good experience in implementing World Bank-financed projects.

107. **Summary of procurement risks.** The procurement risks identified during the assessment include, for EEU and DBE, (a) limited knowledge of World Bank procurement regulations, contract management, and Systematic Tracking of Exchanges in Procurement (STEP); (b) the procurement guideline (manual) and standard specifications not updated, and standard bidding documents (SBDs) not standardized; (c) lack of independent complaint handling system; (d) lack of adequate internal and external procurement audit mechanisms; and (e) direct award of contracts by EEU to some firms and to job-seeking youth organized by public bodies called MSEs. The risks for MoWIE are (a) not conducting procurement in a coordinated manner using the central procurement unit and (b) lack of procurement and contract management capacity including capacity to handle procurement complaints. EEU, DBE, and MoWIE do not widely advertise contract award notices, and they do not have adequate procurement performance monitoring and measurement systems. Furthermore, as a result of the COVID-19 pandemic, there may be low responses to bidding opportunities, availability of fewer goods and services providers, and delay in contract implementation. Based on the assessment, the overall project procurement risk is High.

108. **Summary of mitigation measures.** The measures to mitigate the risks should include the following: (a) flexibilities should be given to allow bid securing declaration in place of bid security and electronic bid submission and online bid opening options; (b) use online platforms for contract management where possible; (c) provide training on World Bank procurement regulations, contract management, and STEP; (d) ensure that contract award notices are published widely; (e) EEU, DBE, and MoWIE should continue to monitor procurement using KPIs developed under ELEAP; (f) EEU should engage a technical assistance consultant to review and update the procurement guideline (manual), standard specifications, and SBDs; (g) tenders should be advertised openly unless there are conditions for use of direct selection; (h) EEU should continue the arrangement under ELEAP to adopt the federal public procurement complaint handling procedures; (i) EEU should continue the arrangement under ELEAP to have internal and external procurement audit mechanisms; (j) MoWIE should strengthen the central procurement unit to handle project procurement; and (k) engage a technical assistance consultant to provide support in procurement and contract management and build the capacity of MoWIE. A detailed procurement assessment including the associated risks and mitigation measures is presented in annex 6.

109. **Procurement strategies.** Component 1 will be implemented based on the conventional request for bids selection method. Component 2 will be implemented in three procurement delivery strategies. Part of the public sector model will follow the EPC approach for the generation of assets and supply and installation contract for the distribution system. For part of the public sector model and the full private sector-led MST and PBG modalities under component 2, one contractor will be selected to design, supply, install, maintain, and operate the generation assets and distribution systems of the respective packages. Details of procurement (selection) and award procedures of the PBG component of sub-component 2.2

and the RBF component of sub-component 3.1 will be included in the POM. The World Bank procurement regulations will not be applicable for sub-component 3.2 as it will be implemented by DBE as FI according to paragraph 2.2 of the procurement regulations. Procurement for component 4 will be based on supply, installation, and possible O&M contracts; and separate supply and installation contracts through contractors and force account units of EEU for isolated remote areas which may not attract the private sector. Component 5 involves procurement of institutional and capacity-building technical assistance consultancy services and goods.

110. **Project Procurement Strategy for Development (PPSD), Procurement Plan, and STEP.** The borrower prepared the PPSD which shall be agreed with the World Bank and forms the basis for a procurement plan for the first 18 months of the project implementation and provides the basis for the procurement arrangements. The project will use the World Bank's online procurement planning and tracking tool STEP for all transactions. The procurement plan will be updated by the project team as required to reflect the actual project implementation needs and agreed with the World Bank. All documents, at each stage of the procurement process, will be uploaded in STEP for the World Bank's prior or post review.

111. **World Bank's oversight.** The World Bank will provide oversight of procurement activities through prior and post reviews, based on the high-risk level assessed by the World Bank during appraisal and shall be updated periodically. The World Bank will carry out regular procurement supervision missions on a biannual basis and carry out procurement post review and/or independent procurement reviews (IPRs) on an annual basis. Contracts not subject to prior review will be subject to post review by the World Bank according to procedures set forth in annex II - Procurement Oversight of the procurement regulations. The sample contracts for procurement post reviews and IPRs will be selected on a risk-based approach.

C. Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

D. Environmental and Social Risk Management

112. The project aims at increasing access to reliable electricity for households, social Institutions, and enterprises in Ethiopia, particularly the off-grid component focused to expand access to sustainable energy services for households, health and education facilities, and small businesses in rural areas which are not connected to the national grid. As energy is one of the drivers of human capital development, off-grid renewable energy will have largely positive impacts for the community toward ensuring their livelihoods and to strengthen public health and education services at remote areas.

113. ADELE will utilize the World Bank's Environmental and Social Framework (ESF), which provides a holistic tool for identifying and managing environmental and social risks and opportunities in the design and assessment of the project. The main potential environmental risks and impacts that emanate from the proposed project activities include (a) supply and installation of equipment for strengthening of MV

and LV network; (b) upgrading and rehabilitation of distribution network; (c) installation, construction, and implementation of solar mini-grid; (d) installation and construction of off-grid SHS; and (e) installation and construction of stand-alone PV solar system. The project potential environmental risks and impacts generated from these activities are stated in the following.

114. The potential environmental risks include (a) disposal and management of liquid and solid waste, such as spoils metals, cables, capacitor, wood, glass, and packaging materials; (b) disposal and management of hazardous wastes such as polychlorinated biphenyls (PCBs) from older imported transformers and capacitors, transformer parts and oils, certain amount of heavy metals, used and damaged solar panels, and batteries; (c) soil erosion and degradation; (d) fauna and flora disturbance leading to loss of habitats due to land clearance; (e) dust and noise; (f) contamination and degradation of soil and water; (g) health and safety of employees and communities including those associated with operation of vehicles, plant and equipment, working at height, contaminations associated with improper handling of e-wastes, electrocution and aesthetic and light refection, and resource use, mainly in areas of less availability. The potential project risks associated with the disposal and management of hazardous wastes will be more aggravated due to limited knowledge and capacity on disposal, recycling, and management of the anticipated large amount of nonbiodegradable hazardous wastes from electrical equipment; damaged or leftover solar panels, and used or damaged batteries; and limited knowledge and capacity in O&M of these new energy technologies, including availability and affordability of parts. These risks and impacts are expected to be managed in accordance with the World Bank Group environment, health, and safety guidelines and the relevant requirements of Environmental and Social Standards ESS1, ESS2, ESS3, ESS4, and ESS6.

115. **Main positive and negative impacts.** The major positive impact associated with the ADELE activities is more reliance on the use of renewable energy, which is seen as a necessary step toward sustainable energy development, diminution of the use of fossil fuels, and mitigation of climate change. The project mainly depends on solar PV systems considered as the best option for electricity access in remote and rural areas. Among others, the major positive impacts are increased access to new and improved electricity services with quality lighting for several beneficiaries throughout the country, particularly in the peri-urban, rural, and deep-rural areas where on-grid access is not available, among others. Access to electricity will lead to improved communication for the beneficiaries, and access to modern electricity will go a long way toward alleviating the daily household burdens of women, giving them more time, improving their health, and enhancing their livelihoods.

116. The main negative impacts associated with the proposed ADELE activities will largely occur during construction, rehabilitation, and installation works of both project main grid and off-grid components and will include (a) creation of public and workers nuisance from dust and noise due to rehabilitation, installation, and construction activities; (b) dumping of construction material and e-waste generated from used batteries and solar appliances; (c) spillage of machine oil and lubricants, which leads to soil contamination and water pollution and additional stress on hydrological and water resources; (d) land degradation due to use/increase of quarries and borrow pits for materials sourcing; (e) community and occupation health and safety due to traffic safety, light reflection, contamination of water, improper waste disposal, and so on; and (f) avian collision with the distribution network and solar panel installations and electrocution associated with the distribution network rehabilitation activities. The major adverse sensitive environmental impacts of project activities are those emanating from the disposal and

management of nonbiodegradable hazardous wastes, known as electronic wastes (e-wastes), and wastes associated with PCBs and SF6 from older imported transformers and capacitors.

117. **Potential social risks and impacts.** In general, relatively smaller-scale solar PV arrays like stand-alone solar systems have no land use impact because they are often mounted on rooftops of individual houses. However, land is required for setting up solar mini-grids and associated facilities. The land will be acquired from government, privately owned, or communal lands. Therefore, the installation of mini-grids requires larger land size and subsequent impacts. In addition, the project may have impacts associated with distribution rehabilitation activities. The impacts from the mini-grid and distribution rehabilitation include involuntary resettlement, land acquisition, and restriction of access to and use of natural resources. Impacts may be temporary or permanent but will be limited in the scale and scope of land requirement given the size of investment for household and public institutions, typically less than 0.5 ha mirroring the land requirements for mini-grid subprojects' sites.

118. The potential social risks and impacts encompass (a) affordability of the technology; (b) non-compensation for affected crops and trees (typically less than 0.5 ha for mini-grid subprojects' sites); (c) influx of labor and potential gender-based violence (GBV)/sexual exploitation and abuse (SEA)/sexual harassment (SH), and sexually transmitted and communicable diseases (STDs), including HIV/AIDS, risks into targeted areas; (d) lack of adequate consultation of affected persons; (e) access to functioning GRMs; (f) social exclusion of women, youth, persons with disabilities, and other members of vulnerable groups; (g) difficulties in accessing project benefits for Indigenous Peoples/Sub-Saharan African historically underserved traditional local communities and households; (h) diverse nature of regions and socioeconomic and sociocultural aspects including gender aspects being quite different, which requires cautious SEA/SH risk assessment; and (i) lack of compliance with labor and working conditions laws and related standards, especially in relation to supervision of contractor violations of labor laws, worker grievances, and occupational health and safety (OHS).

119. **Environmental and social risk classification.** From the environment and social risk management perspective, the proposed project is not complex or large in scale and does not involve activities that have high potential risks for harming people or the environment. The potential impacts that will be generated are expected to be temporary, reversible, low in magnitude, and site specific and are manageable with the application of appropriate environmental and social risk and impacts management (ESRM) tools and international best practices. It is expected that thus, other than the e-waste that can be generated from the project activities, the anticipated environmental impacts and risks associated to the proposed ADELE are not likely to be significant. Thus, the ADELE environmental and social risk and impact is considered as Substantial. The project environmental risks rating of Substantial is mainly based on the project activities, which focus on the installation of equipment for strengthening of the MV and LV network; upgrading and rehabilitation of the distribution network; installation, construction, and implementation of the solar mini-grid and local distribution network; installation and construction of stand-alone solar systems and SHS; and so on. These activities will be implemented throughout the country. The social risk classification of the projects is considered Moderate in view of the operational and implementation potential risks identified and the broader contextual risk such as political instability (induced by potential civil unrest), accessibility of subprojects for monitoring and support, and proper utilization and implementation capacity of project ESRM tools.

120. **ESRM measures.** The ESRM actions are assessed based on the scope of the proposed project components and commensurate with potential risks and impacts. The environmental risk management approach targeted screening and identifying the environmental risks and impacts of subprojects associated with upgrading and distribution rehabilitation, mini grids, and SHS and mitigation/management options. These actions are mainly identification, development, and implementation of appropriate (a) solid and liquid waste management measures associated with the distribution rehabilitation works and e-waste management mechanisms including hazardous wastes associated with used and damaged solar panels and batteries, PCBs, and SF6 from older imported transformers and capacitors; (b) measures for the OHS hazards related to electrocution, working at height, traffic safety, and so on; and (c) measures commensurate with other project environmental risks and impacts, such as dust and noise nuisance, disturbance of fauna and flora, soil and land degradation, contamination of water and soil, bird collision, and so on. The social risk management approach will divulge on (a) strategic stakeholder and community engagement and functioning grievance redress accessible for all affected communities; (b) social development plan informed by the enhanced social assessment for people meeting the requirements of ESS7 (Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities) especially in Afar, Somali, Gambella, Benishangul-Gumuz, and pastoral and agropastoral areas of SNNPR and Oromia; (c) IDP areas social tensions and violent conflict; (d) gender dimensions including GBV; and (e) unintended labor issues, including regarding worker health and safety, child labor, and noncompliance with labor laws.

121. The project develops and implements risk management instruments, such as the Environmental and Social Management Framework (ESMF), and other specific management plans for solid and liquid wastes that are related with rehabilitation and network upgrading activities and hazardous wastes including e-wastes due to the implementation of the project that are related with the mini-grids, stand-alone, and SHS components. This is due to the generation of solid and hazardous wastes associated with PV panels and used solar batteries. The potential for environmental contamination will be significant if they were improperly disposed upon their end life and decommissioning. Concentrating solar power systems may employ materials such as oils or molten salts, hydraulic fluids, coolants, and lubricants, which may be hazardous and present spill risks. Safe working condition and handling system, proper planning, and good practices during the maintenance or repair of insulated equipment are crucial.

122. **OHS.** Electrocution is the main safety risk particularly during installation and maintenance works of distribution lines, which may lead to accidents resulting in serious injury and fatalities. Workers on construction sites are also exposed to injuries, falls, and fatalities caused by machinery and/or transport; risks from falling objects; and risks from manual handling of heavy loads. Furthermore, the limited capacity coupled with the collection and recycling practices of used and damaged batteries and solar appliances lacking basic precaution measures could not prevent the emission of lead and battery acid to the workspace and the environment. In addition, working on the rooftops of individual houses may bring an occupational hazard for the SHS installation. Thus, to safeguard workers from health and safety risks and impacts during the construction and operational phases of the project components, the implementing institutions (EEU, MoWIE, and DBE) have committed to prepare an OHS plan in line with the World Bank Group health and safety guideline and good international industry practice before project implementation.

123. **Community health and safety.** Communities living in the project areas may be exposed to project health and safety impacts and become affected due to construction and operation activities. This includes

adverse impacts such as traffic safety, contamination of nearby water sources, labor influx and associated impacts, GBV, sexual exploitation, and the transmission of communicable diseases such as HIV/AIDS on local communities. The installation of stand-alone solar systems in schools and health institutions can disrupt regular functions of the institutions through impacts such as dust emission, noise, and increased generation of solid waste. The potential risks and impacts on beneficiaries and communities residing nearby has been analyzed and the respective management and mitigation measures are captured in the ESMF. Other specific risk assessment measures will be detailed in subproject-specific Environmental and Social Management Plans (ESMPs). From the works envisaged through the implementation of the project, GBV risks are expected to be moderate, and all works and operations will be planned, designed, and implemented to comply with the World Bank Group's EHS guidelines.

124. The project will not finance activities that will adversely affect biodiversity conservation or sustainable management of living resources. This project will not lead to significant land conversion. Project activities are expected to involve mostly modified habitat, but construction of solar mini-grids may affect natural habitats in some ways. In addition, solar systems can pose risks to wildlife, especially birds that may confuse solar panels with water bodies. Furthermore, LV and MV power transmission lines could pose threats to a variety of birds including mortality through collision, electrocution, and habitat disturbance. All these threats could result in the loss and reduction of the local bird population and habitat modification. The ESMF (with embedded screening procedures) and subproject environmental and social instruments included management and conservation measures to manage risks and impacts to any natural habitats, including birds, consistent with the requirements of ESS6.

125. **Stakeholder and community engagement will be tailored to the various project components and cultural, livelihood, and linguistic context.** These platforms will be used to create awareness about the potential environmental and social risks and impacts through meaningful consultations including the avenue for feedback and complaints mechanism resolution process. The SEP and related operational steps are defined as part of the SEP based on the local context, language, preferred media, and cultural values. The SEP will define (a) the disaggregate audiences at different levels, (b) preferred media, (c) instruction language, (d) receiving of feedback from the communities, (e) mechanisms to reach historically underserved people and vulnerable groups, and (f) approaches for IDP outreach. The SEP will be updated considering the evolving potential impacts of COVID-19 and respective mitigation measures. The SEP was publicly disclosed on January 20, 2021 and outlines commitments to releasing routine information on the project's environmental and social performance. The borrower will engage in meaningful consultations with all stakeholders throughout the project life cycle, paying attention to the inclusion of historically underserved peoples and vulnerable and disadvantaged groups (including the elderly, persons with disabilities, women, female-headed households, and orphans and vulnerable children). A stakeholder grievance mechanism (GRM), as part of the SEP, will be formed to allow for feedback on the inclusiveness of the project and associated design and planning decisions.

126. **Awareness on environmental and social mitigation measures.** The implementing agencies have committed to provide awareness/orientation sessions on health and safety, waste management, STDs/HIV/AIDS, GBV/SEA/SH, GRM, and so on for the staff from EEU, MoWIE, DBE, relevant woreda-level offices, private sectors, cooperatives, MFIs and FIs, contractors of civil works, and so on.

127. **Disclosure.** The Environmental and Social Management Framework (ESMF), Resettlement Policy Framework (RPF), Labor Management Procedure (LMP), Social Assessment (SA), Stakeholders

Engagement Plan (SEP), Gender-Based Violence (GBV) Action Plan, Environmental and Social Commitment Plan (ESCP) for the project were disclosed in country on the websites of MoWIE, EEU, DBE on January 20, 2021 and January 22, 2021, and as well as on the World Bank's external website on January 22, 2021.

128. **Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities.** The ADELE scope is spread across Ethiopia, including underserved regions of the country. Project sites will be selected in a manner to avoid adverse impacts to underserved and vulnerable communities. The project will ensure that these communities are not disproportionately affected by the adverse impacts of project activities and will experience its benefits—particularly ensuring affordability and availability of O&M. Selection of project components/subprojects that would otherwise result in significant adverse impacts on land or natural resources traditionally owned or used by underserved/Indigenous communities, relocation, or impacts on cultural heritages will not be eligible for financing. An SA developed by EEU including context-based Social Development Plan was developed, consulted, and disclosed before appraisal. As necessary, other implementing agencies that will work on the underserved regions of Ethiopia shall undertake SA, consulted upon and disclosed before the project implementation. The project will also ensure that the GRM consistent with the requirements of ESS10 will be accessible for these communities.

129. The project design and implementation should consider the cultural appropriateness, affordability of technologies, and maintenance (after service) alternatives that may not be catered due to remoteness. The delivery of the project activities will require an assessment of affordability of the household-level technologies in the Ethiopian context, including for the historically underserved and vulnerable groups. Beyond introduction of new energy technologies, the sales agreement or the product information sheet should provide clear guidance on the O&M (availability and affordability of parts). While the results-based incentives will enhance access to energy in remote rural areas, an indicative site selection criterion should be defined for mini-grids to ensure equity in energy access.

130. **Conflict tensions and IDP settlements.** The political stability (induced by potential civil unrest), could limit accessibility of subprojects for monitoring and support, as required in line with ESF provisions. The project will be implemented in conflict-affected and internal displacement areas. The task team would work closely with the social development team to deploy the conflict lens and conflict tool to understand the situation and design appropriate mitigation measures. The project will be operating in areas where there are IDPs and refugee-hosting areas. The project implementation will need to be cognizant of these dynamics and ensure no further escalation of such tensions. EEU, MoWIE, DBE, and other implementing entities should alert the World Bank of any incidents related to security, conflict, and potential sensitivities toward conflict escalation in the project areas.

131. **Labor and working conditions.** The deployment of workers/technical labor in rural and pastoral underserved areas may lead to undesirable relationships with communities. Potential risks may include GBV, including SEA/SH, transmission of HIV/AIDS and other STDs, employers failing to pay local workers on time and violating other legal requirements relating to benefits and related terms and conditions of employment, as well as provision of adequate personal protective equipment, discriminatory labor recruitment, and so on. EEU will monitor and supervise the private sector or cooperatives through a well-identified private sector ESMS including SEA/SH prevention and response code of conduct and action plan to address SEA/SH and overall ESMS risks. The project does not anticipate mobilization of community workers as defined in ESS2.

132. **Labor Management Procedure (LMP).** ADELE will be implemented in accordance with the Ethiopian Labor Proclamation and the World Bank's ESS2. ADELE project implementing agencies are responsible for ensuring compliance by their employees as well as potential contracted institutions. Labor and working conditions in the project are relevant to direct workers (including government civil servants seconded from their home agencies to work in relation to the project) employed or engaged by the project implementing agencies, contracted workers, and primary supply workers. These will include construction workers hired for the projected civil works (as required) and trained technicians for the installation and maintenance of the solar mini-grids, SHSs, and stand-alone solar systems. The project does not anticipate mobilization of community workers as defined in ESS2. On the other hand, DBE's ESMS will include adequate assessment and procedures for private sector HR management. The LMP includes potential labor risks anticipated in the project, terms and conditions that will be applicable for workers according to the GoE Labor Proclamation No. 1156/2019, the GoE's legal frameworks on OHS, responsibility of staff management, and workers' grievance mechanism. The project has prepared the LMP, which will be implemented defining the potential project workers and the risks and impacts in relation to issues of labor and working conditions.

133. **Labor influx and GBV**. The contextual risk for GBV in Ethiopia is similar to or higher than that of other Sub-Saharan African countries. A GBV risk assessment of the project was undertaken in accordance with the World Bank's good practice note 2018. An initial screening of the labor influx profile of the project deemed it to be substantial, and based on different factors, the project has been assessed to have a moderate risk of GBV/SEA/SH due to high levels of poverty, rural context of the project, the low rates of help seeking on SEA/SH, social acceptance of at least one reason for spousal abuse, and so on. GBV risks and mitigation measures have been included in the ESMF, including the need for capacity enhancement of the implementing agency and codes of conduct for contractors and other implementers. The client (EEU/MoWIE and DBE) will ensure that an area-specific assessment of GBV/SEA/SH risks is undertaken within subsequent project ESIAs/ESMPs and that prevention and response measures are put in place.

134. **ESRM approach and instruments.** The ADELE project activity-specific sites are not known at this stage. Thus, the ESRM approach for the project adopted framework instruments, which outline the principles to prepare the site-specific plans. The project is subject to the World Bank's ESF, and an Environmental and Social Commitment Plan (ESCP) will outline the ESRM requirements and timeline which will be part of the project financing agreement with the GoE. The required ESRM instruments embodied under ESCP are ESMF, ESMS, RPF, SA, SEP, LMP, WMP, OHS plan, and GBV/SEA/SH risk mitigation plan. ESMF, RPF, LMP, SA, SEP, GBV Action Plan and ESCP for the project were disclosed in country on the websites of MoWIE, EEU, DBE on January 20, 2021 and on January 22, 2021, and as well as on the Bank's external website on January 22, 2021.

135. Overall, the potential negative environmental and social impacts and risks during project implementation can be managed through robust and well-developed and adaptive mitigation measures, which have been established in the project ESCP.

Institutional Arrangements

136. **GRM.** The project will provide resources to ensure the functioning of the GRM system. The project will establish a project-level GRM, with multiple channels, to facilitate individuals and communities to voice/express general complaints, queries, and concerns including those not necessarily related to risk

management (ESS5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement). In addition, the project-specific A/RAPs will outline procedures through which project-affected persons (PAPs) and communities will systematically raise grievances and concerns specifically related to land acquisition, resettlement, and compensation and how these will be effectively resolved and monitored. A dedicated person will ensure that all complaints received are logged, written, and treated with confidentiality, transparency, and accountability. PAPs will be given an opportunity to present their grievances in local languages, with support from the project and to translate if necessary. In addition, if PAPs and communities disagree with the grievance resolution in the outlined stages, the GRM will provide an opportunity to escalate to subsequent levels such as district administrations, PIUs, and finally the courts.

137. **GBV/SEA/SH GRM procedure.** The project will equally ensure that grievances related to GBV are recognized and referred to respective service providers based on a survivor-centered approach (that is, always based on the demands of survivors and ensuring confidentiality, as outlined previously). Such grievances shall not be handled according to standard GRM procedures but by the Woreda women and children affairs office or female GBV focal points to be selected and trained to provide basic referrals. The community consultations and trainings for workers will include information regarding the grievance mechanism.

E. Other Corporate Priorities

138. **Climate change.** The investments under the proposed project will rely on clean energy sources, including the grid investments under component 1 to enhance reliability of grid electricity (largely hydropower), as well as components 2, 3, and 4, which will be fully powered by distributed solar PV generation in the case of components 3 and 4, and largely solar based in the case of component 2, with a small percentage, less than 1 percent of investments used for diesel generation to improve the availability of power. GHG accounting has also been undertaken for this project. The project will result in significant GHG emission avoidance by replacing household usage of candles, kerosene, and charcoal fuels as well as diesel consumption in public facilities and productive uses. As outlined previously, most of the activities will not directly emit GHG due to the use of solar technologies. A total of 2.96 million tCO_2e is avoided throughout the project's lifetime (assumed 20 years).

139. **Gender.** According to the 2020 Global Gender Gap report, Ethiopia ranks 82 among the 153 countries assessed. The rank goes down to 125 for the gap in economic participation and opportunities and 140 in the case of educational attainment.[17] These gaps are reflected in the energy sector across women's labor force participation and livelihoods, education and skills development, and access to formal financial services. The gap in participation in science, technology, engineering, and mathematics (STEM) fields can lead women to turn to less technical positions and sectors when making career choices**.** In the Ethiopian energy sector, women professionals' participation at EEU stood at 20 percent in 2017 (since increased to 24 percent through ELEAP efforts on women's employment, which translated to over 750 new female employees) and women's participation in leadership roles at EEU is fairly limited but has increased from 5.8 percent to 18.5 percent in 2020 through continuous engagement with chief executive officers (CEOs), HR departments, and so on. Consultations with mini-grid companies revealed women's labor force participation of about 21 percent, with most women in non-technical roles. In the OGS sector,

[17] The Global Gender Gap Index 2020, World Economic Forum.

dynamics are similar, with female employees making up on average 20 percent of the staff footprint in companies. Limited access to formal financial services is another key constraint. According to the World Bank's enterprise surveys, access to finance is perceived as the primary business environment constraint by micro (41 percent), small (36 percent), and medium (29 percent) enterprises in Ethiopia.[18] Also, there is limited success on existing efforts in reaching women with financing to purchase OGS products.

140. The proposed project has a strong focus on closing the gender gap in the energy sector and increasing the percentage of women participating in the mini-grid and off-grid technology value chain. A comprehensive strategy focused on enhancing gender equality in the sector at the enterprise, employee, and customer levels will be in place for ADELE. The strategic plan (being prepared with ESMAP and PPIAF funding) investigates the main challenges affecting women's participation in the OGS market and identifies solutions to increase the participation of women. Activities will focus on five core support areas: (a) enhancing productive use of energy of female business owners and farmers to support income earning through enhancing agro-processing, manufacturing, or service delivery of community-level assets and services, such as electric water pumping and grain grinding, which yield time savings and reduce the labor burden of women at the household; (b) increasing access to finance for women entrepreneurs by setting up a credit guarantee facility that will allow commercial banks/MFIs to lower collateral requirements and offer better financing to women entrepreneurs, and providing support to the commercial banks/MFIs on alternative credit risk assessment approaches and gender-diverse business practices; (c) building the capacity of MFIs and PAYGo providers to develop and implement customer-centric models for female consumers and understand the unique credit constraints that women face and develop financial products that directly address these barriers; this will include developing new financial products based on alternative credit risk assessment processes for non-collateralized lending, provision of product-specific financial education, and exploring new financing arrangements; (d) building the capacity of women entrepreneurs in the off-grid sector to gain entry into the market, ensure sustainability and profitability, and provide capacity-building support for women entrepreneurs who will access credit line; and (e) facilitating job creation and livelihood opportunities for women in the energy sector by onboarding women technicians and sales and marketing professionals at the last-mile connection as advocates, promoters, salespersons, and technical support providers at mini-grid sites and in off-grid companies. Focus will also be placed on developing a road map for job creation for women in stand-alone solar system installation and maintenance. This would create an opportunity to reach more women and also support the gradual shift of gender norms around women's roles in the community and marketplace. The project will provide technical support to energy companies (both local and international mini-grid and off-grid) to reshape their HR frameworks, investigate the work culture that exists, and document the experience of women and think through job opportunities in existing roles for both women and men. Detailed implementation approaches of all gender-targeted activities are outlined in annex 7.

141. **Gender M&E.** The following five indicators will be included in the results framework to track progress toward closing the gender gap in the Ethiopian energy sector: (a) Percentage of women among total number of people employed by mini grid companies, (b) Number of mini-grid sites that have adopted a strategy on closing gender gaps in productive uses of energy, (c) Off-grid systems used in support of small businesses (Number) of which women-owned businesses (Percentage), (d) Percentage of women among total number of people employed by off-grid solar companies, and (e) Adoption of skills

[18] World Bank 2015 Enterprise Surveys.

development and job creation roadmap for women for the standalone solar system installation and maintenance for health and education facilities. .

142. **Citizen engagement.** The consumer awareness and citizen engagement focus will help improve the delivery and quality of energy service provision; improve the reach of the technologies in implementing localities; and bring greater service delivery, transparency, dialogue, and consumer-centric grievance redress. The proposed project will support the delivery of institutional strategies, energy information and education campaigns, and the establishment of a consumer feedback mechanism. Adequate awareness campaigns and information dissemination will be conducted to inform citizens on the diverse benefits of the energy services, safe use, and grievance redressal. MoWIE will take the lead to oversee and supervise overall consumer awareness and citizen engagement activities and develop a consumer awareness and citizen engagement guideline and strategy for ADELE to be adopted. The guideline and strategy will be used by all ADELE component implementers (EEU, private sector, and MFIs).

143. Consumer awareness and citizen engagement activities are integrated under each component: For component 1, consumer and information provision, community engagements, and customer satisfaction surveys will build on the comprehensive citizen engagement work program designed under ELEAP and under implementation by EEU. For component 2, the mini-grid companies that will be awarded tenders will need to attend citizen engagement trainings. Also, community-level energy education program (including productive uses of energy) in local languages will be delivered, with customized messaging and face-to-face events such as forums and as well using print, radio, and video display with farmers and field demonstrations in local languages. For component 3, the project will provide training on consumer awareness and citizen engagement especially on rural community education campaigns to be delivered by MoWIE to all ADELE implementing agencies. OGS companies will be required to align their operational activities with the consumer awareness and citizen engagement guideline and strategy for ADELE (adopted by MoWIE under the project). For component 4, activities will include public forums with selected social institutions to collect information on the overall usage and effectiveness of the stand-alone solar systems as well as feedback and grievances collection in relation to the quality, durability, and efficiency of the stand-alone solar system will be considered. Lastly, component 5 will support the development of the ADELE consumer awareness and citizen engagement guideline and strategy by MoWIE in consultation with various stakeholders, EEU, private sector/cooperatives, OSG companies, and MFIs. Indicators are included in the Results Framework to track progress of consumer awareness and citizen engagement support areas. Detailed activities are outlined in annex 7.

V. GRIEVANCE REDRESS SERVICES

144. Communities and individuals who believe that they are adversely affected by a World Bank–supported project may submit complaints to project-level GRMs or the World Bank Grievance Redress Service. The Grievance Redress Service ensures that complaints received are promptly reviewed 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 corporate Grievance Redress Service, visit

http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service. For information on how to submit complaints to the World Bank Inspection Panel, visit www.inspectionpanel.org.

VI. KEY RISKS

145. **The overall risk rating of this operation is Substantial.** The main risks that might affect the achievement of the PDO relate to (a) Political and Governance, (b) Macroeconomic, (c) Technical design of the project, (d) Institutional capacity for implementation and sustainability, and (e) Fiduciary. The implementation of actions supported under this operation, as well as technical assistance and advisory services to be provided during preparation, are designed to help address some of these risks in the short and medium terms.

146. **Political and Governance: High.** Ethiopia has been hit by political disruption and social unrest. It experienced the worst locust invasion in decades and faced unprecedented military operation in Tigray. This may undermine development gains and threaten the food security and livelihoods of millions of Ethiopians. Political disruption, associated with social unrest, could negatively affect growth through lower FDI, tourism, and exports. While the military operation seems concluded, it may take some time for full recovery given displacement of people and damage to infrastructure and services. In addition, the upcoming Ethiopian general election in 2021 could result in the diversion of political commitment. The aftereffects of the Tigray crisis and the need for rebuilding damaged infrastructure will be high on the political agenda. The transition after election may potentially affect the effectiveness of the operation. Some activities under the project related to important reforms in the off-grid sector may require change of policies, laws, and regulations, which could potentially delay implementation. The World Bank carefully monitors the political and governance situation in the country with the view to take appropriate mitigation measures in case these risks materialize.

147. **Macroeconomic: Substantial.** High macroeconomic risks are further exacerbated due to COVID-19. The COVID-19 outbreak is expected to severely affect the external and fiscal accounts, potentially enlarging some of the imbalances that authorities have been trying to address over the past 20 months. Expected gains in terms of FDI attraction and improved export performance under ongoing business climate reforms are likely to be hampered while the crisis lasts. Meanwhile, foreign currency shortages could become even more pervasive, putting further pressure on the Ethiopian Birr (ETB). In response, faster currency depreciation could be considered, since spending thin foreign exchange reserves to limit depreciation would be counterproductive, as the shock may not be temporary. Even if inflation is likely to remain high, a more flexible monetary policy can be desirable in the short run to prevent a liquidity crunch and a potential crisis in the banking sector. The larger fiscal deficit emerging due to COVID-19 could result in a temporary increase in the government's debt stock, but public finances are expected to remain sustainable if the response is adequate and outlays help economic actors cushioning the impacts of the crisis. COVID-19 will exert additional pressures on the financial sector, constraining liquidity and contributing to a deterioration of assets' quality. Combined with a deteriorating income and capital positions, this will further disincentivize lending by banks, leading potentially to a slower recovery of the real sector. State-owned banks (SOBs) in particular could see additional increases in their already elevated nonperforming loans (NPLs) on account of their exposure to the loss-making SOE sector and priority projects. Deteriorating macroeconomic conditions might further limit availability of foreign currency,

essential for delivery of energy services, and disincentivize investments of OGS businesses in the expansion of their outreach capacity and product introduction. Further, an increase in perceived credit risks, due to deteriorating macroeconomic conditions, could limit the ability of the financial sector to attend the capital needs of the off-grid solar enterprises, slowing down implementation. Overall, there seems to be consensus among development partners that there is a need for fast and decisive action using available instruments (monetary and fiscal) to mitigate crisis impacts on people and firms, which can be reconciled later on as the pandemic subsides. The activities supported under the project are aimed to provide the financing required in the medium term, as well as to increase the financial sector's capacity to serve the sector's capital needs in the longer term.

148. **Technical design of project: Substantial.** This risk is rated Substantial as the project components and activities involve technologies where, despite not being new in the Ethiopian context, there is limited experience to date. To mitigate the risk associated with the limited local experience, the project design builds on best practices from similar projects and the experience in Ethiopia. On the grid side, the utility has considerable experience and track record, and the approach is similar to that under other World Bank-funded projects such as ENREP. On the off-grid side, even though the technologies are well known in the Ethiopian context, there is less experience in deploying and managing investments. Specialized international and local experts will be employed to assist in technical capacity building and project implementation as needed. An additional risk relates to the sustainability of off-grid service delivery, particularly O&M and grid encroachment risk for mini-grids. Mitigation measures include the support of remote monitoring and management of systems to provide sustainable service provision and the establishment of a regulatory framework for mini-grids to provide rules around potential grid extension to mini-grid areas.

149. **Institutional capacity for implementation and sustainability: Substantial.** These risks have been assessed under the NEP and ELEAP, and implementation constraints have been also identified in the NEP 2.0. While both MoWIE and EEU are experienced in implementing programs financed by the World Bank and other development partners, the capacity of the ministry and utility is overstretched. MoWIE and EEU need dedicated and experienced staff to support the ambitious energy access program. The scale and wide reach of the project pose additional implementation challenges to agencies involved, particularly related to the needs to ensure inclusiveness and equity in service provision. The activities planned under component 5, together with technical assistance and advisory services provided during project preparation, will address capacity challenges and build local, in-house technical and management capacity for longer-term sustainability of the program.

150. **Fiduciary: High.** The fiduciary risk is high due to the presence of high procurement risk and substantial FM risk. The FM residual risk is assessed to be Substantial mainly as a result of delays in entity external audit reports at EEU and DBE and weak internal audit oversight especially at MoWIE. In addition, internal controls weaknesses are noted at EEU as revealed in external audit reports, the recent reports of which are issued with a disclaimer opinion. Financial reporting from MoWIE is weak and delayed. There are delays in budget approvals at EEU and MoWIE. The nature of the project also poses risks related to property management and internal controls challenges in advance. The project will manage the risks by developing an FM action plan which will be followed up during implementation. MoWIE's procurement capacity is generally weak and needs to be substantially strengthened. At the ministry, there is low level of capacity and high staff turnover. Capacity constraints and lack of adequate procurement organization, internal controls, and independent complaint handling mechanisms are the major procurement

management challenges of DBE, MoWIE, and EEU. Disbursement-linked indicator-based incentive mechanisms and mitigation measures were introduced in ELEAP to address the procurement management challenges of MoWIE and EEU. These interventions are believed to produce positive results. Additional capacity-building measures are introduced for DBE and MoWIE and in the technical assistance component of ADELE.

151. **Environmental and Social: Substantial.** As an implementing agency, for network strengthening and rehabilitation, mini-grids, and SHS for institutions components, EEU has prepared an ESMF, RPF, and SA including stand-alone SEA/SH prevention and response action plans, as part of project preparation. Besides, EEU has committed to prepare an ESMS proportionate to the risks level of impacts associated with the private sector-led mini-grids before implementation of the subcomponent. EEU will monitor and supervise private company environmental and social activity according to the requirement that will be developed in the ESMS. The private sector will customize and maintain its ESMS based on the ESMF and ESMS developed by EEU. MoWIE and DBE prepared an initial project risk assessment and an environment and social action plan. Furthermore, MoWIE and DBE will establish a functional ESMS based on a capacity assessment to manage the risks and impacts associated with private sector/cooperatives and other subproject implementers for the SHSs for households, smallholder farmers, and small businesses component.

152. **Environment: Substantial.** The proposed project is not complex or large in scale and does not involve activities that have high potential risks for harming people or the environment. The potential impacts that will be generated from the project construction activities, even though site specific, are expected to be moderate in magnitude and change the land use permanently or in the long term. Thus, the anticipated environmental impacts and risks associated with ADELE components are not likely to be significant. However, replacement of old transformers in the grid rehabilitation work of major towns and end-of-life management of batteries and solar panels from waste management aspects could become a significant challenge, especially of the solar PV systems in the context of the rural coverage of the project. In addition, the health and safety aspect of distribution rehabilitation activities of the project requires a considerable effort from the project implementers.

153. **Social: Substantial.** The anticipated social risks and impacts associated with the project activities and outcome are The project components 1 and 2 may involve temporary and/or permanent economic and physical displacement along the Rights of Way in Addis Ababa and other major urban areas as well as in rural areas due to acquisition of land (less than 0.5 ha) for mini-grids, respectively. Such project risks and impacts would lead to loss or disruption of income or livelihood activities for individuals or groups of people. Land will be required temporarily or permanently for construction of stores, camps, installation of equipment, and putting mini grid solar panels and other associated structures. In addition, the deployment of workers/technical labor in rural and pastoral underserved areas may lead to undesirable relationships with communities. Further, the project indicated implementation in refugee areas. As a result, potential risks may include Gender Based Violence (GBV), sexual abuse and exploitation, unfair wages to local labor, discriminatory labor recruitment, etc. The risk classification of the project is substantial considering the broader contextual risk such as political stability (induced by potential civil unrest), accessibility of subprojects for monitoring and support, and proper utilization and implementation of project safeguard tools. For the private sector activities, the selected FI will be required to prepare an ESMS which will guide the FI in assessing and managing environmental and social risks and impacts.

154. As an implementing agency, for network strengthening and rehabilitation, EEU-led mini-grids, and SHS for institutions components, EEU has prepared an ESMF, RPF, and SA and stand-alone SEA/SH prevention and response action plans, as part of project preparation. Besides, EEU has committed to prepare an ESMS proportionate to the risks level of impacts associated with the private sector-led mini-grid sub-component before the implementation of the sub-component. The ESMF has also reflected that EEU will monitor and supervise the private company environmental and social activity according to the requirement that will be developed in the ESMS. The private sector will customize and maintain its ESMS based on the ESMS developed by EEU. For the SHSs for households, smallholder farmers, and small businesses component, MoWIE and DBE prepared an initial project risk assessment and an environment and social action plan. Furthermore, to manage the risks and impacts associated with private sector/cooperatives and other subprojects FIs, MoWIE and DBE have developed TOR for the ESMS development, and they are committed to prepare the ESMS before project implementation.

155. **Other - Sector Financial Viability: Moderate.** As stated in the sector context, low consumer tariffs and high sector debt from large capital expenditures pushed the electricity sector to its financial limits. At the end of FY2018, average consumer tariffs stood at about US$0.02 per kWh, while the cost of service reached US$0.07 per kWh. Meanwhile, the level of EEP's debt reached US$10.8 billion (11.5 percent of GDP), mainly from investment in large generation projects that have yet to start commercial operations. To address this situation, the GoE approved a four-year electricity tariff reform in 2018. The first two tariff adjustments in 2018 and 2019 brought average tariffs to about US$0.45 per kWh and raised FY2019 revenues substantially above operating costs. To address the issue of mounting sector debt, in 2019, the GoE adopted a phased debt restructuring plan, which includes conversion of all on-lent loans from the MoF and outstanding interests to the sector utilities into the MoF-owned equity, in principle the takeover of 20–40 percent of existing EEP/EEU liabilities and the creation of a new entity under the MoF to absorb the SOEs' residual debt, among others. These measures are expected to destress the sector's financial situation in the medium term. The task team has carefully considered the financial situation of EEU in the project design to avoid additional financial burden on the utility in taking on the ambitious off-grid electrification activities by leveraging the private sector to the maximum extent possible and providing sufficient subsidies where needed.

Climate Change

156. **Mitigation.** Overall, the project has strong contribution to climate change mitigation. The grid investment under component 1 will carry 100 percent renewable energy-based (largely hydropower) grid electricity in Ethiopia. Solar home and institutional systems under components 3 and 4 are fully powered by distributed solar PV generation. Mini-grid investments under component 2 are expected to be largely solar based, but approximately US$3 million out of the component is expected to be used for diesel generation to hybridize mini-grid systems in combination with solar PV to improve the availability of power. Technical assistance under component 5 will support the delivery of other components.

157. **Adaptation.** High-level climate and disaster risk screening has been carried out, based on available information including the World Bank's Ethiopia Climate Risk Country Profile. Given the major risk of flood and heavy rainfall events in the country, grid and off-grid infrastructure investments under the project may be vulnerable to such events. Infrastructure sites near major rivers, such as the Blue Nile river, will be particularly at high risk. The country's overall coping capability to such events remain low, especially in the face of increasing magnitude and frequency of such extreme weather events. The project will address

these climate vulnerability risks through geo-spatial analysis that will be carried out at the initial implementation phase to identify the exact sites for grid, mini-grid, and stand-alone solar systems for education and health institutions. The project is supported by a grant from the Africa Climate Resilient Investment Facility. The grant will be used to integrate the GIS-based climate risks assessment, in particular the risk of flood, to the project-supported infrastructure. The proposed project locations will be overlaid with the World Bank's GIS-based climate vulnerability data to recommend either alternative site locations or measures to strengthen the climate resilience of the infrastructure investment at the site, considering the World Bank's good practice note for energy sector adaptation.

VII. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY: Ethiopia

Access to Distributed Electricity and Lighting in Ethiopia

Project Development Objectives(s)

The development objective is to increase access to reliable electricity for households, social institutions, and enterprises in Ethiopia.

Project Development Objective Indicators

Indicator Name	PBC	Baseline	End Target
To increase access to reliable electricity for households, institutions, and enterprises in Ethiopia			
People provided with new or improved electricity service (CRI, Number)		0.00	4,950,000.00
Enterprises provided with new or improved electricity service through mini grid and off-grid electricity solutions (Number)		0.00	131,500.00
Institutions provided with new or improved electricity service through mini grid and off-grid electricity solutions (Number)		0.00	1,900.00
Interruption frequency per 100 km MV network length per year in Addis Ababa (Number)		882.00	653.00

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	End Target
Network strengthening for improved reliability of supply in urban areas			
Average reduction on interruption frequency per 100 km MV lines across ten towns (Percentage)		0.00	45.00
Solar-hybrid mini grids for rural economic development			
Households provided with access to electricity services through mini-grids (Number)		0.00	240,000.00
Renewable energy generation capacity of mini-grids supported under the project (Megawatt)		0.00	35.00
Percentage of women among total number of people employed by mini grid companies (Percentage)		21.00	30.00
Volume of private capital mobilized to support delivery of new or improved electricity service through mini grids (Amount(USD))		0.00	50,000,000.00
Number of mini grid sites that have adopted a strategy on closing gender gaps in productive uses of energy (Number)		0.00	50.00
Solar home systems for households (HHs), small-holder farmers and small businesses			
Households provided with off-grid electricity access (Number)		0.00	750,000.00
Off-grid systems used in support of small businesses (out of which women-owned 20%) (Number)		0.00	120,000.00
Percentage of women among total number of people employed by off-grid solar companies (Percentage)		20.00	28.00
Volume of private capital mobilized to support delivery of new or improved electricity service through off-grid solar systems (Amount(USD))		0.00	50,000,000.00
Standalone solar systems for education and health facilities			
Education and health facilities provided with electricity services through standalone systems (Number)		0.00	1,400.00
Adoption of skills development and job creation roadmap for		No	Yes

Indicator Name	PBC	Baseline	End Target
women for the standalone solar system installation and maintenance for health and education facilities (Yes/No)			
Capacity building, technical assistance and implementation support			
Delivery of ADELE consumer awareness and citizen engagement strategy by MoWIE (Yes/No)		No	Yes
Maintenance of an operational grievance redress mechanism (Yes/No)		No	Yes

Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
People provided with new or improved electricity service		Semi-annually	Semi-annual report: For grid, mini-grids and public institutions, EEU PIUs. For off-grid, MoWIE through their access monitoring and tracking system based	For grid, mini-grids and public institutions, EEU PIUs through monitoring connections. For off-grid, MoWIE based on verification reports generated under the RBF and reports from the FI. HH size: 5 people	MoWIE, and EEU.

			on verification reports generated under the RBF and reports from the FI.		
Enterprises provided with new or improved electricity service through mini grid and off-grid electricity solutions	Number of enterprises (farmers, business, commercial, industrial users) provided with access to electricity through mini grid and off-grid electricity solutions.	Semi-annually.	Semi-annual report: mini-grids, EEU PIU. For off-grid, MoWIE through their access monitoring and tracking system based on verification reports generated under the RBF and reports from the FI.	For mini-grids, EEU PIU through monitoring connections. For off-grid, MoWIE based on verification reports generated under the RBF and reports from the FI.	MoWIE and EEU.
Institutions provided with new or improved electricity service through mini grid and off-grid electricity solutions	Number of institutional users (schools, health centers, government buildings) provided with	Semi-annually	Semi-annual reports from EEU PIU and MoWIE	MoWIE, EEU, Ministry of Education, Ministry of Health.	MoWIE, EEU, Ministry of Education, Ministry of Health.

	new or improved access to electricity through standalone systems under the project.		through the tracking platform.		
Interruption frequency per 100 km MV network length per year in Addis Ababa	Number of interruptions per 100 km of MV network length per year in Addis Ababa. It reflects interruptions/ power outages (more than 5 minutes) that are often caused by faults in distribution network. It is the ratio of total number of interruptions to total length of distribution line. Expectation is reduction of 26 percent. Formula: {(INT of current period)-(INT of corresponding period in previous year)} /(INT of corresponding period in previous year) *100 Where, INT= (Total number of interruptions / Total length of distribution network)*100.	Annually.	EEU Annual Report.	EEU **Inputs required for calculation of KPI:** • Total number of interruptions in current year in Addis Ababa (2019/2020) is estimated to **18,849** • Total number of interruptions in previous year in Addis Ababa (2018/2019) is estimated to **26,169** • Total length of distribution network in current year in Addis Ababa is **measured to 2138** KM • Total length of distribution network added during current	EEU

				year.	

Monitoring & Evaluation Plan: Intermediate Results Indicators					
Indicator Name	**Definition/Description**	**Frequency**	**Datasource**	**Methodology for Data Collection**	**Responsibility for Data Collection**
Average reduction on interruption frequency per 100 km MV lines across ten towns	Calculated based on the number of interruptions per 100 km of MV network length per year. It reflects interruptions/ power outages (more than 5 minutes) that are often caused by faults in distribution network. It is the ratio of total number of interruptions to total length of distribution line. Expectation is reduction of 45 percent. Formula: {(INT of current period)-(INT of corresponding period in previous year)} /(INT of corresponding period in previous year) *100 Where, INT= (Total number of interruptions / Total length of distribution network)*100	Annual	EEU Annual reports	EEU Baseline (number) of interruptions for each City/Town Ambo: 60 Bishoftu : 739 Asela: 715 Nekemt: 221 Asossa: 199 Jigjiga: 202 Hossana: 196 Sululta: 143 Dilla: 440 Debre Berhan: 306	EEU

Households provided with access to electricity services through mini-grids	Number of households provided with access to electricity services through mini-grids under the project.	Semi-annually	Semi-annual report	EEU, MoWIE	EEU, MoWIE
Renewable energy generation capacity of mini-grids supported under the project	Renewable energy generation capacity (Megawatt) of mini-grids supported under the project.	Semi-annually.	Semi-annual report.	EEU, MoWIE.	EEU, MoWIE.
Percentage of women among total number of people employed by mini grid companies	Percentage of female employees among total number of people employed by mini grid companies.	Semi-annually.	Semi-annual reports	EEU with private sector companies.	EEU.
Volume of private capital mobilized to support delivery of new or improved electricity service through mini grids	Amount of private capital in USD mobilized through the project to support delivery of new or improved electricity service through mini grids.	Semi-annually.	Semi-annual report.	MoWIE and EEU.	MoWIE and EEU.
Number of mini grid sites that have adopted a strategy on closing gender gaps in productive uses of energy	Number of mini grid sites that have adopted a strategy on closing gender gaps in productive uses of energy.	Semi-annual.	EEU Semi-annual report.	EEU.	EEU.
Households provided with off-grid electricity access	Number of households provided with electricity connections by off-grid systems.	Semi-annually.	Semi-annual report.	MoWIE and EEU.	MoWIE and EEU.
Off-grid systems used in support of small businesses (out of which women-owned 20%)	Number of systems used in support of small businesses by providing access to electricity through off-grid	Semi-annually	Semi-annual reports.	MoWIE.	MoWIE.

	solutions for lighting and productive uses.				
Percentage of women among total number of people employed by off-grid solar companies	Percentage of female employees among total number of people employed by off-grid solar companies.	Semi-annually.	Semi-annual report.	MoWIE .	MoWIE.
Volume of private capital mobilized to support delivery of new or improved electricity service through off-grid solar systems	Amount of private capital in USD mobilized through the project to support delivery of new or improved electricity service through off-grid solar systems.	Semi-annually.	Semi-annual report.	MoWIE .	MoWIE.
Education and health facilities provided with electricity services through standalone systems	Number of schools and health facilities provided with electricity services through standalone systems under the project.	Semi-annually.	Semi-annual report.	EEU, MoWIE, Ministry of Education, Ministry of Health.	EEU, MoWIE, Ministry of Education, Ministry of Health.
Adoption of skills development and job creation roadmap for women for the standalone solar system installation and maintenance for health and education facilities	Adoption of skills development and job creation roadmap for women for the standalone solar system installation and maintenance for health and education facilities.	Annually.	Annual report EEU.	Annual report EEU.	EEU.
Delivery of ADELE consumer awareness and citizen engagement strategy by MoWIE	MoWIE will design a and adopt a consumer awareness and citizen engagement strategy for the ADELE project which will outline minimum standards and requirements for various entities engaged in	Annually.	Annual report.	MoWIE.	MoWIE.

	the service delivery.				
Maintenance of an operational grievance redress mechanism	Maintenance of an operational and well-functioning grievance redress mechanism.	Semi-annual.	MoWIE, EEU, DBE.	Semi-annual reports.	MoWIE, EEU and DBE.

ANNEX 1: Summary of Implementation Arrangements

COUNTRY: Ethiopia
Access to Distributed Electricity and Lighting in Ethiopia

Component or Sub-component		Agencies					
		MoWIE	**EEA**	**EEU**	**DBE**	**FAS and IVA**	**Private Sector (or Cooperatives)**
1	**Network strengthening for improved reliability of supply in urban areas.**			**Implementing Agency** • Procurement and management of supply and installation contracts. • Enhance the implementation of RPP.			**EPC contractors** • Execute supply and installation contracts.
2.1	**EEU-led mini-grids.**			**Implementing Agency (OGU)** • Site identification and allocation for EEU-led models. • System planning and optimization. • Procurement, management, and oversight of EPC contracts. • Long-term O&M (directly or through an O&M contract).			**EPC and O&M contractors** • Execute EPC and short-term O&M contracts. • Execute long-term O&M contracts.

Component or Sub-component		Agencies					
		MoWIE	**EEA**	**EEU**	**DBE**	**FAS and IVA**	**Private Sector (or Cooperatives)**
				• Operate customer relationship management call center, monitor assets, and collect payments.			
2.2	**Private sector-led mini-grid pilot.**	• Overall coordination of the PPP business model for mini-grids. • Oversight of local and international stakeholder engagement. • Determine the per-connection performance-based affordability gap financing amount for PBG in consultation with EEU.	Develop and adopt a mini-grid directive to define regulatory aspects related to licensing, tariffs, quality of service, and technical standards.	**Implementing Agency (OGU)** **For MSTs:** • Collect market intelligence for selected sites and incorporate into tender documents. • Execute the tender and disburse grants against delivery/performance milestones, with support from FAS and IVA. **For PBGs:** • Determine the per-connection performance-based subsidy in discussion with MoWIE.		Needed	**Private Mini-Grid Developers** • Mobilize equity and debt financing. • Procure, install, own, operate, and maintain the generation and distribution assets. • Sell electricity and collect payments. • Transfer assets to EEU upon grid encroachment (against compensation). • Provide data and information to report on results and impact.

Component or Sub-component		Agencies					
		MoWIE	**EEA**	**EEU**	**DBE**	**FAS and IVA**	**Private Sector (or Cooperatives)**
				• Select grant applications. • Disburse grants against performance milestones, with support from FAS and IVA.			
3.1	**RBF for Off Grid Solar.**	**Implementing Agency** • Oversee and coordinate RBF through an FAS and an IVA to incentivize OGS companies to (a) expand sales and service network to deep rural and remote areas, (b) scale up and expand new business models such as PAYGo, and (c) deliver higher levels of electricity access. • Select, appoint, and manage the FAS and IVA.				**FAS** • Appraise business model, capacity, and proposals of OGS companies. • Provide timely feedback to MoWIE on financial and administrative issues. • Disburse incentives to OGS companies. • Provide technical assistance to OGS	• Expand sales and service network to deep rural and remote areas. • Adopt new business models such as PAYGo. • Deliver high-quality OGS systems, honor warranties, and provide after-sales services. • Provide data and information to report on results and impact. • Demonstrate that awarded funds translate to new customer connections.

Component or Sub-component		Agencies					
		MoWIE	**EEA**	**EEU**	**DBE**	**FAS and IVA**	**Private Sector (or Cooperatives)**
		• Monitor progress and track data.				companies, if needed. • Attract new market entrants by building trust. **IVA** • Provide independent, technically solid, and timely verification.	
3.2	**Access to Finance for off-grid solar penetration.**	**Coordinating agency** • Oversee and coordinate the implementation through DBE as the apex institution for managing the Forex Facility, the Local Currency Facility (for working capital needs of OGS companies and consumer finance), and the risk sharing facility.			**Apex Institution** • Assess eligibility of PFIs on a regular periodic basis. • Manage on-lending for (a) **Forex Facility:** Provide funds to PFIs to facilitate import of certified OGS solar systems.		**PFIs** • Facilitate import of OGS systems. • Provide local currency working capital loans along the OGS value chain. • Provide local currency consumer finance for OGS purchase. • Facilitate adoption of new models such as PAYGo. **OGS Companies** • Import certified OGS systems and

Component or Sub-component		Agencies					
		MoWIE	**EEA**	**EEU**	**DBE**	**FAS and IVA**	**Private Sector (or Cooperatives)**
		• Appoint, manage, and monitor the role of DBE as the apex institution.			(b) **Local Currency Facility:** (i) Establish policies, procedures, and operational capacities for on-lending to PFIs. (ii) Assess, monitor, and report on credit risk from on-lending to PFIs. (c) **Risk Sharing Facility:** • Provide partial risk coverage to eligible PFIs for OGS loans.		deliver to retailers or buyers. • Adopt PAYGo.
4	**Standalone Solar Systems for Health and Education Facilities**	• Site selection - Coordination with the Ministry of Health and		**Implementing Agency (OGU)** • Procurement (supply and			**EPC and O&M Contractors** • Execute EPC.

Component or Sub-component		Agencies					
		MoWIE	**EEA**	**EEU**	**DBE**	**FAS and IVA**	**Private Sector (or Cooperatives)**
		Ministry of Education as well as other stakeholders to confirm sites.		installation - EPC) of solar PV systems. • Supervision of long-term O&M contracts with external agency.			• Execute long-term O&M contracts. • O&M contractors to train EEU personnel as part of contract.

ANNEX 2: Economic and Financial Analysis

COUNTRY: Ethiopia
Access to Distributed Electricity and Lighting in Ethiopia

Economic Analysis

1. The economic viability of the proposed project was assessed using a standard cost-benefit methodology. Net benefits for the project were calculated by comparing total system costs and benefits for the 'with-project' and 'without-project' scenarios. Economic costs were estimated based on the cost estimates for different components of the project obtained from market assessment and World Bank experience in other similar projects in the region and adjusted to remove duties and taxes. For increased electricity access, economic benefits were based on a conservative approach using an avoided cost methodology and WTP derived from an affordability and consumer segmentation for SHS market assessment. For improvement in reliability, the benefits were based on reduced unserved demand due to fewer and shorter interruptions. The proposed project is also expected to have a number of additional benefits that are difficult to quantify such as (a) employment generation; (b) health benefits derived from the displacement of some sources of energy for lighting, such as kerosene or wood; (c) improvements in the provision of education and health services; and (d) a range of environmental and social externalities. As analysis has shown, 44 percent of SHSs enable a household member to spend more time at work. About 24 percent of the systems are used in a business or income-generating activity and 7 percent of the SHSs enabled a household member to get a new job. As such, the results of the economic analysis can be considered a conservative estimation of the total economic benefits for the society. Table 2.1 presents a summary of the assumptions used in the economic and financial model. The assumptions for the economic analysis of the mini-grids are based on an already operating set of mini-grids in Ethiopia.

Table 2.1. Modeling Assumptions

ADELE Project analysis specifications	Unit	Value	Comments
Shadow cost of carbon.	US$	Range: For Low Scenario US$40	World Bank guidelines
Ethiopian birr/US dollar exchange rate.	ETB/US$	31ETB/1US$	Average of exchange rate in 2020
Economic analysis discount rate.	%	6	World Bank - guidelines
Financial analysis discount rate.	%	10	World Bank guidelines
Cost of diesel power.	US$/kWh	0.35	Assumption
GHG emission factor of diesel self-generation.	$kgCO_2e/kWh$	0.65	World Bank guidelines
Emissions avoided by households switching from traditional lighting sources per year.	tCO_2	0.374	World Bank guidelines
Tax rate.	%	15	Assumption
Component 1: Network strengthening for Improved reliability of supply in urban areas			
Total length of MV network in Addis Ababa	Km	2,138	EEU
Interruption frequency per 100 km MV lines.	Number/ year	882	EEU
Interruption duration per 100 km MW lines.	Hours/year	2,103	EEU
Average demand in Addis Ababa.	MW	1,034	EEU

ADELE Project analysis specifications	Unit	Value	Comments
Growth of average demand.	%	7.8	EEU
Interruption frequency per 100 km MV lines after the project.	Number/ year	653	Project design
Interruption duration per 100 km MV lines after the project.	Hours/year	1,469	Project design
WTP for grid electricity.	US$	83.8	MTF
Average consumption of grid-connected households.	kWh/year	1,448.4	MTF
Component 2: Solar hybrid mini grids for rural economic development			
Average total mini-grid system capex (pre-tax).	US$	1,000,000	Estimate for mini-grid design proposed under the project.
Number of greenfield mini-grids supported (EEU led and private sector led).	Number	255	Calculation.
Number of hybridized mini-grids.	Number	10	Project design.
Regular O&M of mini-grids as percentage of capex.	%	2	Assumption
Battery replacement after number of years.	Years	5	Estimate from existing mini-grids.
Battery replacement costs (pre-tax).	US$	166,946	Estimate from existing mini-grids.
Inverter replacement after number of years.	Years	10	Estimate from existing mini-grids.
Inverter replacement cost (pre-tax).	US$	88,572	Estimate from existing mini-grids.
Solar panel capacity.	kWp	289	Proposed design.
Capacity factor (solar panel).	%	18.5	Proposed design.
Availability factor (solar panel).	%	98	Proposed design.
Annual solar power generation.	kWh	458,288	Calculated.
Diesel generator capacity.	kVA	50	Proposed design.
Capacity factor (Diesel).	%	9.3	Proposed design.
Availability factor (Diesel).	%	98	Proposed design.
Annual diesel power generation.	kWh	40,119	Calculated
CO_2 emission per kWh consumed from mini-grid.	$kgCO_2e/kWh$	0.052	Calculated
Diesel generation as percentage of total generation.	%	8	Calculated
Single-phase customers per mini-grid.	Number	370	Estimate from existing mini-grids.
Average yearly power consumption single-phase customer.	kWh/year	48	EEU.
Annual increase in power consumption single-phase customers.	%	1	Assumption.
WTP of single-phase customers.	US$/year	72	Market assessment.
Annual increase in WTP of single-phase customer.	%	6.8	Assumption.
Three-phase connections per mini-grid.	Number	56	Proposed design.
Three-phase connection average monthly power consumption.	kWh	6,056	Proposed design.
Component 3: Solar home systems for households (HHs), small-holder farmers and small businesses			
Unit cost of SHS (pre-tax)	US$	59.50	Market assessment.

ADELE Project analysis specifications	Unit	Value	Comments
Total SHS installed.	Number	750,000	Calculated
Annual O&M as a percentage of capex.	%	1	Assumption
SHS useful life.	Years	5	Assumption
WTP for SHS per household.	US$	18.96	Calculation, MTF.
Annual increase of WTP for SHS.	%	6.8	Assumption.
Cost of lighting alternatives per household.	US$	17.47	Affordability assessment.
Annual increase of cost of lighting alternatives.	%	4	Assumption.
Component 4: Standalone solar systems for health and education facilities			
Allocation – schools.	US$	20,000,000	Project design.
Allocation - health centers.	US$	30,000,000	Project design.
Capex per kW.	US$	4,500	Regional estimate.
System capacity – school.	kW	3	Typical size of system for secondary schools.
System capacity – health centers.	kW	5	Ministry of Health.
Capacity factor.	%	25	Assumption.
Regular O&M of mini-grids as percentage of capex.	%	1	Regional estimate.
Battery replacement after number of years.	Years	8	Regional estimate.
Battery replacement costs (pre-tax).	US$/kW	700	Regional estimate.
Inverter replacement after number of years.	Years	10	Regional estimate.
Inverter replacement (pre-tax).	US$/kW	250	Regional estimate.
Availability factor - schools.	%	30	Assumption.
Availability factor - health centers.	%	90	Assumption.
Average monthly power consumption – schools.	kWh/month	164	Calculated.
Average monthly power consumption - health centers.	kWh/month	821	Calculated.

Project Costs

2. The project will invest in improving reliability of on-grid electricity and providing off-grid electricity solutions to those areas in Ethiopia where the provision of on-grid electricity services is not economically or technically feasible. The technical solutions include supporting (a) the improvement of the reliability of supply and the upgrade and rehabilitation of the distribution network in Addis Ababa; (b) the development and hybridization of mini-grid installations, with backup diesel generators, including inverters and batteries for households, productive users, and community installations; (c) sales of around 750,000 Tier 1 solar systems; and (d) the provision of 1,400 stand-alone solar systems, including batteries and inverters, for community facilities such as secondary schools and health centers. Additionally, the costs include O&M for the grid infrastructure upgrades, active SHSs, mini-grid and institutional solar installations, and the replacement costs for batteries and inverters. The component on solar-hybrid mini-grids will provide US$215 million for greenfield systems and the hybridization of existing facilities. An additional US$2 million is provisioned for technical assistance, which does not factor into this analysis. US$50 million is for the private sector-led mini-grid pilot, with additional US$3 million of technical

assistance not factored in this analysis. The mini-grids will be installed over a period of six years. The batteries and inverters of the mini-grids typically need replacement after 5 and 10 years, respectively. The SHSs are expected to be rolled out over a six-year time frame, with a useful life-span of 5 years. The number of SHSs supported by the project have been arrived at by assuming a 25 percent overlap between the expected number of SHS that will be imported using the foreign exchange facility, working capital provision, and risk-sharing mechanism for partial loan guarantees (allocation of US$40.5 million) and the number of SHSs that will be supported under the RBF (allocation of US$10 million). The 25 percent overlap implies that 75 percent of the SHSs under the RBF are assumed to be imported using foreign exchange outside of the project's purview. The installations for the social institutions, secondary schools, and health centers are rolled out over a six-year time frame. The capex of a system for a school is US$13,500 and for a health system is US$22,500.

Economic benefits

3. The project aims at providing electricity access to underserved counties of Ethiopia. The economic benefits to the households are estimated conservatively using the households' WTP. With this methodology, for component 1, the economic benefits comprise households' WTP for the additional units of electricity that they will be able to consume through a reduction in unserved demand due to reliability improvements. For component 2, the economic benefits for households are defined by the amount that they are willing to pay to gain electricity access through mini-grids. The WTP is obtained from a local market assessment. For component 3, the MTF assessment was used to estimate household WTP for SHS. The households' up-front WTP for SHS was amortized across the useful life of the SHS to estimate an annual WTP. For non-household consumers, including industrial/commercial consumers, community connections, and social institutions, under components 2 and 4, the avoided cost of diesel generation was used to estimate benefits. With this methodology, the estimated economic benefits are defined by the amount that these consumers actually pay today for energy services, in the form of power from diesel generators, which can be substituted by solar systems or mini-grids. Table 2.2 shows the component breakdown of the economic analysis.

Table 2.2. Component Breakdown of the Economic Analysis

	Unit	ADELE	Component 1	Component 2	Component 3	Component 4
Economic analysis without GHG benefits						
NPV	US$, millions	409.28	210.26	162.75	31.34	4.92
EIRR	%	16.78	21.79	13.75	47.95	7.60
Economic analysis with GHG benefits						
NPV	US$, millions	521.68	210.26	221.17	79.32	10.93
EIRR	%	20.96	21.79	16.42	157.15	9.44

GHG Accounting

4. GHG accounting has been undertaken for this project. The project will result in significant GHG emission avoidance by replacing household use of candles, kerosene, and charcoal fuels as well as diesel consumption in public facilities and productive uses. Most of the project activities, except the mini-grid component with diesel backup, will not directly emit GHG due to the use of solar technologies. A total of 3.75 million tCO_2e is avoided throughout the project's lifetime (assumed 20 years for components 1, 2, and 4).

Sensitivity

5. A sensitivity analysis has been carried out to assess the project's returns against variations in key variables. Table 2.3 indicates the baseline and threshold values of key assumptions underlying the economic value of each project component. Ceteris paribus, the economic value of the respective components (excluding GHG mitigation benefits), switch from positive to negative at the indicated threshold values.

Table 2.3. Threshold values of key variables for economic analysis

Variable	Unit	Baseline	Threshold
Component 1			
Reduction of unmet demand.	%	30	10
Component 2			
Cost of mini-grid systems**.**	US$	1,000,000	1,643,340
Component 3			
Cost of SHSs	US$	70	125
Ability to pay	US$	18.96	10.56
Component 4			
Cost of system	US$	4,500	4,974
Monthly power consumption - health centers	kWh/month	821	739
Monthly power consumption - schools	kWh/month	164	91

Financial Analysis

6. The financial analysis reviews the project from the perspective of the implementation agency, EEU, for components 1, 2 and 4, and consumers for component 3. Returns to the project investments are evaluated by assessing financial inflows and outflows from the perspective of the implementing agency or consumer. As EEU is the implementing agency for components 1, 2, and 4, a combined financial analysis for these components was performed. The costs to EEU include investment in the infrastructure, routine O&M expenditure, and replacement costs for batteries and inverters. The revenues include connection charges and tariff revenues. For component 2, mini-grids to be developed under the PPP modality were excluded from the analysis as EEU will only act as the grant provider for these mini-grids, incurring no financial costs or revenues. Table 2.4 displays the assumptions to calculate EEU's financial inflows. The assumptions for the financial analysis for the mini-grids are taken from a separate financial viability analysis of an already operating sample of mini-grids in Ethiopia. These sample mini-grids of different capacities are operating in three Ethiopian villages. The cost estimates for the mini-grid component are arrived at by adjusting the cost of existing installations according to the proposed project design and observed cost trends. The connection costs and systems technical specifications were also taken from this sample and adjusted for the proposed project design. The different categories of connections, number of connections per connection category, and their average consumption are derived from consumption patterns of existing consumers.

Table 2.4. Assumptions to calculate EEU's Inflows of the mini-grid component

Component 1: Network strengthening for improved reliability of supply in urban areas		
Electricity tariff.	US$ per kWh	0.064
Component 2: Solar mini-grids for rural economic development		
Electricity tariff (consumption <52.8 kWh per year)	US$ per kWh	0.064
Electricity tariff (consumption >52.8 kWh per year)	US$ per kWh	0.321
Connection charges for single-phase consumers	US$ per connection	30.90
Connection charge for three-phase consumers	US$ per connection	103.9

7. For component 3, the unit of analysis are the households that would purchase the SHS. Table 2.5 displays the assumptions to calculate the households' financial inflows and outflows.

Table 2.5. Assumption of the financial analysis of SHS component

Cost of SHS (post tax).	US$	70
O&M costs as a percent of SHS cost.	%	1
Cost of lighting alternatives.	US$	17.47
Annual increase of WTP for SHS.	%	4

8. The combined financial NPV for the investments to be undertaken by EEU is US$123.20 million (table 2.6). Component 1 has a positive NPV of US$163.36 million. A negative financial NPV for Components 2 and 4 is expected as mini-grids for rural communities and solar installations for schools and health centers are usually not financially viable on their own and require public financial support.

9. The financial analysis for component 3 has been performed for households to assess if their savings from switching away from lighting alternatives will be sufficient to afford the SHS. The NPV for component 3 is US$1.55 million at a discount rate of 10 percent.

Table 2.6. Results of financial analysis

FIRR (percent)	
EEU total (Component 1, Component 2 Hybridization + EPC and Component 4).	15.71
Component 3.	11.92
Composition of NPV (US$, millions)	
EEU total (Component 1, Component 2 Hybridization + EPC and Component 4.)	123.20
Component 1.	163.36
Component 2 (Hybridization + EPC).	−38.96
Component 4.	−1.19
Component 3.	1.55

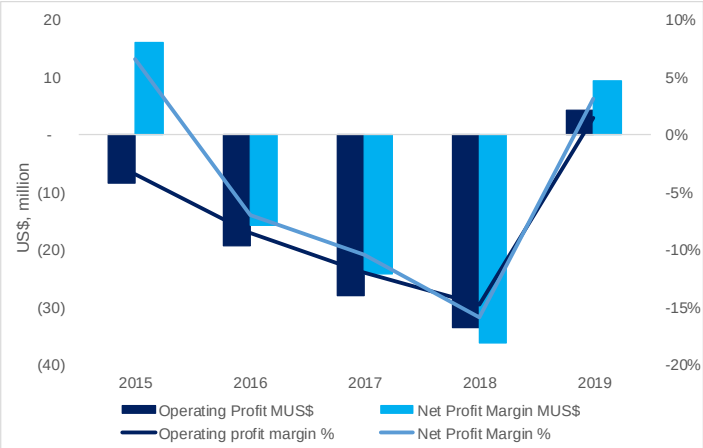
Utility Financial Analysis

10. **As a result of recent tariff reforms and due to favorable revenue-sharing arrangements, EEU has turned around its financial situation and is now a profit-making utility.** In September 2018, Ethiopia approved a four-year electricity tariff reform. EEU implemented the first two adjustments in December 2018 and December 2019. The first tariff adjustment in December 2018 resulted in raising FY2019 revenues substantially above operating costs and finance costs. As a result, after recording operating and net losses for three years in a row between 2016 and 2018, in 2019 (the last year for which full financials

are available), EEU's revenues from electricity sales increased by 41 percent, and the utility recorded positive operating and net profit margins (figure 2.1).

11. **EEU's financial situation is expected to remain stable, and absorbing investments under ADELE is not expected to have any substantial negative impact on EEU's profitability and cash flows.** With implementation of the remaining two instalments of the tariff reform, EEU will retain and improve its profitability, with both operating and net profit margins above 14 percent in the forecast period. Implementing the grid reliability improvements and the EPC segment of mini-grids will add a long-term liability of US$317 million for EEU. Given the concessional loan terms, EEU's surplus profits are expected to cover the additional debt burden. Table 2.7 summarizes the forecasts of financial statements of EEU.

Figure 2.1. EEU Profitability: Historical



Source: World Bank staff analysis based on Financial Statements of EEU

Table 2.7. Summary of Financial Statements of EEU (Forecasts)

Income Statement		2020	2021	2022	2023	2024	2025
Revenue	US$, millions	432	579	773	801	837	873
Cost of sales	US$, millions	(325)	(394)	(431)	(470)	(506)	(599)
Gross profit	US$, millions	107	185	342	331	331	274
Gross profit margin	*%*	25	32	44	41	40	31
Other operating costs	US$, millions	(48)	(50)	(54)	(59)	(64)	(70)
Operating profit	US$, millions	59	135	288	273	266	204
Operating profit margin	*%*	14	23	37	34	32	23
Other income	US$, millions	25	33	43	48	51	74
Finance cost	US$, millions	(14)	(18)	(24)	(29)	(34)	(38)
Other non-operating costs	US$, millions	—	—	(1)	(3)	(4)	(6)
Profit/loss for the year	US$, millions	71	149	305	288	279	234
Net profit margin	*%*	16	26	40	36	33	27
Balance Sheet		—	—	—	—	—	—
Total assets	US$, millions	1,592	1,752	2,109	2,435	2,740	2,961
Non-current assets	US$, millions	1,082	1,153	1,251	1,350	1,449	1,519
Current assets	US$, millions	510	599	858	1,085	1,291	1,442
Equity	US$, millions	944	1,004	1,243	1,458	1,662	1,811

Income Statement		2020	2021	2022	2023	2024	2025
Non-current liabilities	US$, millions	559	672	800	919	1,028	1,104
Current liabilities	US$, millions	89	76	66	58	50	47
Cash Flow Statement		—	—	—	—	—	—
Net cash from operating activities	US$, millions	(64)	67	223	286	302	289
Net cash from financing activities	US$, millions	129	147	148	134	118	84
Net cash from investing activities	US$, millions	(167)	(189)	(195)	(198)	(198)	(179)
Net increase (decrease) in cash and cash equivalents	US$, millions	(102)	25	176	222	222	194
Cash at the beginning of the year	US$, millions	253	137	152	308	503	688
Cash at the end of year	US$, millions	151	162	327	530	725	882

Key assumptions:

1. Remaining two installments of tariff reforms announced in 2018 are implemented and adjusted for exchange rate changes, leading to average tariff of US¢6.5 per kWh in 2022. No tariff adjustments subsequently.
2. Future capex in the distribution network to be financed by concessional loans (40 percent) and Commercial Bank of Ethiopia (CBE) bonds (60 percent).

ANNEX 3: Assessment of Financial Sector and Financial Intermediary

COUNTRY: Ethiopia
Access to Distributed Electricity and Lighting in Ethiopia

1. According to the World Bank's policy for FI lending (OP 10.00), an assessment of DBE, the designated implementing entity for the financing component of the operation, has been carried out. Based on the assessment, and considering the overall context and constraints of the Ethiopian financial system and its component parts, it can be concluded that the core governance, institutional, and financial indicators of DBE are on balance acceptable and do not pose constraints or risks of a magnitude to imperil successful implementation of the proposed subcomponent.

2. Moreover, despite persistent challenges, and the added pressures of COVID-19 during 2020 on operations, assets quality, and results, it is recognized that progress has been achieved in strengthening DBE's institutional, financial, and operational performance over the last number of years, including significant capital increases in 2016 and 2020. Further reform measures are envisaged in the context of the wider financial sector modernization initiative of the Government, which would strengthen DBE's role as a second-tier lender.

3. Furthermore, DBE has relevant sector and industry experience, having successfully executed a prior OGS enterprises financing project and has developed second-tier funding capacities in the context of development finance projects aimed at refinancing first-tier lending activities for, for example, the OGS value chain, SMEs, and women entrepreneurship development. Nevertheless, opportunities for further improvements of DBE's performance persist and will be addressed, as feasible, within the objectives of the present operation, through specific technical support measures.

4. The FI component has been designed in close coordination with other financial sector reform efforts and activities aimed at strengthening DBE, as well as funding operations for DBE. During project implementation, efforts will be coordinated to avoid duplication of activities or straining DBE's resources and capacities.

Financial Sector Context and Constraints

5. Ethiopia's financial sector is slowly modernizing in line with the requirements of a growing economy and the need for financial deepening and financial access for a growing share of the population. Over decades, Ethiopia's financial sector has been operating under a financial repression framework used by the government for managing its monetary and foreign exchange policy and financing of large infrastructure projects and SOEs. Instruments used under this framework include the central bank financing of the government, heavy state involvement in providing financial services, mandatory financing of priority projects and directed credit to select sectors, administered interest rates, a captive domestic market for government debt, high liquidity and capital requirements, and strict foreign exchange controls. Over time, the framework has led to the emergence of significant imbalances and constraints and stifled the evolution of the financial sector, which has remained public sector dominated in its structure and resource allocation. SOBs comprise approximately two-thirds of the banking system total assets. The ratio of private sector credit to GDP stands at just 11 percent, half the average seen among the 20 largest

African economies (22 percent), and overall, the value of domestic financial assets is only equivalent to approximately 52 percent of GDP.

Table 3.1. Banking Sector

(in million ETB)	Sector	Share Public Banks
Total Capital	112,900.0	50.8%
Deposits Portfolio	1,041,410.3	57.4%
Gross Loan Portfolio	1,032,193.0	66.4%
Total Assets	1,329,687.5	65.5%

Source: CBE, Quarterly bulletin, 4th Quarter 2019/20.

6. Ethiopia's financial system is dominated by banks. The banking sector comprises 18 banks, including the two SOBs: CBE and DBE. Together with currently 39 MFIs, the largest of which are also public sector owned, the banking sector holds about 98.6 percent of all financial sector assets, as of mid-2019. Total assets of the banking sector stood at approximately the equivalent of US$38.9 billion and capital at about US$3 billion. Total gross loan portfolio at the end of the fourth quarter 2019/20 stood at US$30.2 billion, registering an interannual increase of the outstanding portfolio of about 20.4 percent, driven by significant increase in lending by the SOBs. The sector's total deposit portfolio stood at US$30.4 billion at the end of the fourth quarter 2019/20.

Table 3.2. Loan Portfolio Composition Banking Sector

(in million ETB)	Public Banks	Private Banks
State-Owned-Enterprises	546,091.5	1,514.8
Cooperatives	15,475.7	4,415.3
Private Enterprises	123,517.4	341,178.0
Total	685,084.6	347,108.1
Corporate Bonds[1)]/Central Government	405,225.1	0

[1)] CBE Corporate Bonds

Source: CBE Quarterly Bulletin, 4th Quarter 2019/20.

7. The two SOBs represent a significant share of the sector's total assets, with CBE accounting for approximately 59 percent of the total, whereas DBE, the second largest institution in the sector, accounts for 6.5 percent. Moreover, CBE accounts for about 44 percent of capital, 60 percent of all deposits, and 39 percent of outstanding loans of the banking sector, whereas DBE's share in sector capital is about 6.8 percent and reaches 9.5 percent in lending. DBE does not take public deposits but is financed principally by domestic funding through the NBE and through international development funding sources. The two public banks have traditionally been operated as tools of the government for directed credit, with the CBE used mainly to finance large infrastructure projects and SOEs, whereas DBE mainly provided subsidized financing to SMEs in key priority sectors as well as funding to SOEs. As a result of this approach, both public institutions have traditionally faced pressure on asset quality and their operational capacity, while it has perpetuated an unlevel playing field in favor of the SOBs and the crowding out of lending by private banks. Overall, lending to the private sector accounts for only 45 percent of the outstanding loan portfolio, whereas lending to SOEs absorbs around 53 percent, with the remainder allocated to the cooperative sector. For the SOBs, lending to SOEs accounts for close to 80 percent of the portfolio and private sector

lending represents about 18 percent. The SOBs provide additional public sector funding, equivalent to 59.1 percent of their loan portfolio, through the purchase of public debt instruments.

Table 3.3. MFI sector concentration

(in million ETB)	MFI Sector	Top 5 MFIs (%)
Total Capital	19,440.1	82.6
Deposits	44,714.1	90.1
Loan Portfolio	64,901.7	85.9
Total Assets	92,200.1	86.3

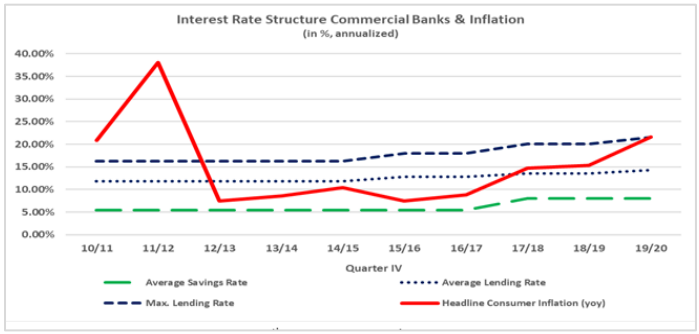
Source: NBE, Quarterly Bulletin, 4th Quarter 2019/20

8. At the end of June 2020, there were 39 MFIs operating in Ethiopia under the supervision of NBE. All licensed and supervised MFIs are authorized to offer savings services to third parties in addition to traditional micro-lending for private consumers and businesses and account transfer and payment services. The MFI sector is dominated by state-owned entities, established by regional governments, which concentrate significant market share. The five largest institutions—Amhara, Dedebit, Oromia, Omo, and Addis credit and saving institution are all publicly owned and range in total assets size from approximately US$200 million to US$1,122 million. Combined, those five institutions account for over 86 percent of total MFI sector assets. By comparison, the largest private sector MFI reports total assets of only close to US$62 million, which, however, still exceeds the average of total assets for private institutions by a factor of almost 5.

9. While the state-centered development model has allowed for significant growth over the last two decades, it has also perpetuated a dynamic of 'financial repression' and has led to growing distortions and constraints. Foremost among those are the challenges to the exchange regime and the availability of foreign currency and significant inflationary pressures, which has been trending at double digits for most of the recent period. The former has tended to add pressures on credit quality and hampers private sector development, whereas the latter has further exacerbated the effects of the traditional policy of administered interest rates, which tend not to reflect liquidity conditions in the money market or liquidity and risk premiums. In effect, the financial sector has been characterized by negative real rates over an extended period. This is particularly the case for deposit rates, for which NBE establishes a mandatory minimum rate, currently at 7 percent, and public debt instruments such as the Grand Ethiopian renaissance dam bond with a coupon rate of 5.5–6 percent[19] or the treasury bill rates at a weighted yield of 6.77 percent at the end of the fourth quarter 2019/20. But it also holds over the most recent past for average lending rates.

[19] DBE. NBE reports 7.5 percent and 8 percent.

Figure 3.1. Selected interest rates and headline inflation - 2010/11 to 2019/20



Source: NBE Quarterly bulletin, 4th Quarter 2019/20.

Table 3.4. Principal lending segments - Banking sector

(in % of GLP)	SOBs	Private Banks
Trade	4.4	54.9
Domestic	1.0	23.0
International	3.4	31.9
Real Estate/Construction	9.4	14.8
Industry	24.8	15.0
Mines, Power & Water	44.3	0.1
Consumer Lending	3.9	6.8
Other[1)]	13.2	8.4
Total Loan Portfolio (ETB million)	685,085	347,108

[1)] Includes agriculture, tourism, transport & communication and Others

Source: NBE Quarterly Bulletin, 4th Quarter 2019/20.

10. Ethiopia's banking sector faces a number of challenges, which will likely be further accentuated by the COVID-19 impact. Funding and liquidity constraints, particularly for private sector entities, have been a persistent challenge over the last year, owing to the general short-term structure of local deposit mobilization, the shallow domestic capital market, and limited access to external long-term funding. While recent policy changes to mandatory liquidity allocation by private banks in public debt instruments have freed liquidity,[20] overall access to longer-term funding remains a challenge for most market participants. Banks remain fairly risk averse, reflecting limited banking know-how and risk management capacities, as well as weaknesses in the enabling environment for lending. This manifests itself in reportedly significant collateral requirements for lending, a preference for shorter-term operations and limited innovation, and market penetration in new segments. This holds particularly true for the private sector institutions where half of the outstanding loan portfolio is placed in domestic and international trade financing operations, and additional significant portions are granted for real estate and construction financing and consumer lending.

11. Going forward, the development of NPLs will remain a concern, not only for the SOBs, given their significant exposure to challenged and low-performing SOEs but also for the private institutions. To address the potential tightening of financial conditions in the wake of COVID-19 and allow banks to address any deteriorating payment performance of borrowers, the NBE has established a liquidity support

[20] Until November 2019, the 27 percent rule required private commercial banks to mandatorily purchase five-year NBE bills equivalent to 27 percent of disbursements which were channeled to finance the budget and funding for DBE.

mechanism and enacted certain regulatory forbearance regarding the credit assets' qualification and provision and capital adequacy regime.

12. MFIs reportedly face more significant liquidity and solvency challenges, given their reliance on short-term deposits and limited access to institutional funding sources and a deterioration of credit assets' quality. A number of MFIs have indicated growing NPLs and the need to access additional liquidity to be able to address borrower payment delays. At present, authorities have not instituted arrangements to address those challenges for the regulated MFIs, beyond potential regulatory relief with regard to credit risks provisioning and capital adequacy requirements.

Development Bank of Ethiopia

13. The DBE is the second largest commercial bank and one of two wholly government-owned banking institutions in the country. Tracing its roots back to 1909, it was established as Development Bank of Ethiopia in 1951 to promote the national development agenda through development finance and close technical support to viable projects from the priority areas of the government by mobilizing fund from domestic and foreign sources while ensuring its sustainability. [21] As of mid-2019, DBE's total assets were approximately ETB 85.1 billion (approximately US$2.49 billion), representing slightly more than 6.4 percent of total banking assets. The reported outstanding loan portfolio amounted to ETB 47.6 billion, representing about 9.5 percent of the banking system's total, while the reported equity was ETB 7.7 billion, equivalent to close to 6.8 percent of the banking sector's recorded equity. The DBE does not engage in deposit taking, funding its activities through government and NBE funding, domestic bond issuances, and development finance funding. At present, the DBE provides first-tier and second-tier financing to business and retail customers and eligible MFIs. Retail and business lending operations are conducted through a nationwide network of 78 offices, most of which—over 90 percent—are located outside Addis Ababa across all regions of the country.

14. The DBE has acquired substantial sector and operational experience in serving OGS clients in the context of executing the market development credit line under the World Bank-funded ENREP. Under ENREP, the DBE has implemented a US$40 million financing component aimed at direct lending to eligible OGS energy companies in the SHS value chain, as well as second-tier financing of eligible MFIs to support end-consumer lending for the acquisition of SHS. Furthermore, a limited risk-sharing mechanism was implemented to support access to credit for SHS companies. DBE contracted a total of 29 loans to qualifying importers and distributors of SHS for an accumulated volume of ETB 815 million and provided refinancing to 12 MFIs for a contracted amount of ETB 521.6 million. As of mid-2020, the totality of the component's resources had been committed by DBE. At present, DBE reports continuing operations with 22 OGS enterprises for an outstanding principal of ETB 145 million and remaining balances with all 12 MFIs. FY2018/19's external audit of the project provides an unqualified opinion and does not observe breaches of the financing agreement or significant control issues in the project execution.

15. In addition to the sector-specific experience in OGS funding, DBE in the past has established first-tier funding facilities aimed at SMEs as well as second-tier funding structures to provide targeted resources to eligible first-tier intermediaries.

[21] https://www.dbe.com.et/index.php/about/mission-vision-and-value

Ownership, Regulation, and Oversight

16. The DBE is a fully licensed and regulated non-deposit-taking bank, wholly owned by the GoE, through the shareholding of the MoF. As a shareholder representative, the Public Financial Enterprises agency oversees DBE's performance through regular reporting requirements.

17. The DBE is regulated by the NBE under the Banking Business Proclamation Act No. 592/2008 and is subject to NBE's prudential norms and regulations for commercial banks. According to local standards, DBE reports and registers its operations and transactions according to generally accepted accounting principles (GAAP) for fiscal years before 2017/18. From FY2017/18, DBE reports according to IFRS, in compliance with the Financial Reporting Proclamation 847/2014, leading particularly to a relevant revaluation of risk asset values and corresponding adjustments to net income.

18. At the time of assessment, the DBE was in 'good regulatory standing' and not subject to any constraints imposed by NBE or other authorities upon its regular conduct of business. Neither did the institution report any material breach of prudential norms or other covenants. External auditors have provided an unqualified opinion for the latest fiscal year end financial statements.

19. DBE is subject to annual independent external audits of its financial statements. For FY2018/19 and a number of prior years, the institution has been audited by the Federal Democratic Republic of Ethiopia Audit Services Corporation, an independent public sector entity established by law, with delegated functions to provide external audit services to state-owned commercial entities. During the assessment, the annual external audit reports for FY2014/15 to FY2018/19 were reviewed. In all cases, the auditors provided an unqualified opinion.

20. The accompanying management letters did not note internal control issues or deficiencies in risk management or indicate a need for material accounting adjustments. However, as of July 2019, the bank's risk management indicates a breach of the regulatory single borrower limit of 25 percent of equity in two project finance operations and furthermore notes a level of NPLs in excess of the bank's internal targets. The increase in capital in early 2020 addresses the regulatory breaches, whereas the portfolio performance issues are expected to be addressed in the framework of further reform efforts for the institution, particularly regarding the cases of public sector-sponsored project finance activities, directed lending, and lending to SOEs. However, the emergence of COVID-19 has led to further pressure on the asset quality of DBE and exacerbated portfolio quality issues.

Governance

21. The assessment concludes that DBE's governance structure and arrangements do not yet reflect international best practice in all aspects, particularly with regard to the Board of Management (BOM), the nine-member supervisory organ of the institution,[22] which oversees DBE.

22. Members of the BOM are appointed by the Public Financial Enterprises Agency, which oversees the operations of all state-owned financial institutions and reports directly to the Prime Minister's Office. Although it has improved over time, the selection and appointment process of the BOM and its operations

[22] The BOM constitutes what in other institutions is generally termed the Board of Supervisors or Board of Directors. It is solely an oversight organ and not an executive management organ.

remains challenged, particularly in terms of independence and relevant experience and appointment and replacement processes. Currently five of the nine BOM members are senior government officials, including at ministerial rank. All BOM members are formally subject to NBE 'fit and proper' regulations, which do not, however, establish specific professional qualification criteria, and the enforcement capabilities of NBE remain in question. In fact, while the current BOM members have significant academic and professional credentials, few members show an extensive background in commercial banking or finance. Furthermore, the number of political appointees and the traditional presence of the regulator NBE on the BOM raises concerns with regard to the effectiveness and independence of the BOM in business, risk management, and operational decisions. However, the appointment of two independent members, including a representative of the private sector, and the designation of an independent member as chair of the BOM are considered positive steps toward continued strengthening of the governance structure of the institution.

23. The BOM has the authority to appoint the members of the Executive Management Committee (EMC), which is responsible for the bank's day-to-day operations. The EMC is chaired by the bank's president, who is also a non-voting member of the BOM, and currently comprises five additional vice presidents, in charge of (a) Project appraisal and portfolio management, which oversees the bank's principal corporate lending and project financing business; (b) SME financing, which manages retail lending business and also hosts the sponsored projects of development finance institutions (DFIs) in the external funds and credit management directorate; (c) Finance and banking, which agglomerates back-office finance support, treasury, and accounting; (d) Customer relationship management; and (e) Corporate services.

24. The BOM has three standing statutory committees: The Audit committee, the Risk and Finance committee, and the Human Resources committee. None of those committees is chaired by independent or outside members, as is considered best practice, particularly, for example, for the Audit committee or the Risk Management committee.

25. The DBE has an independent internal audit function and Compliance and Risk Management Directorate (CRMD) which report to the BOM. However, in particular, anti-money laundering (AML)/combating the financing of terrorism (CFT) capacities are still challenged by a lack of automated review and reporting capabilities.

Organizational Structure

26. At the end of June 2020, the DBE had 78 branches and employed a total of 2,252 staff, having slightly reduced the headcount along with the footprint over the course of the fiscal year. About three-fourths of all employees are grouped as 'professional' staff. Although most of the professional staff, 1,741 employees, have a tertiary education, skill deficits are a concern, with lack of staff experience and knowledge cited as an efficiency constraint. Furthermore, various organizational units reported unfilled positions, despite the significant overall staffing levels in the institution.

27. Salary expenditure accounts for approximately 55.6 percent of the total operating expenses and has shown a declining tendency over the last two fiscal years. Furthermore, personal costs slowly increased in relation to average assets for most of the years observed, indicating an apparent loss of efficiency and productivity as the institution has grown, only reversing that tendency since FY2017/18 and

more markedly in FY2018/19. Although the historical data seem to indicate that the bank has been challenged to generate economies of scale while increasing its assets size, the lack of apparent efficiency gains could also reflect the effect of needed investments in staff capacity and processes in the modernization and strengthening of the institution.

28. As noted, the DBE is organized into five vice presidencies below the president, which in turn group the operational and administrative directorates. The CRMD and internal audit do not report to the president but to the BOM. A separate project rehabilitation and loan recovery directorate reports directly to the president, removing potential conflict of interest issues with the loan origination and credit risk assessment areas. Loan origination and operational credit risk management are appropriately separated along two vice presidency reporting lines. Overall, the organizational design would appear to be appropriately structured in its separation of duties and control functions. However, DBE would appear to still face challenges in the efficiency of its processes and the alignment of performance indicators for the different organizational units.

Risk management and control

29. Complementary governance structures and arrangements such as the appropriate BOM committees and independent internal audit and risk management functions are established and perform reasonably. The DBE has a pertinent set of relevant risks management policies and compliance management policy.

30. The internal audit process (IAP) conducts financial, operational, and special investigative audits based on its annual audit plan approved by the BOM or upon request of the BOM or Executive Management. In line with best practice, IAP reports to the internal audit committee of the BOM. The internal audit directorate is staffed with 29 employees, including management positions, and organized into three core audit teams: operational, financial, and information technology. The directorate has separate legal audit capacity. Annual audit plans are established. For FY2018/19 a total of 122 audits were planned for the different areas and branches and the directorate reports the effective execution of 125. For FY2019/20 the audit plan anticipated over 150 audits. While about one-third of staff have advanced degrees, audit experience is limited. Less than 30 percent of staff have worked in the field for more than five years.

31. The CRMD provides regular periodic independent risk assessments on relevant risk exposure to the BOM, such as credit risk, operational risk, liquidity risk, foreign exchange risk, and compliance management. The CRMD is also in charge of reviewing loan procedures and updating internal risk rating criteria and oversees and reports on key compliance issues such as ‘politically exposed persons’ (PEP), ‘know your customer’, and AML/CFT compliance, including pertinent notifications of relevant authorities. The CRMD, however, does not perform individual credit risk reviews on a consistent basis or counterparty risk reviews in the context of second-tier operations, a task performed by the appraisal directorates under the Vice President project appraisal and portfolio management. The CRMD reports to the risk committee of the BOM, in line with best practice.

32. While the introduction of a full-fledged core banking system (CBS), Temenos 24 (T-24) in 2011 alleviates data and process constraints affecting DBE’s operations and timely and accurate reporting, the lack of automation of some compliance functions is a concern. ‘Know your customer’ aspects are integral

to the customer management in the CBS, and PEP exposure is also controlled through automated processes. However, AML/CFT screening is not fully automated, particularly at the branch level. That poses considerable risks, despite the fact that DBE does not engage in deposit-taking or payment services and therefore has a lower transactional volume and will need to be addressed through automation and integration of functions into the wider CBS structure.

Reporting and data management

33. Earlier in the decade, the DBE upgraded its CBS to a mainstream commercial system—Temenos 24 (T-24), used by an estimated 3,000 commercial banking institutions in some 150 countries. T-24 supports a full suite of consumer, retail, and corporate banking services and provides integrated functions for the registration and reporting of operations, including core accounting functions. The introduction of T-24 has allowed DBE to improve accuracy of operational transactions and improved timeliness and accuracy in reporting. No auditor or regulatory observations on reporting compliance were reported.

34. DBE reports having established information security, disaster recovery, and business continuity strategies in place.

Credit risks and liquidity challenges

35. The risk management processes need to be further strengthened, foremost in view of the significant levels of credit risks, liquidity risks, and interest rate risks the DBE faces, some of which reflect the banks' structural constraints as a non-deposit-taking state-owned institution. Credit risks and the attending potential pressure on the bank's solvency are of concern. Particularly, several large-scale project finance operations and corporate lending exposures have performed poorly. As of end-June 2019, the reported NPL for the bank stood at almost 34 percent, slightly diminished from the earlier quarter. NPLs are largely driven by poorly performing exposures in the manufacturing sector, particularly businesses in the textile, telecom, and agro-processing segments, followed by exposures in the agriculture sector.

36. The credit risk profile of the institution is further challenged by the significant concentration of poorly performing loans. Twenty exposures account for almost 60 percent of NPL, equivalent to ETB 9,573 million, according to the July 2019 risk report. Although the report establishes that the average provision ratio for those loans is only 27 percent, the net exposure of ETB 6,980 million would in fact exceed the total equity. The report deems provision levels as adequate and makes no mention of elevated risks to the solvency of the institution. The advent of COVID-19 has further exacerbated DBE's portfolio challenges with a reported significant deterioration of payment performance and restructuring of obligations, in line with regulatory relief authorized by NBE for the banking system.

37. Whereas the credit risk profile of DBE for its overall portfolio is concerning, the experience in the OGS financing under the market development component of ENREP has been significantly more positive, both in the lending operations to individual enterprises in the value chain as well as in the second-tier operations with eligible MFIs. As of end-April 2020, of the ETB 608 million disbursed to OGS enterprises, ETB 145.36 million is still outstanding, of which ETB 75.82 million was overdue or NPL, equivalent to 12.5

percent of the disbursed amount.[23] In the case of the second-tier financing of MFIs, less than 0.6 percent of the disbursed amount of ETB 360.27 million was experiencing repayments delays as of end-2020.

38. The DBE faces liquidity and interest rate risks derived from assets and liabilities maturity mismatch, although the former would appear moderate in the short to medium term, whereas the latter is more pronounced particularly in a declining interest rate environment. Going forward, liquidity risk could become more accentuated. As a non-deposit-taking financial institution, DBE has traditionally relied on accessing refinancing through NBE, until recently supported by a mandatory liquidity transfer from the private banking sector. With the repeal of the so-called '27 percent rule' in late 2019, the DBE will need to develop alternative funding sources going forward. At present, a secondary source of funding has been dedicated credit lines from DFIs for directed lending activities. However, currently these lines only account for approximately 11 percent of funding.

Financial performance

39. The DBE has been growing significantly over the last five years, more than doubling total assets between FY2014 and FY2019, from ETB 35.7 billion to ETB 83.4 billion, for an increase of almost 134 percent. Growth has been driven by a significant expansion of the loan portfolio over that period which grew at a compounded annual rate of almost 19 percent, outpacing significant inflation. At the end of June 2019, DBE's audited financial statements reported total assets of ETB 83.4 billion and an outstanding gross loan portfolio of ETB 51.4 billion. The net loan portfolio was reported as ETB 40.2 billion, reflecting an increase of 36.8 percent over FY2018/19. Funding liabilities with domestic or foreign sources amounted to ETB 62.3 billion or some 74.7 percent of total assets, of which 84.9 percent are financed by NBE and another 13.5 percent through the MoF. The DBE also has issued close to ETB 10 billion in government-backed bonds, among others, to channel retail investors' funding for the Renaissance Dam project. The NBE refinancing is granted at 3 percent in local currency, whereas international DFI funding channeled through the MoF is generally US dollar based at mostly fixed concessional rates of between 1.5 percent and 2 percent per year. The DBE has limited direct DFI funding to the China Development Bank, at ETB 1 billion as of the end of June 2019.

40. At the end of FY2019, the DBE's authorized and fully paid capital stood at ETB 7.5 billion and total equity at estimated ETB 7.7 billion, after having been recapitalized in 2016 through an injection of ETB 5,700 million in paid-in capital to accommodate loan growth and compensate for assets deterioration. At end FY2019, the bank's reported risk-weighted capital adequacy ratio (CAR) stood at 11 percent, comfortably in excess of the minimum regulatory requirement of 8 percent. However, the significant deterioration in the asset quality casts doubts about the sustainability of the reported CAR. Assets' deterioration originating from politically driven lending decisions and lower quality credit origination in the wake of the rapid expansion of the loan portfolio over the last year will continue to exert pressure on the bank's capital position through elevated loan loss provisions and write-offs.

41. As noted earlier, at the end of June 2019, the bank's loan portfolio experienced significant NPLs at 33.9 percent, slightly less than at the end of the prior quarter. Some 62 percent of NPLs correspond to

[23] As recovered funds have not been lent out, calculating the NPL over the outstanding loan portfolio does not provide meaningful insight into the payment performance over time. The indicator will reach invariably 100 percent with only the NPL portfolio remaining once all performing loans have been liquidated.

corporate or project finance operations originated in the headquarters, pointing to the possibility of weakness in loan origination particularly of larger operations. While manufacturing contributes to 68 percent of total NPLs, agriculture accounts for 29 percent. An additional concerning aspect of NPL development is the concentration risk among few borrowers, particularly among those with worsening payment performance. The DBE has a history of significant concentration risks among its borrowers, with the largest 20 borrowers with exposures above 5 percent of the bank's equity accounting for approximately 45 percent of the loan portfolio at end of FY2019. A total of 4 operations of the largest 20 borrowers were non-performing at the end of June 2019, representing almost 15 percent of the institution's loan portfolio and an astonishing 88.85 percent of its capital base. This included one individual exposure equivalent to 33.9 percent of DBE's capital, in breach of regulatory single exposure limits and the bank's own policy limits. Overall, the largest 20 NPL exposures account for 59.3 percent of the total NPL balance.

42. Provision coverage of DBE at end-June 2019 is 21.7 percent for the total portfolio. For the above mentioned large NPL, the DBE risk report for June 2019 indicates an average coverage ratio of 27 percent, which would appear to be a concern. However, the report rates coverage as adequate, presumably on the strength of underlying collaterals, which in Ethiopia tend to be heavily real estate focused.

43. The DBE had been producing consistently a net positive income over the past few years, albeit at a comparatively low and declining level. However, the introduction of IFRS led to a revaluation of loan loss reserves for FY2017/18 and a significant loss. FY2018/19 also shows a loss, albeit slightly declining from the prior year, driven, in part, by continued elevated loan loss provisions, in excess of the net-operating income. Furthermore, the DBE's returns have come under additional pressure by (a) contracting portfolio yield and net interest margins and (b) challenged productivity ratios. Low profitability has resulted in depressed return on average equity (RoaE) and return on average assets (RoaA), which for 2017 (GAAP) stood at 4.13 percent and 0.63 percent, respectively, and turned negative in FY2017/18 and FY2018/19.

Table 3.5. DBE's financial performance overview

In ETB, thousands	FY2014/15	FY2015/16	FY2016/17	FY2017/18	FY2018/19
Total assets	41,704,009	49,475,947	53,166,865	73,201,034	83,399,581
Loan portfolio (net)	23,773,019	26,889,176	28,283,850	29,414,327	40,248,990
Equity	4,257,705	7,876,584	7,902,436	2,557,078	5,726,782
Net profit	681,437	373,520	325,852	(1,886,444)	(1,666,382)
Net operating income	1,576,200	1,813,642	1,607,229	3,463,337	3,992,639
LLP	471,944	1,042,747	650,919	4,344,389	4,187,688
Operational expenses	298,984	404,745	591,390	794,164	887,702
Staff costs	186,043	247,897	392,306	475,801	493,328
Cost/income	27.1%	52.5%	61.8%	Negative	Negative
Net portfolio yield	6.3%	6.4%	5.1%	10.7%	9.68%
LLP margin (percentage of net income)	29.9%	57.5%	40.5%	125.4%	104.9%
RoaA	1.76%	0.82%	0.63%	Negative	Negative
RoaE	17.4%	6.16%	4.13%	Negative	Negative

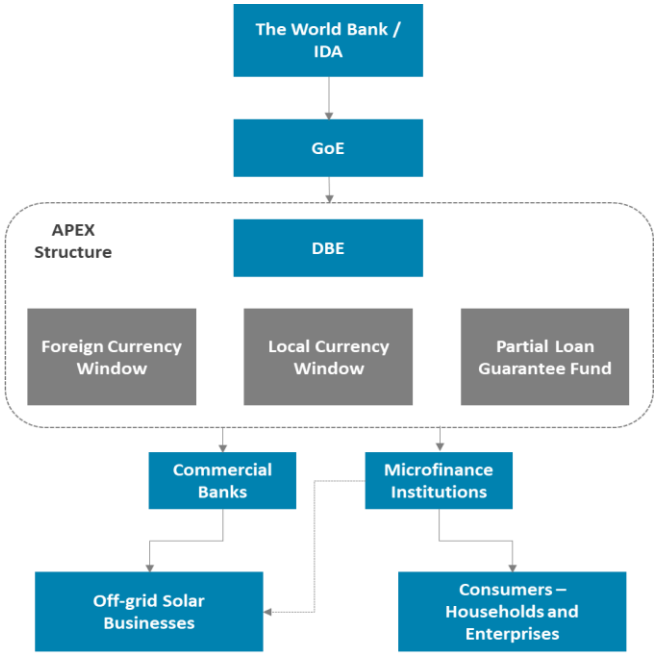
Note: LLP = Loan loss provision.

Products and offerings under the financing facility operational structure and funding flow

44. The funding flow for the operation originates with the credit resources contracted by the MoF with the World Bank and then cascades to the private end borrowers, OGS system businesses or end consumers through an apex arrangement and first-tier borrowers, applying independent client selection criteria and risk assessments and commercial loan terms.

45. The DBE will perform the function of the apex institution and will receive the projects funds from the MoF through a dedicated accounts arrangement in the NBE. The funds will be applied by DBE in three different windows accessible to all eligible PFIs, which in turn will channel the resources to their selected clients (figure 3.2).

Figure 3.2. Structure of the credit facility managed by DBE under an apex arrangement



46. All commercial banks and regulated MFIs which are operating under a current license, have no 'fit and proper' concerns with respect to shareholders, directors, and principal executives, and are in 'good regulatory standing' will be eligible to operate as PFIs, following an assessment by the DBE., as is currently done by DBE, for example, under the apex components of ENREP, SMEFP, and WEDP World Bank-funded operations. The DBE will undertake individual risk assessments of the institutions, according to a specific due diligence methodology satisfactory to the World Bank's OP 10.00 criteria and to be set out in the POM to determine (a) eligibility of PFI, (b) risk exposure limits, (c) pricing of funds, and (d) eligibility criteria for final borrowers. Initial and continued eligibility of PFI will be subject to compliance with OP 10.00 criteria. Areas to be addressed in assessing PFI will include, among others,

- Governance arrangements and processes;
- External and internal audit, compliance, and oversight;

- Risk management capacity, including policies and procedures for financial (liquidity, credit, currency, and interest rate), operational risks, and market risk;
- Capital adequacy, NPL, and liquidity ratios;
- Assets risks assessment and LLP;
- Profitability and (structurally) positive RoaA and RoaE; and
- Reporting capacity and CBS/MIS functionality.

47. Product pricing and conditions will seek to minimize distortions and disincentives for market-conforming behavior. Detailed condition and pricing structures will be determined as part of the POM. However, the project seeks to establish pricing mechanisms and product conditions which will minimize distortions and disincentives and broadly reflect market conditions, as well as risks and operational costs at each stage of the intermediation process. As such, DBE's transactions under the component's project lending windows will reflect customary market conditions and rates.

48. The DBE will apply a commercial approach in its second-tier on-lending activities. On-lending rates to PFIs in the apex window will reflect DBE's operational costs as well as be commensurate with the average funding costs of the PFIs' and their respective risks assessments. The NBE minimum savings rate or the yield on longer-dated government debt instruments will serve as benchmarks for pricing to reduce crowding-out effects.

49. Conditions of first-tier lending operations, including pricing of loans, will be freely determined by the PFIs in line with their approved policy and commercial decisions, to support the sustainability of the approach. Furthermore, all credit and risk decisions regarding eligible first-tier operations will rest only with the PFIs, within the procedures and eligibility criteria established in the POM. The participation of private sector entities, PFIs, should ensure pricing that follows market practices.

50. Pricing for the partial loan guarantees will reflect DBE's capital costs, operational costs, and an adequate risk premium based on a risk assessment of the PFIs and the performance of the OGS loan portfolio. The experience under the current ENREP has shown exceptionally good portfolio performance with no registered defaults at present.

51. **The project will provide capacity enhancement and strengthening support to DBE and eligible PFIs.** The program design recognizes the challenges faced by DBE and the PFIs in efficiently and sustainably attending to the financing needs of the stand-alone solar systems market. In particular, the DBE will require further support in strengthening its apex operation, and in areas such as product design, risks management, and M&E. Furthermore, support will be provided in the detailed design, set-up and operation of the partial loan guarantee structure. On the other hand, PFIs will be supported in developing adequate product designs and enhancing risk assessment capacities and the use of non-traditional guarantee structures, in the context of attending to SMEs along the OGS systems value chain.

ANNEX 4: Off-grid Market Assessment

COUNTRY: Ethiopia
Access to Distributed Electricity and Lighting in Ethiopia

Assessment of mini-grids in Ethiopia

1. **Although several pilot mini-grid implementations are currently under way, the ecosystem for mini-grids is still largely nascent in Ethiopia.** The mini-grid experience in Ethiopia to date covers 28 EEU-operated large diesel mini-grids in the Somali region, a few donor-funded hydroelectric micro-grids run by cooperatives, a Korean-funded solar-hybrid mini-grid operated by EEU in the Bishoftu area, several micro-grids run by Ethio Resource Group (ERG, one of the few private Ethiopian companies active in the market), the 12 mini-grids currently under construction through an EPC tender launched by EEU in 2019 under the World Bank-funded ELEAP, and the 25 mini-grids currently under an EPC contract tender by EEU with financing and support from the African Development Bank . Despite numerous pilots, the mini-grid ecosystem in Ethiopia remains nascent with few private players, limited success with business models, and until recently, absence of a regulatory framework. The World Bank has supported the EEA in developing a mini-grid directive (adopted in November 2020), which constitutes a key building block for the mini-grid program under ADELE. It provides clarity on tariff aspects, licensing requirements, quality of service benchmarks, and technical standards and as such, is key to promoting private sector involvement and commercial investment in the sector. Further, the EEA has developed a mini-grid tariff spreadsheet tool that calculates cost-reflective tariffs for mini-grids, considering subsidies and allowing for a variety of tariff structures (for example, TOU rates and different tariffs for different customer classes).

2. **A portfolio of suitable mini-grid sites has been developed (for both the EEU and the private sector-led models) based on least-cost electrification principles and potential for productive uses, such as agricultural, commercial, and industrial demand centers, and is being finalized.** Using geospatial data on 14 million rooftops across the country and the extent of the national grid, settlements that are distant enough from the grid to be uneconomic for grid extension but with sufficient population density to justify investment have been identified to form a cohort of long-term off-grid sites for potential mini-grid development. A total of 874 such villages, which could be served by 385 mini-grids (because some of these mini-grids would serve multiple villages located close to one another in a cluster) have been identified, and the presence of productive loads in these communities will be verified and measured as part of project preparation. While some of these villages may already have adequate productive loads, it is likely that these more remote, rural communities will require some support from the project to stimulate additional demand for productive use.

3. A second, much larger cohort of sites that ultimately may be connected to the main grid but remain candidates for mini-grid electrification in the medium term (because they are relatively more remote and/or less densely populated, and grid extension is expected to target more accessible, larger load centers first) has also been identified and overlaid with data on productive uses and agricultural demand centers collected by mapping of organized horticulture, dairy, and poultry clusters, including geo-tagging of electricity consuming equipment wherever possible. Data on 472 agricultural commercialization clusters (ACCs) developed with the support of the Ethiopian Agricultural Transformation Agency that focuses on cultivation of one or more of five horticulture crops (avocado,

banana, onion, tomato, and mango), where irrigation represents a significant energy requirement currently served by diesel generators, have been collected across three regions (Amhara, SNNPR, and Tigray) out of four regions where horticulture ACCs have been developed to date. Unrest in the fourth region, Oromia, has made data collection there infeasible for now, but this will resume once conditions on the ground allow.

4. Data have also been collected on 600 poultry farms that are not connected to the main grid across five regions (Amhara, Oromia, Tigray, SNNPR, and Somali). Small-scale and medium-scale intensive and semi-intensive poultry systems, including egg layer, broiler, out-grower, and combined farms, utilize a variety of electric equipment , such as incubators and water and feed systems, and could benefit from the supply of reliable mini-grid electricity to replace existing diesel-based generation. Similarly, data have been collected on 100 milk collection centers that have been introduced in high production areas across four regions (Amhara, Oromia, Tigray, and SNNPR) to help address the challenge of getting milk from smallholder farmers to the market. These milk collection centers play an essential role in aggregating milk production from smallholder farmers and facilitating sales to processors and retailers in large towns. Although these 100 milk collection centers (70 of which are off-grid) can host other equipment as well, they feature, at the very least, milk chillers that need to be operated 24 hours a day and are reported to require 4 to 8 kW of power.

5. Through merging of spatial data on settlements and productive loads described earlier, as well as that on public institutions, potential mini-grid locations were long-listed based on the presence of adequate residential, institutional, and productive loads, and the team advanced provisional costing of these mini-grids to determine the locations with the lowest estimated levelized cost of energy and prioritize accordingly for inclusion in the proposed ADELE portfolio. As a result of this analysis, more than 1,000 potential sites with significant productive loads in areas suitable for mini-grid electrification in the medium term have been identified and prioritized. It should be noted that this does not constitute the entire universe of such sites but rather the low-hanging fruit of locations where known, organized agricultural activity is taking place and where there is potential for existing, individual diesel-based generation to be supplanted with mini-grid electricity. Consideration of ACCs where cereals are the primary crops, as well as areas with less formal agricultural production systems, could further expand the geographic scope for mini-grid deployment but would need to be accompanied by sensitization, capacity-building, and microfinance programs to introduce and finance irrigation and mechanization of agriculture where they are not currently practiced.

6. An initial geospatial screening, conducted in 2018 as part of the preparation of NEP 2.0, identified potential for public sector development of 285 mini-grids serving at least 250 households in deep rural areas located more than 25 km from existing MV lines. All of these proposed long-term sites were validated in the course of the geospatial analysis for ADELE and are included in the long lists prepared. The initial geospatial screening for NEP 2.0 also indicated technical potential for approximately 1,150 medium-term mini-grids, located 2.5–25 km from the existing grid, to be implemented by the private sector or cooperatives, but no assessment of productive use potential was carried out at the time. Where these candidate sites coincide with the mapping of productive loads for ADELE, they will also be considered for inclusion in the long lists. This long-listing approach, which entails a dynamic list of potential mini-grid sites informed by data as it becomes available, allows the proposed project to provide opportunities for other development partners to support additional investments in the country's mini-grid program.

7. **The World Bank has supported the EEA in developing and adopting a mini-grid directive (adopted in November 2020), which constitutes a key building block for the mini-grid program under ADELE.** This directive outlines the regulations applicable to the development of mini-grids in Ethiopia and is key to promoting private sector involvement and commercial investment in the sector. The EEA has developed a mini-grid tariff spreadsheet tool that calculates cost-reflective tariffs for mini-grids, considering subsidies and allowing for a variety of tariff structures (for example, TOU rates and different tariffs for different customer classes).

Assessment of off-grid solar standalone in Ethiopia: State of the current supply and demand for off-grid solar products [24]

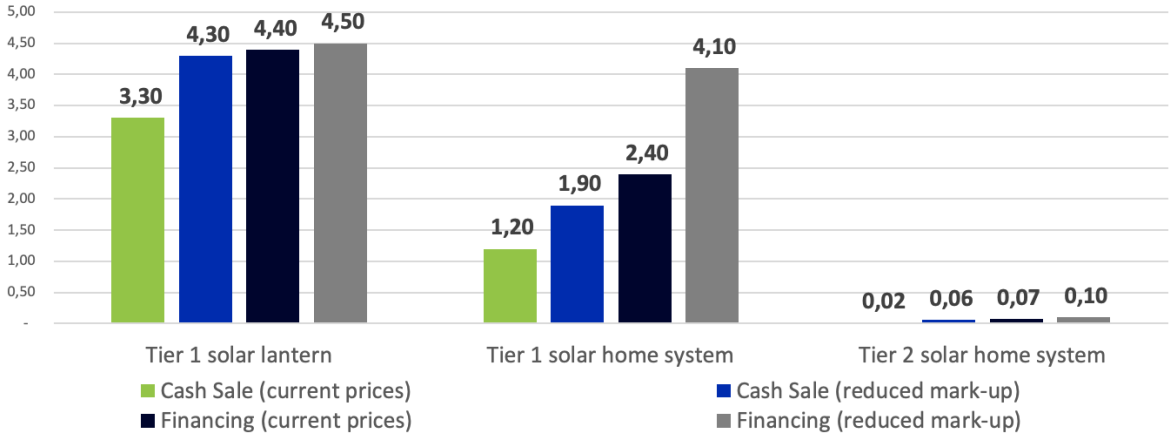
8. **The Ethiopian OGS market is vibrant and constitutes one of the largest markets across Sub-Saharan Africa.** Due to foreign exchange restrictions, the supply of products in the country currently does not nearly meet the demand. Through World Bank-financed credit lines at the DBE, the import of approximately 150,000 SHSs and 1.2 million Lighting Global-certified solar lanterns and their sale to rural end users has been financed. Ethiopia has a considerably active market with more than 13 SHS companies operating, around 490,000 products sold in 2018 and more than 1 million products sold in 2019.[25.] The vast majority of products sold in the Ethiopian markets are sold in cash and qualify as entry-level products and are usually sold through retail channels. MFIs play a key role in consumer financing. While the market has shown strong growth and potential over the last year, due to the COVID-19 pandemic and associated economic impacts, the growth of the OGS market is expected to falter.[26]

9. **There is strong demand in the Ethiopian market, but affordability is a constraint**. About 13.5 million of all households are off- grid. Within this group, about 1.9 million have access to tier 1 or above electricity through OGS products such as SHSs. Currently, 11.6 million off-grid households are below tier 1 electricity access. At current retail prices and when purchased in cash, only 38 percent of this population segment would be able to afford a tier 1 solar system. Affordability of tier 2 solar system is negligible when purchased in cash. Affordability of systems, however, increases substantially if consumer financing is introduced: 69 percent of the off-grid households currently below tier 1 level of access would be able to afford a tier 1 solar system.

10. **End-user prices in Ethiopia are among the highest in the East African regions, due to a number of factors.** NEP 2.0 estimates that the fragmented supply chain that is a result of the current regulation preventing more integration (figure 4.1), leads to a 30 percent mark-up in price. Assuming regulatory changes took place that would allow for a more streamlined supply chain, affordability would increase significantly. With a reduced mark-up and availability of consumer financing, only 8 percent of the current off-grid population below tier 1 would not be able to afford any product. About 74 percent would be able to afford a tier 1 system and 1 percent a tier 2 system. While consumer financing significantly increases affordability of products, it is not readily available across the country (as detailed in the following sections).

[24] This section summarizes findings of a study carried out by Fraym in cooperation with Nithio, done as part of project preparation as well as findings of the team during project preparation.
[25] GOGLA. 2020. *Half-yearly Off-grid Solar Sales Data Report for H2 2019*.
[26] EnDev. 2020). *Energy Access Industry Barometer*.

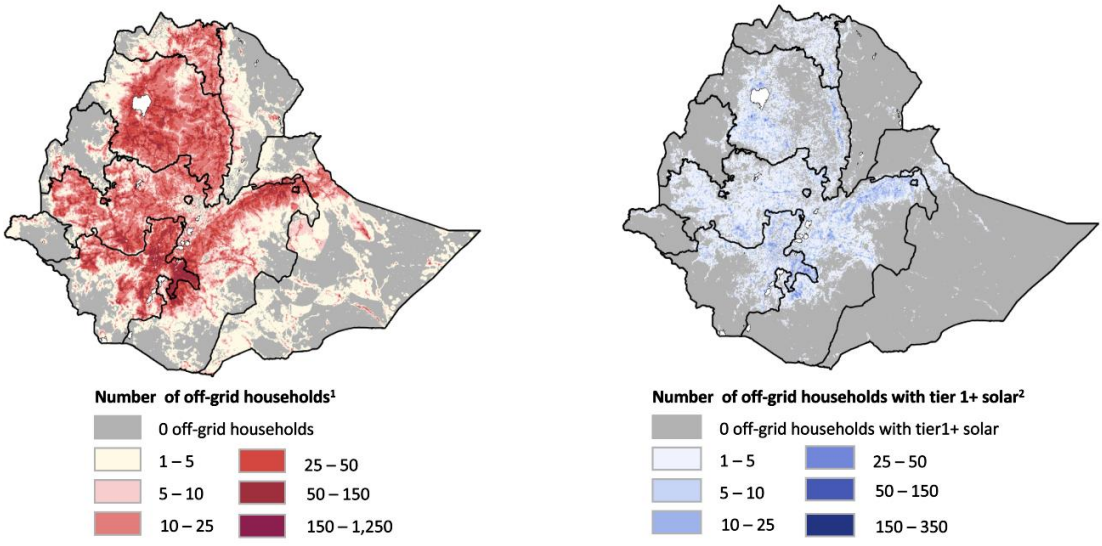
Figure 4.1. Affordability with reduced mark-up and consumer financing (million households)



Source: Fraym, 2020.

11. **The supply of OGS products is limited to more densely populated areas.** As figure 4.2 illustrates, currently only households that live in more densely populated areas have access to tier 1+ systems. Given the higher costs and risks associated with expanding the supply chain into less densely populated areas, OGS companies are currently focusing on regions with high density of potential customers. Although there is at least one SHS company active in each region, companies are currently concentrating on Amhara, Oromia, SNNPR, and Tigray.

Figure 4.2. Spread of off-grid households and tier 1+ off-grid Access



Source: FRAYM, 2020.

12. **Lower OGS market penetration coincides with higher vulnerability of households.** Particularly Benishangul-Gumuz, Gambella, Somali, and Afar are underserved. Together with parts of Oromia, Tigray,

SNNPR, and Amhara, they form the 'lowlands', home to particularly vulnerable communities.[27] Most households with access to tier 1 and above solar products live in populated areas, but penetration is relatively low further from the grid, where population density is lower, and companies and MFIs may have difficulty serving customers.

13. **PAYGo could help make products more affordable but the consumer-centric business model is facing many barriers.** Under NEP 2.0, the GoE explicitly proposed to harness the latest developments and best practices emerging in off-grid business models, particularly on PAYGo ones. Against this background and given the importance of consumer financing, the barriers listed focus on the expansion of PAYGo.

14. **Access to finance is inadequate.** PAYGo is a capital-intense business model that requires companies to take on large amounts of debt to offer consumer financing. Foreign ownership in local Ethiopian companies fundamentally changes the licensing of the local company. At present, a local company is no longer able to retail products if it accepts any FDI. Only 100 percent locally owned companies can obtain licenses to import and/or licenses to retail solar products. Investment Proclamation (849/2014) prohibits foreign entities from retail trade (including solar products). This means Ethiopian companies can only turn to domestic investors. Local capital markets, however, are currently not offering sufficient amounts of investments.

- **Access to debt.** Experience shows that PAYGo companies across different markets have mostly secured needed debt from international impact investors and DFIs. Ethiopian companies are currently limited to securing debts from local banks due to the investment restrictions and the missing access to foreign exchange to service the debt from international DFIs or investors.

- **More equity investments are needed to access more debt.** Raising debt requires equity. Power Africa estimates that the debt-to-equity ratio for PAYGo in Ethiopia would be 3:1. Most Ethiopian companies are family owned and do not have a strong equity base that would allow them to raise required debt. The logical go-to place would be international impact investors that have shown interest in the Ethiopian market yet cannot make investments due to current regulations.

- **Dependable access to foreign exchange short term and long term.** The inconsistent ability to access foreign exchange leads to interrupted supply, heavily undermining any business model. In particular PAYGo that builds on upgrading customers for long-term financial sustainability of the business model cannot easily absorb interrupted supply.

15. **Vertical integration of the business model is not possible.** Under the current proclamation, companies that import products are ineligible to act as retailers (Proclamation 980/2016), which means any retailer active in the country needs to obtain goods from a specialized importer. Even in the case of locally manufactured products, the manufacturer cannot sell directly to consumers but can only supply products to dedicated retailers. Vertical integration is a precondition for PAYGo.

[27] World Bank and DFID. 2020. *Poverty and Vulnerability in the Ethiopian Lowlands: Building a More Resilient Future.*

16. **Physical and digital infrastructure is not readily available and will take time to expand.** Mobile money plays an essential role in the expansion of PAYGo solar. Ethio Telecom could help accelerate the adoption of solar by introducing mobile money and creating places where customers can pay for services. The GoE recently passed a legislation that enables telecoms to begin scaling mobile money services. However, regulatory, operational, and logistical barriers remain that could inhibit the expansion of mobile money to rural areas. Ethio Telecom will need time and expertise as the company scales its payment services. The new legislation does not enable foreign-owned mobile network operators.

17. **Local companies lack capacity to implement PAYGo.** PAYGo is a complex and highly sophisticated business model that combines managing a retail as well as a leasing/lending value chain. Most Ethiopian companies have experience in retail but not in the lending value chain. Capacity-building and knowledge transfer is needed to ensure entrepreneurs build effective, resilient, and scalable PAYGo models adapted to the Ethiopian context.

18. **The Ethiopian market is fragmented, limiting economies of scale.** The regional energy bureaus play a central role in defining and implementing regulation for OGS companies on a regional level. Procedures and rules to obtain such a license are not harmonized across regions, adding substantial administrative costs to companies seeking to operate across several regions. Though they are yet to reach economies of scale, many companies will seek to eventually operate nationwide.

19. **Regulatory clarity for PAYGo is missing.** While PAYGo leasing is common practice, different interpretations of the current regulatory framework exist. According to NBE, only financial institutions are legally able to offer credit. However, EEA has expressed the opinion that PAYGo conforms with regulations. Providing clarity on the status of PAYGo solar companies in the current regulatory context will reassure the private sector to invest in PAYGo business models.

ANNEX 5: Financial Management Assessment and Arrangements

COUNTRY: Ethiopia
Access to Distributed Electricity and Lighting in Ethiopia

Executive Summary

1. An FM assessment was conducted at the implementing entities of the project, that is, MoWIE, EEU, and DBE, in accordance with the FM manual for World Bank IPF Operations issued on February 10, 2017 and the supporting guidance note (February 28, 2017). The objective of the assessment was to determine whether the implementing entities of the project have adequate FM systems and related capacity which satisfies the World Bank's policy and directives on IPF, to provide reasonable assurance that the proceeds of the financing are used for the purposes for which they are granted. FM arrangements are the planning, budgeting, accounting, internal control, funds flow, financial reporting, and auditing arrangements of the borrower and entity or entities responsible for project implementation. The World Bank has conducted the assessment building on the lessons learned from the current World Bank-financed projects[28] at MoWIE, EEU, and DBE. The assessment also included the identification of key perceived FM risks that may affect program implementation and proceeded to develop mitigation measures against such risks.

2. The project will inherit the various strengths of the country's PFM system. Several aspects of the PFM system function well, such as the budget process, classification system, compliance with financial regulations, and satisfactory government internal system. Several reforms are being undertaken to improve the country's PFM systems through the government's PFM strategy and the support of development partners (such as the PFM project funded by the World Bank). In addition, the project will benefit from lessons learned in managing ELEAP and ENREP.

3. The main strength of the project is that all the three implementing entities have experience in World Bank-financed projects and the internal control system provides sufficiently for the separation of responsibilities, powers, and duties. The main weaknesses identified are delays in entity external audit reports especially at EEU and DBE and weak internal audit oversight especially at MoWIE. In addition, internal controls weaknesses are noted at EEU as revealed in external audit reports, the recent reports of which are issued with a disclaimer opinion. Financial reporting from MoWIE is weak and delayed. There are delays in budget approvals at EEU and MoWIE. The nature of the project also poses risks related to property management and internal control challenges in advance. As a result, the FM residual risk rating for the implementation of this project is considered Substantial. An action plan has been developed to mitigate the risks identified.

4. **FM arrangements** for the project will be based on the respective entities' FM systems. The budgeting, accounting, and internal control procedures will mostly rely on the entities' respective procedures. In addition, the POM and FM Manual are expected to be developed and submitted to the World Bank which should be aligned as much as possible to the respective entities' procedural manuals. Each entity will prepare the project AWPB for the activities/components it implements, which will be

[28] ENREP (P119893) for DBE and ELEAP (P160395) for EEU and MoWIE.

included and approved as part of the entity budget. The implementing entities will submit their AWPBs to the World Bank and are expected to obtain 'no objection' from the World Bank. The regular budget execution reports and the IFRs as well as progress reports would be used for project budget monitoring. Each entity's existing accounting systems will be used which will be supplemented by memorandum of records as needed, and the existing FM staffing at the entities is adequate in managing the project FM issues apart from MoWIE, which should recruit/assign at least one senior accountant for this project. In addition, each entity will review its staffing capacity and if deemed necessary, will explore the possibility of recruiting an additional accountant within six months of project effectiveness. The internal audit departments/directorates or unit of EEU, DBE, and MoWIE will include this project in their work program and conduct audit accordingly.

5. **Disbursement.** The implementing entities will have all the disbursement methods available. These are advances, reimbursement, direct payment, and special commitment. Each entity will open a segregated DA at NBE managed by each entity to receive project funds. Local currency accounts will also be opened as needed. For the advance to the DA and for reimbursement methods, the project will use report-based disbursements using quarterly IFRs. There are disbursement conditions under component 2.2, component 3.1 and component 3.2.

6. **Financial reporting and audit.** Each implementing entity will prepare and submit quarterly unaudited IFRs for the project within 45 days of the end of the quarter. The formats of the IFR is attached in the Disbursement and Financial Information Letter (DFIL)and were agreed during negotiation. Each implementing entity will also have the project accounts audited on an annual basis by an independent external auditor acceptable to the World Bank and will submit the external auditor's annual report within six months of the fiscal year-end. The audit TOR was also agreed during negotiation.

7. **FM-related covenants** include (a) maintenance of a satisfactory FM system for the project, (b) submission of IFRs for each quarter within 45 days of the end of the quarter, and (c) submission of annual audited financial statements and audit report within six months of the end of each fiscal year.

8. Based on the assessment conducted, it is the conclusion of the FM assessment that the project's FM arrangements meet the World Bank's minimum requirements under World Bank policy and directives on IPF and the FM Manual.

Country PFM Issues

9. Over the past few years, the government has shown a sustained effort to modernize and reform its PFM and enhance its efficiency and effectiveness. Responsibility for ensuring that the PFM system is designed to achieve this purpose has been with the MoF through its expenditure management and control program. Public procurement is regulated by the Public Procurement and Property Administration Proclamation, which establishes the Federal Public Property and Administration Agency as the body responsible for regulation and monitoring of public procurement activities. The government has also instituted several reforms to reduce corruption through the establishment of the Federal Ethics and Anti-Corruption Commission in 2001 and the creation of the Federal Attorney General's position in 2006. In addition, Ethiopia has developed a legal framework for addressing fraud and corruption risks, although implementation is an issue and corruption remains a roadblock to institutional accountability and governance. To strengthen the PFM system, the government has taken a systematic approach to reform

focused on 'getting the basics of PFM right.' The reform process began with the reform of the legal framework and the issuance of updated directives and regulations covering all aspects of the PFM cycle. The result has been a steady strengthening of PFM systems over the last 10 years.

10. The findings of the Public Expenditure and Financial Accountability (PEFA) assessment for FY2018 indicate that while most indicators remained the same compared to previous years, the debt department has improved the recording of income and expenditure information in donor-funded projects, information to subnational governments on their budget allocations is communicated on time and considered reliable, systems are in place for contracting loans and issuance of guarantees, and financial statements are compiled and submitted on time. Budget discipline at the aggregate level continues to be reasonably assured. Macroeconomic forecasting and fiscal forecasting are performing well, and payroll management and internal control continue to be reasonable. Audit coverage and quality have improved significantly, although the same unaddressed findings persist year after year.

11. Despite noted improvements, weaknesses remain in the PFM system. The main weaknesses identified at the federal level are in tax collection, public access to budget information, medium-term perspective in budgeting, and limited parliamentary oversight. Low tax collection by international standards is related to significant constraints in tax administration, both in terms of system shortcomings and poor capacity affecting implementation and compliance. With regard to policy-based budgeting, Ethiopia does not have a medium-term expenditure framework, limiting the government's ability to plan beyond a one-year horizon. Fiscal risk monitoring is weak and lacks complete and timely financial information, especially from SOEs, and there are challenges in the management and control of assets and liabilities including shortcomings in undertaking independent economic analysis for major public investments. Public procurement processes are also characterized by several weaknesses which undermine procurement efficiency and effectiveness including limited capacity in public bodies, lack of transparency and inadequate regulatory framework, constrained market, delays in procurement processes, uneven use of standard bidding and contract documents, and weak contract administration capacity and practices.

12. To further strengthen the PFM system and implement the recommendations from various diagnostics, the government has developed a PFM reform strategy. The strategy covers a five-year period from 2018–22 with the aim "to modernize the PFM system in Ethiopia, promote its transparency, accountability and equity and enhance its efficiency and effectiveness." However, the strategy is limited in scope and is not comprehensive because it lacks coverage on the revenue and audit aspect, among others. Furthermore, it is weak in prioritization of reforms, results framework, and monitoring aspects. The government is expected to revise the PFM strategy document based on the findings and recommendation provided through PEFA and MAPS assessments. The World Bank is supporting the government in its efforts to reform and strengthen procurement as well as the overall PFM system.

Risk assessment and mitigation

13. The FM residual risk is assessed to be 'Substantial' mainly as a result of delays in entity external audit reports at EEU and DBE and weak internal audit oversight especially at MoWIE. In addition, internal controls weaknesses are noted at EEU as revealed in external audit reports, the recent reports of which are issued with a disclaimer opinion. Financial reporting from MoWIE is weak and delayed. There are delays in budget approvals at EEU and MoWIE. The nature of the project also poses risks related to

property management and internal controls challenges in advance. Action plans that encompass the mitigation measures for the risks and weaknesses are prepared, agreed, and documented in table 5.1.

Table 5.1. Action plan and mitigation measures

Sl. No.	Action	Expected date	Responsible
1	Improve budget preparation and monitoring: (a) Prepare AWPBs on time. (b) Authorize payments based on approved budget. (c) Maintain budget tracking mechanism. (d) Produce regular budget monitoring reports with explanation for major variances.	During implementation.	DBE/EEU/MoWIE
2	Improve accounting arrangement: (a) Develop project FM Manual. (b) Provide training on the FM Manual. (c) Map the existing chart of accounts with the project needs to match the project activities. (d) Assess current capacity and recruit finance experts as and if required. (e) Provide capacity-building training/guidance to finance staff.	(a) Within 2 months of project effectiveness. (b) Within 2 months after FM manual is approved by the World Bank. (c) Within 2 months of project effectiveness. (d) After effectiveness. (e) During implementation.	DBE/EEU/MoWIE
3	The internal auditor will include the project in the annual plans and will perform an audit on an ongoing basis and share the report to the World Bank.	During implementation.	DBE/EEU/MoWIE
4	IFR/report issues: (a) Agree on the formats and content of the IFR. (b) Trainings will be provided by the World Bank. (c) IFRs will be submitted to the World Bank within 45 days from the end of the quarter.	(a) Agreed during negotiation (completed) (b) Within 4 months of effectiveness. (c) Within 45 days of the end of the quarter.	(a) DBE/EEU/MoWIE (b) World Bank (c) DBE/EEU/MoWIE
5	**Audit issues** (a) Recruitment of external auditors at early stages of the project. (b) Project annual financial statements will be prepared on time and strict follow-up on timely closure of accounts will be made. (c) Submission of annual audited financial statements and audit report including the management letter. (d) Disclosure in accordance with World Bank policy.	(a) Within 3 months of effectiveness. (b) Within 3 months of year end. (c) Within 6 months of the end of each fiscal year. (d) Annually.	(a) to (d) DBE/EEU/MoWIE

Sl. No.	Action	Expected date	Responsible
	(i) The World Bank requires that the borrower disclose the audited financial statements in a manner acceptable to the World Bank. (ii) Following the World Bank's formal receipt of these statements from the borrower, the World Bank makes them available to the public in accordance with the World Bank Policy on Access to Information. (e) Agree on the audit TOR. (f) Prepare and submit a comprehensive time-bound action plan to address issues raised in the entity audit reports and status of current implementation. (g) Provide progress update on the implementation of the action plans to address the issues raised in the recent entity audit reports. (h) Clear entity audit backlogs.	(e) By negotiation (completed). (f) Before negotiation (completed). (g) During implementation - Quarterly until issues are resolved. (h) March 2021.	(e) DBE/EEU/MoWIE and World Bank. (f) EEU (g) DBE/EEU/MoWIE. (h) EEU/DBE

Financial Management Implementing Entities

14. Project FM arrangements will be coordinated and managed by each of the three implementing entities (MoWIE, EEU, and DBE) for their respective parts. Apart from assuming overall FM responsibility for project funds, they will ensure, at a minimum that (a) the project FM activities are carried out efficiently and in accordance with acceptable accounting standards; (b) the project financial affairs and administration are carried out according to the financing agreement and POM/FM Manual; (c) qualified accountants are recruited/assigned to handle the project funds; (d) adequate internal controls are in place and internal auditors provide regular support to the project; (e) the project financial transactions are audited by independent external auditors in accordance with international standards on auditing; (f) funds are transferred and or payments are made on time to implementing entities; (g) acceptable financial reports are delivered on time to the World Bank; and (h) budgets are prepared on time, approved, and disseminated to users. No funds will be transferred to other entities. Should a need arise in future to transfer resources to other entities, then an FM assessment will be conducted to ensure that adequate FM capacity exists and to mitigate risks.

Project FM arrangements

Budgeting

15. **Budget preparation and approval.** EEU and MoWIE follow the Ethiopian government fiscal year, which runs from July 8 to July 7 (Hamle 1 to Sene 30), while DBE's fiscal year runs from July 1 to June 30. MoWIE follows the GoE's budgeting procedures and calendar, while EEU and DBE follow their internal procedures. Approval of the annual budget is at the prerogative of the Board of Directors at EEU and DBE,

while the budget of MoWIE is approved and proclaimed by the Parliament. For this project, budget preparation will be led by the units created in each entity to manage projects, that is, PMO at EEU, project management unit at MoWIE, and the External Fund and Credit Management Directorate at DBE. Each entity will prepare the project AWPB for the activities/components it implements. The annual budget preparation process of the project will be aligned to the respective entity's budgeting process and the project budget will be included and approved as part of the entity budget. The implementing entities will notify their annual plans and budgets to the World Bank and are expected to obtain 'no objection' from the World Bank well before the start of the fiscal year to which the budget relates. Lessons learned from current World Bank-financed projects note that there are delays in budget approval at EEU, lack of detailed budget at DBE, and discrepancies between the proclaimed amount and project budget at MoWIE. These are expected to be addressed for this project. Detailed project budget procedures will be documented in the FM Manual/POM to be prepared for the project.

16. **Budget control and monitoring.** Each implementing entity will follow the budget and implement it as foreseen in the project document and/or the financing agreement. Expenditures will be authorized based on the budget in the project document and approved annual budgets. Budget tracking system, either using the available systems (such as SAP and Peachtree) or off the system using spreadsheets, will be established to track and report budget utilization by components, category, and line items. In addition, report-based monitoring will be made whereby actual expenditure should be compared to the budget on a regular basis and explanations and remedial actions should be sought for significant variations as appropriate. In this respect, financial reports including IFRs should be used which will include a variance analysis, notes on FM performances, and explanations on material variances. The POM/FM manuals for the project will provide detailed procedures on budget monitoring. Current lessons note that transaction-level budget monitoring is not performed at EEU; budgets versus expenditure reports are not periodically analyzed and reported in program quarterly reports at MoWIE and EEU. These should be addressed.

Accounting

17. **Accounting policies and procedures.** EEU and DBE have adopted IFRS and use accrual basis of accounting. Both have their own accounting policy and procedure manuals.[29] MoWIE uses the GoE's accounting policy and procedures and applies modified cash basis of accounting. The project will be required to use the government's modified basis of accounting to report on sources and utilization of funds. The project will have the FM manual to cater to the needs of the project. It will incorporate the design and FM arrangements for the project mainly focusing on the areas of budget, accounting and staffing, internal control and internal audit, fund flow, auditing, transaction coding and reporting aspects, chart of accounts, FM role and responsibilities of implementing entities, and so on. FM manual preparation should be finalized within two months of effectiveness of the project. Training on the FM manual will be conducted within two months after the FM manual is approved by the World Bank.

18. **Accounting software and transaction recording.** EEU uses the ERP-SAP while DBE uses a computerized accounting system which is a product of TEMENOS called T-24 CBS (T-24) to process and journalize transactions. Both EEU and DBE supplements their respective systems by using off-the system memorandum records for some accounts to report for the current World Bank-financed projects. On the

[29] The EEU accounting policy and procedure manual is at the draft stage and expected to be approved by the management and Board.

other hand, MoWIE uses IBEX for its treasury transaction whereas project transactions financed through grant or loan have been captured and reported using Peachtree accounting software. For this project, each entity will use its own system by mapping the respective chart of accounts to meet the project reporting requirements. Details will be described in the project FM manual.

19. **Accounting centers.** As noted above, the project financial arrangements will be led by EEU, DBE, and MoWIE. Therefore, the accounting centers for project funds are (a) EEU, (b) DBE, and (c) MoWIE. All these institutions will maintain acceptable accounting books and records and prepare financial reports in line with the system outlined in the FM manual. Each implementing entity is responsible for maintaining the project's records and documents of the project transactions, which will be made available to the World Bank's regular supervision missions and to the external auditors. Detailed procedures for maintaining and retaining documents and records will be discussed in the FM manual.

20. **Accounting staffing.** The assessment noted that there is a staffing challenge at MoWIE while there is adequate staffing at both EEU and DBE. For this project, MoWIE is required to recruit/assign a dedicated accountant for the project within two months of effectiveness. On the other hand, the current staffing structure at EEU and DBE is deemed adequate for the project. However, if the workload increases there may be a need to recruit during implementation and there should be a review and evaluation of the status during implementation.

21. **Capacity building/training.** Focused and continued FM training is essential for the success of the project. Thus, each entity will include FM annual training as part of the AWPB to train new and existing staff to build capacity and to address turnover challenges.

Internal control including internal audit

22. **Overall internal control.** Internal control comprises the whole system of control, financial or otherwise, established by management to (a) carry out the project activities in an orderly and efficient manner, (b) ensure adherence to policies and procedures, (c) ensure maintenance of complete and accurate accounting records, and (d) safeguard the assets of the project. Each entity will use its own systems and procedures, including those relating to authorization, recording, and custody controls. The project-specific control requirements will be documented in the project FM manual. The procedures outlined in the project FM manual will be applied stringently.

23. **Internal audit.** It is envisaged and agreed that the project will be subject to an internal audit review at each of the three implementing entities and this will be included in their respective annual work programs. This is to help management be aware of internal control and compliance issues in a systematic manner and in real time so that remedial actions are promptly taken. There are independent internal audit directorates at both EEU and DBE which report directly to their respective boards and have their own manuals. The assessment noted that the EEU internal audit directorate has capacity limitations with half of the structure vacant and it is indicated that the staff lack the required expertise to conduct audits in accordance with the expected quality. Currently no audit software is employed, and all the auditing functions are conducted manually. Quarterly audit reports are submitted to the board and management though implementation of audit recommendations by management remains to be low. MoWIE also has an internal audit directorate which performs financial and performance audits. The directorate uses the internal audit manual issued by the MoF. It conducts audit and report findings quarterly. It suffers from

severe understaffing. From the structures that require 11 auditors, 4 are currently on board. It was noted that the directorate does not perform review of project accounts though it has included it in its audit plan. The management should strive to address these challenges.

Funds flow and disbursement arrangements

24. **Disbursement method.** The project may follow one or a combination of the following disbursement methods: advances to DA, reimbursements, direct payment, and special commitments. For advance to the DA and subsequent replenishment as well as for the reimbursement methods, the project will use report-based disbursement method. Disbursement will be made quarterly and cover cash requirements for the next six months based on the forecasts reported in the IFRs.

25. **Banking arrangements.** For the advances to the DA, the three implementing entities will be required to open a segregated DA in the NBE, denominated in US dollars for the project. This account shall be opened by the credit effectiveness date. The authorized ceiling of the DA would be two quarters forecasted cash requirement based on the approved AWPB. The implementing entities may also open an Ethiopian birr bank account for making payments in local currency to suppliers of goods and services. The implementing entities will manage both the US dollar and local currency bank accounts. These accounts will finance all eligible project expenditures according to the financing agreement. Details of the DA once it is opened and the signatories appointed are to be submitted to the World Bank.

26. **Eligible expenditures.** The project eligible expenditures are costs incurred for activities agreed and included in the financing agreement and as included in the approved AWPB (which the project submits annually, and the World Bank provides its 'no objection'). The categories include costs for goods, works, consultants or consulting services, non-consulting services, training, travel, and workshops and operating costs. Although details will be stated in the POM, attention should be given to recognizing and reporting expenditures under the following listed components in the books of accounts and in the quarterly IFRs.

(a) **Sub-component 2.1: MST.** Winning developers under this component will receive one-time capex subsidies at predetermined performance milestones. The project will disburse the subsidy against delivery/performance milestones, with support from an IVA. However, funds will be considered as expenditure following installation and successful operation of the mini-grid. Payments before this will be considered and reported as advance in the books of project accounts.

(b) **Sub-component 2.2: PBGs.** This approach could consist of a performance-based affordability gap financing amount per connection. The grant will be disbursed to qualified mini-grid developers/cooperatives after the installation and a pre-determined period (for example, three months) of successful operation of the systems upon verification by an IVA. Thus, expenditure will be reported in the books of accounts following IVA verification of connections.

(c) **Sub-component 3.1: RBF facility to incentivize market expansion into deep-rural areas and Innovation.** This component will provide targeted results-based financing to pre-qualified market players supporting development of robust and sustainable supply chains in deep

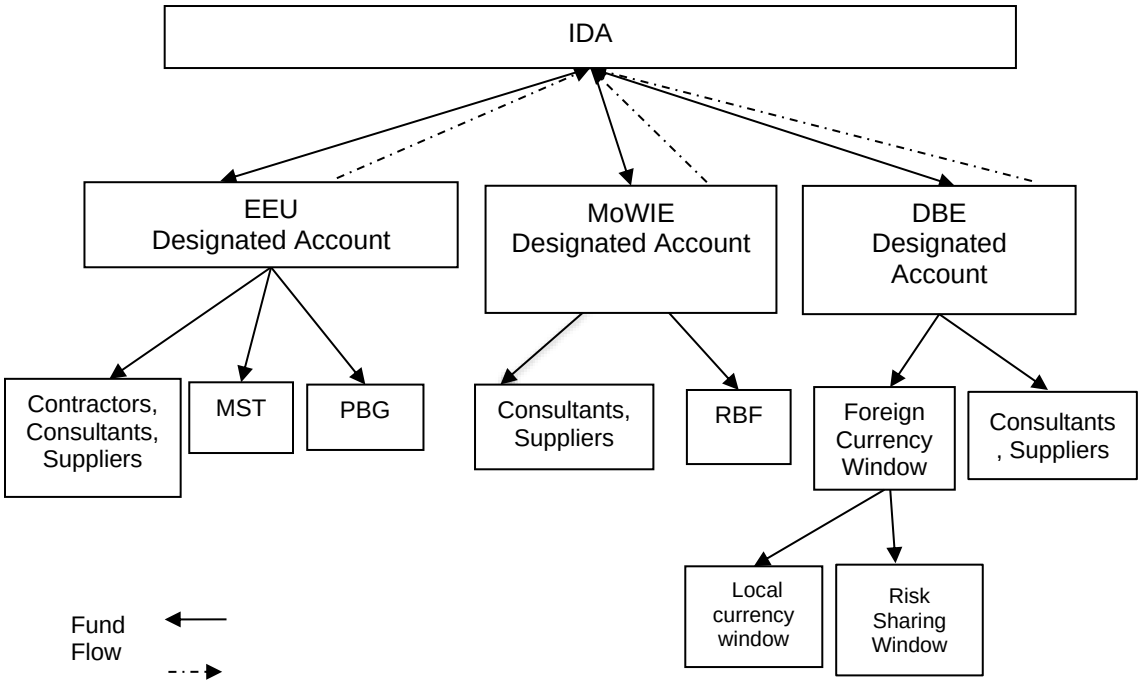
rural areas. Off-grid systems procured and distributed under the sub-component will be equipped to allow for their effective tracking and location, to facilitate M&E of the effectiveness of the approach to foster electrification in deep rural areas. Participating businesses, as part of the financing agreement, will be required to submit products and (limited) clients' data to a tracking application, which will be supplemented by location data for the equipment. The aggregated collected data will allow to identify, among other things, distribution and usage patterns and permit the fine-tuning of the targeting efforts of further policy interventions. Claims by participants will be verified by the IVA. Expenditures will be recognized for payments based on verified claims by the IVA.

(d) **Sub-component 3.2: Foreign currency window.** This window will provide importers access to foreign currency funds to underwrite the issuance of LC for the import of OGS systems and components that comply with IEC quality standards. Funds will be considered as utilized when items are shipped. Expenditures will be recognized based on shipping documents.

(e) **Sub-component 3.2: Local Currency and Risk-sharing Windows.** Both windows will be funded by reflows from the transactions in the foreign exchange window that is, repayment of loans taken under the foreign currency window by importers in local currency. Expenditures from the local currency window and risk-sharing mechanism financed by the reflows from the foreign exchange window will not be documented under the project's DA.

27. Fund flow arrangement for the project is summarized in figure 5.1.

Figure 5.1. Fund Flow Arrangement



Financial Reporting

28. The financial reporting arrangements for the project will be that each of the implementing entities prepares quarterly unaudited IFRs for the project in form and content satisfactory to the World Bank, which will be submitted to the World Bank within 45 days after the end of each quarter to which the reports relate. The format and content of the IFR will be agreed between the World Bank and each entity at negotiation. In addition, the formats will be included in the FM manual of the project.

29. The report should be derived from the system and supporting memorandum of records. The contents of the IFR will include (a) Executive summary; (b) Statement of sources and uses of fund stating summary statement of funds received from IDA, expenditures incurred on the project appropriately classified, and fund balances including opening and closing balances and the movements thereof; (c) Statement of use of funds by project activity/component comparing budgets with actual expenditures for the quarter and cumulative; (d) Statement of cash forecast for the next two quarters together detailing the cash requirement; (e) Statement of DA; and (f) notes to the IFR, advance, and retention statements, supporting schedules—such as aging analysis, bank statements, and trial balances. Trainings on IFR preparation will be provided to the project accountants by the World Bank within three months of effectiveness. The annual financial statements will adopt the same format as the quarterly reports and may also include other issues. However, the annual financial statements do not need to include statement of cash forecast/requirement. The audit TOR includes the content of the audited project financial statement.

30. Current lessons indicate that the project IFRs are submitted by DBE on time and with acceptable quality. However, the reports from EEU and MoWIE are delayed and requires quality improvement regarding variance analysis and narration about project performance.

External audit

31. The auditing arrangements will be that annual audited financial statements and audit report (including management letter) for the project will be submitted to World Bank by each implementing entity within six months from the end of the fiscal year using auditors acceptable to the World Bank. The project will submit three project audited financial statements to IDA in a form and content satisfactory to the World Bank, by the implementing entities for the respective components of the project that they manage/implement. The project auditor(s) will be appointed within three months of effectiveness by each entity. In line with good practice, the project will rotate auditors as appropriate.

32. In accordance with the World Bank's policy on access to information, the World Bank requires that the borrower disclose the audited financial statements in a manner acceptable to the World Bank. Following the World Bank's formal receipt of these statements from the borrower, the World Bank makes them available to the public according to the policy.

33. The annual financial statements prepared in accordance with acceptable standards will be produced by each entity within three months of the end of fiscal year and provided to the auditors to enable them to carry out and complete their audit on time. The auditor would express an opinion on the project financial statements. The audit will be carried out in accordance with the International Standards of Auditing issued by the International Federation of Accountants. The auditor will also provide a

management letter which will, among others, outline deficiencies or weaknesses in systems and controls, make recommendations for their improvement, and report on compliance with key financial covenants. The audit TOR for the project audit prepared by each entity was agreed with the World Bank during negotiations.

34. All project implementing entities will take the necessary follow-up actions on the audit reports and will submit the entity's response to the findings in the annual audit report to the World Bank and an action plan for any follow-up actions within a month of submission of the audit report to the World Bank.

35. Current lessons indicate that audited project financial statements from all the three entities are submitted on time with clean audit opinion. The management letters of the project also did not raise reportable internal control weaknesses. However, the assessment noted that there are delays in the entity audit report of EEU mainly as a result of the delay in the implementation of IFRS. The entity audit report of EEU for the year ended July 7, 2020, is expected to be finalized by the end of March 2021. The assessment also noted that the audit opinion on the EEU financial statements for the year ended July 7, 2019, was a disclaimer, as was the case in previous years. The major findings that led to this disclaimer of opinion are the internal control system on revenue not ensuring that all revenue is actually recorded as such; various weaknesses and errors on the recordings of fixed assets that lead the auditors to conclude they are not able to satisfy themselves whether the fixed assets are correctly stated; poor system of internal control over valuation of stock; abnormal balances found in debtors and balances which the auditors could not get sufficient evidence that they are enforceable and collectible; and errors in recoding of liabilities that lead the auditors to conclude that they cannot satisfy themselves that liabilities are correctly stated. EEU has prepared action plans and it is resolving the issues noted by auditors. In addition, the implementation of IFRS and SAP is expected to help resolve most of the issues. The DBE's entity audit is also delayed mainly due to the delay in the implementation of IFRS. The Ethiopian fiscal year (EFY) 2011 (FY2018/19) DBE entity financial statements are currently under audit, disclosing a year backlog. On the other hand, the auditor's opinion on the financial statements of DBE have been clean. The EFY 2010 (FY2017/18) audit was submitted to the World Bank and the auditors provided a clean (unqualified) audit opinion. The management reports accompanying the audit report also did not reveal any major reportable internal control weaknesses. Entity audit of MoWIE is performed by the Auditor General of Ethiopia and the audit for the EFY 2011 (FY2018/19) was completed and the financial statements for EFY 2012 (FY2019/20) are currently under audit. The auditors provided a qualified (except for) opinion on the financial statements. The project will follow up on the status of entity audit during implementation.

Supervision Plan

36. The project will be subject to full on-site supervision at least twice per year on the basis of the current FM risk assessment after mitigation measures. After each supervision visit, the risk will be measured and recalibrated accordingly. Additional supervision activities will include partial supervision on the follow-up of the compliance with the agreed FM arrangements, as well as timely follow-up of issues arising from reviews and field visits; desk review of quarterly IFRs; desk review of internal audit reports; desk review of annual audited financial statements; transaction review; and updating of the FM rating in the implementation status and results report and the FM system.

Conclusion of the Assessment

37. The conclusion of the assessment is that the project's FM arrangements meet the World Bank's minimum requirements under Bank Policy and Bank Directive on IPF and FM manual. The overall FM residual risk rating for all the entities is Substantial. The FM action plan outlines the mitigating measures, which, if implemented, would strengthen the FM arrangements.

ANNEX 6: Procurement Assessment and Arrangements

COUNTRY: Ethiopia
Access to Distributed Electricity and Lighting in Ethiopia

1. **CPAR.** The CPAR was carried out in 2002 and updated in 2010 mainly to respond to Ethiopia's progress in decentralization since 2002. Procurement capacity assessment using MAPS II has been conducted in 2019/20 and the findings are expected. In parallel, the Federal Government's Public Procurement Proclamation of 649/2009 is being revised. In Ethiopia, for federal budgetary bodies, public procurement is regulated by the Public Procurement and Property Administration Proclamation No. 649/2009. The proclamation establishes the Federal Public Procurement and Property Administration Agency (FPPPAA) as a body responsible for regulation and monitoring of federal bodies' public procurement activities. The nine regional states and two city administrations do have their own procurement proclamations and directives which are basically drafted using the federal one as a prototype. Only the two city administrations under the Federal Government, Addis Ababa and Dire Dawa, have their own local procurement laws. Both the federal and regional procurement proclamations provide that when there are conflicts between the provisions of international agreements and the proclamations, the former will prevail.

2. Both the 2002 and 2010 CPARs highlighted a number of risk areas and inadequacies in the legal and institutional setups and procurement practices that include the following: (a) FPPPAA does not have regulatory and monitoring responsibility over government-owned enterprises; (b) FPPPAA reports to the MoF and the Regional Public Procurement and Property Administration Agencies (RPPPAAs) report to their respective Bureaus of Finance and Economic Development and cannot be considered independent of the executive bodies though it seems that they have some level of management autonomy; (c) capacity of FPPPAA and RPPPAAs to monitor procurement activities and carry out comprehensive procurement audits are weak; (d) there are no formal oversight or complaint mechanisms at some regional states levels; (e) there is lack of adequate recognition for the procurement profession and a shortage of capacity to effectively enforce and implement the procurement law; (f) procurement staffs skills in understanding procurement process management requirements of the Government's own system is low, and the private sector is not organized and mature; (g) minimum time given to bidders to prepare meaningful bids is not sufficient; and (g) local preferences are given to MSEs.

3. **A procurement capacity assessment of the implementing agencies, MoWIE, EEU, and DBE, was carried out as part of the project preparation.** The review included procurement systems such as procurement legislation, procurement organization and staffing, procurement strategies, procurement operation, procurement performance monitoring and measurement, and procurement control and oversight mechanisms. The assessment found that the implementing agencies, especially EEU, have good experience in implementing World Bank-financed projects.

4. EEU will implement components 1, 2, and 4 and part of component 5 of the project. Under ELEAP, EEU made improvements in procurement processing including planning; preparation of bidding documents and request for proposals; evaluation of bids/proposals, award, and publication of contracts; contract management; and procurement record keeping, among other things. EEU also made efforts to

build the capacity of staff. However, there are still several internal weaknesses identified which need to be mitigated under this project. EEU is an SOE and is an entity whose procurement is not regulated under Ethiopia's Federal Government Public Procurement Proclamation of 649/2009. EEU has prepared its own procurement guidelines and manuals based on the federal procurement law, World Bank procedures, and other best practices. EEU's Board of Directors gives both oversight and operational function to the procurement activities of EEU. EEU has two procurement units, the central procurement unit responsible for operational procurement and the projects procurement unit under the project portfolio management directorate responsible for project procurement. However, despite that the project procurements are dominantly technical engineering procurements, the procurement units do not have engineers trained and experienced to review and provide quality assurance of the technical specifications and bidding documents and provide guidance in the judgement of material and non-material deviations during bid evaluations. There were delays in the evaluation of bids and contract implementation of procurements under ENREP. EEU does not have independent complaint handling system as it is not covered by the federal public procurement rules. There was also rejection of bidders for not meeting technical specifications, which may partly be due to lack of capacity in bid evaluation and stringent or outdated technical specifications.

5. The DBE will implement a small technical assistance element of component 5. Even though DBE has some experience in implementing ENREP, it still has a number of weaknesses such as (a) being an SOE, not having independent complaint handling mechanism, (b) not having adequate internal and external procurement audit system, (c) not having experience on the World Bank's procurement regulations, and (d) lacking adequate procurement and contract management capacity.

6. MoWIE will implement parts of component 3 and component 5 of the project. MoWIE follows the federal government public procurement rules. MoWIE did not build adequate institutional procurement capacity as it was conducting project procurements through PIUs under the project implementation directorates. The project implementation directorates with their procurement units have now become autonomous commissions. There were a number of shortcomings even in individual consultant procurements by MoWIE under ELEAP. For this project, the procurement activities of MoWIE are planned to be carried out by the central procurement and finance directorate. There is also weakness in internal procurement audit and procurement complaints handling.

7. **Procurement legislation.** EEU carries out the procurement activities using its 'Works and Procurement Policy & Procedure, volume I (Pre-Award) -OP/EEU/04-026 and volume II (Post Award) OP/EEU/04-027'. EEU also has 'General and Financial Delegation of Power (GFDP)-OP/EEU/04-028' manual, which comprehensively provides the procedures expediting the decision-making process and controlling of procurement transactions. Volume I of the document covers pre-contract award activities whereas volume II covers post-contract activities. These procurement procedural manuals govern all projects, non-project goods, services, and works supported by the business plan of EEU. The procurement procedural manual clearly declares that it may also follow the federal government procurement proclamation and the federal government policies and procedure prevails in the event of contradiction. EEU uses World Bank Standard Procurement Documents (SPDs) for International Competitive Bidding (ICB) and EEU's SBDs for National Competitive Bidding (NCB). However, the SBD documents lack standardization. The procedural manual contains complex subjective provisions such as emergency provisions and several incomplete sections. Furthermore, its proper implementation is weak. MoWIE

follows the Federal Government Public Procurement Procedures and SBDs. DBE, as SOE, follows its own procurement procedures and SBDs.

8. **Procurement staffing.** The EEU project portfolio management procurement unit is staffed with three procurement officers and one procurement manager. They have good experience and training in public procurement including World Bank procurement procedures. However, the number of officers is not considered sufficient. Furthermore, despite that EEU's procurements especially the project procurements are dominantly technical engineering procurements, the procurement units do not have engineers trained and experienced in procurement to review and provide quality assurance of the technical specifications and bidding documents and provide guidance in the judgment of material and non-material deviations during bid evaluations. To mitigate the risks, specific actions have been included in the project design. The MoWIE procurement unit has three senior procurement officers and two junior procurement officers, which is considered sufficient. DBE has twelve senior and junior procurement officers which is also considered sufficient.

9. **Procurement planning.** EEU has a good procurement planning system including using appropriate templates. However, EEU has practices of using Direct Contracting and use of MSEs even where the option for competition is available. For local competitive bidding, contracts are shared among job-seeking youth called MSEs and organized by public bodies. The DBE lacks capacity in procurement planning.

10. **Bidding document preparation and bidding.** For EEU, the bidding documents are prepared based on SBDs. However, some of the provisions such as payment schedules are not comprehensive. Due to this, there are many things which are introduced at negotiation. Adequate bid preparation period (30–79 days) was provided to bidders. MoWIE and DBE lack capacity in preparing quality bidding documents.

11. **Bid evaluation and contract award.** For EEU, there were delays in the evaluation of bids and contract implementation under ENREP. There was also rejection of bidders for not meeting technical specifications which may partly be due to lack of capacity in bid evaluation and stringent or outdated technical specifications. Bid evaluations took slightly higher than optimum (34–76 days). DBE and MoWIE lack adequate expertise for evaluation of proposals and bids. EEU, DBE, and MoWIE do not widely publish contract award notices.

12. **Contracts management.** The contract management mechanisms for EEU are well established even though there are shortcomings in terms of meeting KPIs. Contract administration of goods procurement is handled by the procurement property administration officers while works and engineering consultancy services are managed through the technical unit staff. The Works and Procurement Policy and Procedure has adequate guidance on contracts administration procedures. However, the awareness and implementation of the contract administration procedure is not adequate. There are delays in the implementation of contracts. The contract documents have adequate provisions on resolution procedures for contractual disputes. The DBE and MoWIE's contract management activities have a number of challenges including not having the required organizational structure.

13. **Procurement oversight and controls.** EEU does not have a strong procurement internal audit system. Furthermore, it does not have external audit mechanisms as it is not overseen by the FPPPAA. Hence, the internal and external procurement audits instituted under ELEAP shall be rolled out for the implementation of ADELE. MoWIE's procurement is overseen by the FPPPAA. MoWIE does not have a

strong internal procurement audit system. Furthermore, there are no regular external procurement audits by the FPPPAA. Hence, the internal and external procurement audits instituted under ELEAP shall be rolled out for the implementation of ADELE. DBE's internal procurement audit system should be strengthened.

14. **Procurement complaint handling.** The EEU and DBE do not have an independent complaint handling system as they are not covered by the federal public procurement rules. Hence, the complaint handling procedures shall follow the World Bank Procurement Regulations. When national documents are used for national bidding, complaints shall follow the complaint handling procedures of the Federal Government as agreed for ELEAP. MoWIE follows the FPPPAA complaint handling procedures. The federal public procurement proclamation enacted the establishment of a 'Board' for review and resolution of complaints in public procurement and instituted the board with five members. A complaints review unit in FPPPAA (the board secretariat) receives and compiles complaints and presents to the board and receives offence reports from procuring entities against providers. The board refers any procurement complaints perceived to involve fraud and corruption to the Federal Ethics and Anti-Correction Commission (FEACC) and/or Regional Ethics and Anti-Corruption Commission (REACC) for investigations.

15. **Procurement recording.** The DBE, EEU, and MoWIE have a reasonable level of manual procurement recording system. More structured and easy to retrieve procurement recording systems should be put in place by DBE, EEU, and MoWIE.

16. **Procurement performance measurement and monitoring.** Under ELEAP, EEU and MoWIE have been implementing KPIs for procurement performance measuring and monitoring. This will be strengthened and continued under ADELE for DBE, EEU, and MoWIE.

17. **Summary of procurement risks.** The procurement risks identified during the assessment include, for EEU and DBE, (a) limited knowledge of World Bank Procurement Regulations, contract management, and STEP; (b) the Procurement guideline (manual) and standard specifications not updated and SBDs not standardized; (c) lack of independent complaint handling system; (d) lack of adequate internal and external procurement audit mechanisms; and (e) direct award of contracts by EEU to some firms and to job-seeking youth organized by public bodies called MSEs. The risks for MoWIE are (a) not conducting procurement in a coordinated manner using the central procurement unit and (b) lack of procurement and contract management capacity including capacity to handle procurement complaints. EEU, DBE, and MoWIE do not widely advertise contract award notices, and they do not have adequate procurement performance monitoring and measurement systems. Furthermore, as a result of the COVID-19 pandemic, there may be low responses to bidding opportunities, availability of fewer goods and services providers, and delay in contract implementation. Based on the assessment, the overall project procurement risk is High.

18. **Summary of mitigation measures.** The measures to mitigate the risks should include the following: (a) flexibilities should be given to allow bid securing declaration in place of bid security and electronic bid submission and online bid opening options; (b) use online platforms for contract management where possible; (c) provide training on World Bank procurement regulations, contract management, and STEP; (d) ensure that contract award notices are published widely; (e) EEU, DBE, and MoWIE should continue to monitor procurement using KPIs developed under ELEAP; (f) EEU should engage a technical assistance consultant to review and update the procurement guideline (manual), Standard Specifications, and SBDs; (g) tenders should be advertised openly unless there are conditions for

use of direct selection; (h) EEU should continue the arrangement under ELEAP to adopt the federal public procurement complaint handling procedures; (i) EEU should continue the arrangement under ELEAP to have internal and external procurement audit mechanisms; (j) MoWIE should strengthen the central procurement unit to handle project procurement; and (k) engage a technical assistance consultant to provide support in procurement and contract management and build the capacity of MoWIE.

19. The various procurement risks, mitigation measures, responsible bodies, and timelines are provided in table 6.1.

Table 6.1. Risk and Mitigation Measures

Risk Description	Mitigation Measures	Responsible Agency	Time Frame
As a result of the COVID-19 pandemic, there may be low responses to bidding opportunities, availability of fewer goods and services providers, and delay in contract implementation.	Flexibilities to allow bid securing declaration in place of bid security and electronic bid submission and online bid opening options.	DBE, EEU, and MoWIE	In line with the Procurement plan.
Limited knowledge of World Bank procurement regulations, contract management, and STEP.	Provide training on World Bank Procurement Regulations, contract management, and STEP.	DBE/EEU/MoWIE/World Bank	Within one month of project effectiveness.
Not widely publishing contract award notices.	Ensure that contract award notices are published widely.	DBE/EEU/MoWIE	In line with the procurement plan.
DBE, EEU, and MoWIE do not have adequate procurement performance monitoring and measurement systems.	DBE, EEU, and MoWIE should monitor procurement using KPIs developed under ELEAP.	EEU/MoWIE	In line with the Procurement Plan.
The procurement guideline (manual) and standard specifications are not updated, and SBDs should be standardized.	Engage a technical assistance consultant to review and update the procurement guideline (manual), standard specifications, and SBDs.	EEU	Within three months of project effectiveess.
Direct award of contracts to some firms and job-seeking youth organized by public bodies called MSEs.	Tenders should be advertised openly unless there are conditions for use of direct selection.	EEU	Throughout the project lifetime.
Lack of independent complaint handling system.	Continue the arrangement under ELEAP to adopt the federal public procurement complaint handling procedures.	EEU	In line with the procurement plan.
Lack of adequate internal and external procurement audit mechanisms.	Continue the arrangement under ELEAP to have internal and external procurement audit mechanisms and strengthen the internal procurement audit system of DBE.	EEU/MoWIE/DBE	From project effectiveness.

Risk Description	Mitigation Measures	Responsible Agency	Time Frame
Not conducting in a coordinated manner using the central procurement unit.	MoWIE to strengthen the central procurement unit to handle project procurement.	MoWIE	From project effectiveness.
Lack of procurement and contract management capacity including capacity to handle procurement complaints.	Engage a technical assistance consultant to provide support in procurement and contract management and build the capacity of MoWIE.	MoWIE	Within three months of project effectiveness.
Lack of foreign currency for local importers to participate in national tenders.	Bidding documents for national tenders will have a provision that local bidders can quote and be paid in foreign currency for imports from abroad. The local bidder will provide details of the foreign source/provider of the goods in its bid. The payment to the foreign source/provider will be done by EEU through LC or telegraphic transfer upon authorization of the local bidder/provider. The LC will be opened by EEU on behalf of the local bidder.	EEU	Project effectiveness and thereafter.

20. **Applicable procurement procedure.** Procurement activities under the project shall be carried out in accordance with the World Bank's Procurement Regulations for IPF Borrowers, 'Procurement in IPF, Goods, Works, Non-Consulting, and Consulting Services', dated July 1, 2016, revised November 2017 and August 2018; 'Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants', revised as of July 1, 2016; and the provisions stipulated in the legal agreement.

21. **The World Bank's SPDs.** The SPDs for the World Bank shall be used for all contracts subject to international competitive procurement. As there are no readily available SPDs covering O&M and performance-based approaches, the supply and installation SPDs will be customized to include O&M and performance-based approaches.

22. **PPSD, Procurement Plan, and STEP.** The borrower prepared the PPSD which shall be agreed with the World Bank and forms the basis for a Procurement Plan for the first 18 months of the project implementation and provides the basis for the procurement arrangements. The project will use the World Bank's online procurement planning and tracking tool STEP for all transactions. The Procurement Plan will be updated by the project team as required to reflect the actual project implementation needs and agreed with the World Bank. All documents at each stage of the procurement process will be uploaded in STEP for the World Bank's prior or post review.

23. **Procurement strategies.** Component 1 will be implemented based on the conventional request for bids selection method. Component 2 will be implemented in three procurement delivery strategies. Part of the public sector model will follow the EPC approach for the generation of assets and supply and installation contract for the distribution system. For part of the public sector model and for the private sector-led MST and PBG modalities under component 2, one contractor will be selected to design, supply, install, maintain, and operate the generation assets and distribution systems for the respective packages. Details of procurement(selection) and award procedures of the PBG component of sub-component 2.2

and the RBF component of sub-component 3.1 will be included in the POM. The World Bank Procurement Regulations will not be applicable for sub-component 3.2 as it will be implemented by DBE as FI according to paragraph 2.2 of the Procurement Regulations. Procurement for component 4 will be implemented based on supply, installation, and possible O&M contracts; and separate supply and installation contracts through contractors, and force account units of EEU for isolated remote areas which may not attract the private sector. Component 5 involves procurement of institutional and capacity-building technical assistance consultancy services and goods.

24. **Institutional arrangement for procurement**: EEU has two procurement units within its head office. The first one is the procurement and facility directorate responsible to the CEO and mainly tasked to procure operational procurements. The second one is the project procurement, logistics and warehousing facilities tasked for projects procurement under the project portfolio management directorate which in turn is responsible to the CEO. There are also procurement units within the 11 regional and 28 district offices with various delegation levels. Most of the ICB and NCB procurements have been carried out at the main head office while the regional implementing agencies execute only small-value procurements. The reason for the centralization of the procurement to the head office is economy of scale from packaging and consolidation of procurement capacity. Hence, ADELE will be dominantly procured at the head office level. The project portfolio management directorate which has a good experience in project procurement and off-grid procurements under ELEAP is expected to handle ADELE procurement.

25. MoWIE was conducting project procurements through PIUs under the project implementation directorates. The project implementation directorates have now become autonomous commissions. For this project, the procurement activities of MoWIE are planned to be carried out by the central procurement and finance directorate. The DBE has a procurement unit reporting to the property and facilities management Directorate.

26. **World Bank's oversight.** The World Bank will provide oversight of procurement activities through prior reviews, which will be based on the risk level assessed by the World Bank and shall be updated periodically. The World Bank will carry out regular procurement supervision missions on a biannual basis and carry out procurement post review and/or IPRs on an annual basis. Contracts not subject to prior review will be subject to post review by the World Bank according to procedures set forth in annex II - procurement oversight of the procurement Regulations. The sample contracts for the procurement post reviews and IPRs will be selected following a risk-based approach.

27. **Summary of the PPSD**

(a) **Prior review and procurement methods thresholds:** The prior review threshold based on the risk rating of **HIGH** shall be as below. The threshold for each procurement method shall generally be as below, however, in specific cases it can be deviated based on the merit of the case as discussed in the PPSD:

Table 6.2. Prior-review and procurement methods thresholds (US$, thousands)

Prior-review thresholds		Thresholds for procurement methods							
Procurement type	High risk	Works			Goods, IT, and non-consulting services			Shortlist of National consultants	
Works	5,000	Open International or ICB	Open National or NCB	Request for quotation or National Shopping	Open International or ICB	Open National or NCB	Request for Quotation or National Shopping	Consulting Services	Engineering and Construction Supervision
Goods, IT, and Non-Consulting Services	1,500	≧	<	≦	≧	<	≦	<	≦
Consultants (Firms)	500	7,000	7,000	200	1,000	1,000	100	200	300
Individual Consultants	200								

(b) **National procurement arrangements.** When approaching the national market, as shall be agreed in the procurement plan, the country's own procurement procedures may be applied, provided that such procedure shall be subject to the requirements as provided in section 5 paragraph 5.3–5.6 of the procurement regulations for IPF borrowers.

(c) **Selection methods and market approaches.** Procurements under the project are mainly conducted following international market approaches.

(d) **18-month Procurement Plan.** The 18-month procurement plan agreed between the World Bank and the government during negotiations.

ANNEX 7: Gender and Citizen Engagement Diagnostic and Action Plan

COUNTRY: Ethiopia
Access to Distributed Electricity and Lighting in Ethiopia

Overview of the gender gap analysis

1. **Women in Ethiopia are 17 percent less likely than men to work at all, and when they do work, they tend to work fewer hours per week (in paid work).** They are also less likely than men to work in the wage sector and more likely to work in a non-farm enterprise. Women experience high rates of unemployment (50 percent), seasonal employment (37 percent), and temporary employment (13 percent). Women are also less likely than men to be paid for their work: over half of all women engaged in the agricultural sector, for example, receive no payment. The global gender gap index measures gender-based inequalities on multiple dimensions—economic participation and opportunities, education, health, and political empowerment. According to the 2020 gender gap report, Ethiopia ranks 82 among the 153 countries assessed.

2. **The gender gap in the energy sector and STEM fields can lead women to turn to less technical positions and sectors when making career choices.** At EEU, women professionals' participation stands at 24 percent (up from a baseline of 20 percent in 2017 through targeted actions under ELEAP) with women in STEM fields comprising 14.5 percent of the workforce at EEU. Women's participation in leadership roles at EEU is limited but has increased through targeted efforts from 5.8 percent to 18.5 percent in 2020. Consultations with existing mini-grid companies revealed women's labor force participation on average of 21 percent, with most women in nontechnical roles—with larger gaps identified in bigger international companies which is a key consideration to note for private sector bids in energy in Ethiopia. The staff footprint of two existing mini-grid companies in Ethiopia is 9 employees and 61 employees, respectively. In the off-grid sector that currently exists, women's employment as a percentage is at a similar rate at 20 percent and the staff footprint ranges from 10 to 30 employees. Formal technical and vocational education and training and agricultural technical and vocational education and training institutes can be engaged, and partnerships established to address skill gaps for women and also to attract talent to the sector.

3. **Though women make up more than 40 percent of the agricultural labor force and head approximately 25 percent of all farming households, women's agricultural productivity in Ethiopia is significantly lower than men's mostly due to differences in factors of production.** Female farmers have lower rates of agricultural productivity than their male counterparts. In entrepreneurship, female-owned firms underperform those owned by men in an array of critical dimensions, including profitability, survival rate, average size, and growth trajectory. A recent World Bank policy brief estimated that the annual cost of not closing the gender gap in agricultural productivity, business sales, and hourly wages is between US$1.1 billion and US$1.5 billion (approximately. 1.4 percent to 1.9 percent of the total GDP).[30]

4. **Women entrepreneurs have limited access to formal financial services.** According to the 2017 global findex data, women account for a disproportionate share of the unbanked with 41 percent of men

[30] World Bank. 2019. "What are the Economic Costs of Gender Gaps in Ethiopia?". World Bank, Washington, DC.

having accounts while only 29 percent of women have accounts. According to the World Bank's enterprise surveys, access to finance is perceived as the primary business environment constraint by micro (41 percent), small (36 percent), and medium (29 percent) enterprises in Ethiopia.[31] Women have limited access to credit primarily because they are less likely to have ownership and control of physical assets that can be used as collateral.

5. **Limited success of existing efforts to reach women with financing to purchase OGS products.** Efforts have been made under projects like ENREP which set up an initial US$20 million credit line in 2013 to facilitated access to finance for purchase of OGS products. While the credit line has grown to US$40 million over the last six years, the participation of women-owned enterprises as credit line beneficiaries was limited. As of March 2020, women made up 24 percent of the borrowers (7 out of 29 credit line beneficiaries) with a loan volume of ETB 89,907,878 (roughly US$2.5 million). On the consumer side, women beneficiaries constituted 60 percent (106,981) of the borrowers with a corresponding loan value of ETB 270,409,075 (roughly US$7.7 million). The consumer loan products are limited to the purchase of household solar system technologies, and there are more opportunities to design loan products for women's financing needs or support the distribution of further energy technologies that save time, energy, and labor in the household. Most of the MFIs in the credit line did not have a specific strategy to reach more women clients (at the start of the credit line).[32]

6. **Women in rural areas tend to rely on informal and community-based financial services.** The 2017 Global Findex data for Ethiopia show that while only 20 percent of women saved through a formal financial institution, almost twice as many (38 percent) saved through informal mechanisms such as savings clubs or savings groups. The groups, mostly comprising women, meet regularly to save and take loans from those savings. Village savings and loan associations (VSLAs) are also a vital component of the GoE's Productive Safety Nets Project as a strategy for increasing access to financial services for remote rural households, especially female-headed households. Thus, VSLAs provide an important entry point for women into financial systems in Ethiopia. When credit is constrained, women farm managers are forced to use lower-quality inputs, which limits their output, productive capacity, and potential earnings. Research conducted by the World Bank indicates that acquiring credit has a negative effect on revenues, but the quantity of credit borrowed has a positive impact. Ultimately, this suggests that the lower amount of credit that female managers obtain for their enterprises is too small to be meaningful and widens the gender gap.[33]

Project activities to address identified gaps

7. **The proposed operation includes a comprehensive strategy focused on enhancing gender equality in the off-grid sector at the enterprise, employee, and customer levels.** The targeted interventions will facilitate increased number of women in mini-grids and off-grid technology value chain and narrow the gender gap in productive uses of energy and entrepreneurship (Table 7.1). The proposed

[31] World Bank 2015 Enterprise Surveys.
[32] As part of the technical assistance for MFIs under the DBE credit line, a specific module focused on reaching more women with financing solutions has been delivered in January 2019 to all MFIs actively engaged in consumer finance aspects in the off-grid sector. The training focused on the business case for reaching women, case studies globally on what works, and designing new approaches that focus on women as the target market segment.
[33] World Bank. 2019. "Building the Evidence Base to address Gender Inequality in Ethiopia Policy Brief." Gender Innovation Policy Initiative. World Bank, Washington, DC.

interventions build on four years of comprehensive support by the World Bank on gender equality in the energy sector. Under component 1, focus will be specifically placed on building on interventions supported under ELEAP with EEU.

Table 7.1. Key focus areas on gender equality by component

Focus Area - Gender Equality	Component 1 On-grid	Component 2 Mini-grid	Component 3 Off-grid	Component 4 Health and Education facilities	Component 5 Technical assistance
Enhancing productive uses of energy for female businesses and farmers.		X			X
Increasing access to finance for women entrepreneurs.			X		X
Capacity building to MFIs and PAYGo providers to develop customer-centric models for female consumers (for example, entrepreneurs and household members).			X		X
Building the capacity of women entrepreneurs through training, networking, and mentoring.			X		X
Facilitating job creation and livelihood opportunities for women in the energy sector.	X	X	X	X	X

8. **Enhancing productive uses of energy for female business owners and farmers.** Energy access can support income earning for women's enterprises by extending the working day or enhancing agro-processing, manufacturing, or service delivery. Experience, however, has shown that it is not enough to simply extend the electricity grid or provide access to off-grid technologies and expect outcomes, such as enhanced productive uses of energy. In addition, underlying gender gaps between women and men constrain the ability of women-owned enterprises to thrive and livelihoods to be enhanced. For example, in the agriculture sector, women's access to resources and community participation is often mediated through men, either their fathers or husbands, and their agricultural contributions often go unrecognized, which limits productivity gains through energy access. The project will undertake research to identify productive uses of electricity to increase the income of women's enterprises and livelihoods. The research will map the entry points within energy access activities at mini-grid sites with links to enhancing ago-processing, such as grain milling, various manufacturing/industrial units, such as carpentry and tailoring, and the service sector, for example, in catering, bars, and restaurants that use electricity for lighting, sound systems, and refrigeration, as well as for charging mobile phones. Productive use strategies will be tailored to each of the specific sites (roughly 25 percent of all sites) and will focus on a range of interventions, for example, forming partnerships with MFIs to enhance access to finance, targeted business development services, and education on the availability and use of more modern technologies and agricultural inputs. The exact portfolio of suitable mini-grid sites is still being finalized but the approach on gender will be a first of its kind pilot in Ethiopia and also uncommon in mini-grid sector more generally globally.

9. **Increasing access to finance for women entrepreneurs in the off-grid sector.** The project will focus on increasing access to finance for women entrepreneurs in the OGS sector. Women entrepreneurs in Ethiopia are unable to access adequate and appropriate financial services to grow their business as commercial banks have extremely high collateral requirement. While these requirements are standard for any borrower, women are disproportionately affected since they often have fewer assets than men. To address this constraint, support will be focused on helping commercial banks think through alternative credit risk assessment approaches and adopting diverse business practices can allow them to grow their market outreach and increase profitability.

10. **Capacity strengthening of PAYGo provider and MFIs develop customer-centric products and business models for women entrepreneurs and household consumers.** The project will support PAYGo providers and MFIs to understand better the unique credit constraints that women as entrepreneurs, business owners, and household members face to adopt modern off-grid technologies and develop financial products that directly address these barriers. This will include developing new financial products based on alternative credit risk assessment processes for non-collateralized lending, providing product-specific financial education, and exploring new financing arrangements. A target of 20 percent of technology adoption for women-led businesses to drive a focus on the collection of sex-disaggregated data is also based on the rate of female-led SMEs across sectors which can range widely from very low rates in, for example, construction and increase in retail sector and so on.[34] Education around the benefits of the purchase of off-grid technologies for productivity, income, health outcomes, and educational attainments will also be a key factor.

11. **Leverage existing community-based models such as VSLAs to reach women in rural areas for OGS product sales.** According to the 2017 Findex data, almost 38 percent of Ethiopians saved informally, which includes VSLAs and other community-based finance mechanisms. These VSLAs can be an entry point for distributors who want to reach women in remote areas where there are no other financial service providers. The non-governmental organization experience has shown that women can use the savings from the group to purchase improved lighting and cooking equipment and become suppliers of these technologies and solve the last-mile distribution challenge. PAYGo providers and MFIs will be incentivized to reach women in rural areas through VSLAs, both as buyers of the OGS products as well as potential last-mile sales agents.

12. **Capacity development support for women entrepreneurs in the off-grid energy sector.** To foster female entrepreneurship, a technical capacity-building program will be built for women enterprise owners who will access credit lines, for example, training program on business plan development, entrepreneurship skills, business coaching, and training to women entrepreneurs to increase their participation in the off-grid energy business. Relevant technical training institutes will be given responsibilities to develop competency-based training needs assessment in developing the training program for women entrepreneurs who are thinking of accessing or have accessed the credit line facility.

13. **Facilitate job creation for skilled women as last-mile technicians and in marketing and sales.** Onboarding women technicians and sales and marketing professionals at the last-mile connection as

[34] Women represent up to 30 percent of all SMEs owners in Ethiopia; yet, they have a 78 percent failure rate. An estimated 70 percent of women-owned SMEs in the formal sector in emerging markets are underserved by financial institutions. This amounts to a financing gap of US$285 billion. From: USAID. 2013. *Financing Women-Owned SMEs*. Washington, DC.

advocates, promoters, salespersons, and technical support providers of off-grid energy can create an opportunity to reach more women and also support the gradual shift of gender norms around women's roles in the community and marketplace. Work with women frontline officers for utilities that are targeting women has shown success in reaching women clients where cultural norms might prohibit them from interacting with male staff. Providing technical support to existing and new energy companies in both off-grid and mini-grids to reshape their HR frameworks and think through job opportunities in existing roles for both women and men will be key factors. Focus will be placed on increasing girls' and young women's exposure to jobs in the off-grid energy sector, vocational programs, unconscious bias trainings, career choice guidance, addressing of child care service gaps, institutionalization of GBV prevention and response mechanism, establishment of women's professional networks, and access to upskilling and training/scholarship opportunities. The approach will be tailored to the role, for example, technical versus nontechnical, and also the career stage, for example, recruitment, retention, or advancement. Opportunities for jobs and skills development also exist in the installation and O&M stages of the electrification of public institutions. It should be noted that the exact staff footprint of mini-grid and off-grid companies is not known as the current companies may be supported through the project to scale operations and new companies are likely to be established or international companies attracted to the off-grid energy sector as new opportunities arise. The actions on employment are predicted to create new employment opportunities for roughly 200–400 women who did not have jobs in the sector and also help shift the labor force participation of women up to 30 percent in the mini-grid sector and 28 percent in OGS companies.

14. The following key indicators will track the delivery of the gender equality priorities under the project:

Table 7.2. Gender Equality Indicators

Indicator name	Baseline	End Line
Component 2: Percentage of women among total number of people employed by mini grid companies	21	30
Component 2: Number of mini-grid sites that have adopted a strategy on closing gender gaps in productive uses of energy	0	50
Component 3: Off-grid systems used in support of small businesses (Number) *Of which women-owned businesses (Percentage)*	0 *0*	750,000.00 *120,000.00*
Component 3: Percentage of women among total number of people employed by off-grid solar companies	20	28
Component 4: Adoption of skills development and job creation roadmap for women for the standalone solar system installation and maintenance for health and education facilities	None	Yes/No

Project activities to address consumer awareness and citizen engagement priorities

15. Throughout the implementation period of ADELE, a continuous and systematic consumer awareness and citizen engagement program can help improve the delivery and quality of energy service provision; improve the reachability of the technologies in all implementing localities; and bring greater service delivery, transparency, continuous dialogue, and consumer-centric grievance redressing. EEU has a five-year citizen engagement work program under ELEAP that is under implementation since 2018.

Selected departments at EEU participate in the implementation so that citizen support is available in relevant EEU operations. MoWIE has a Communication and Public Relations Directorate at the head office which has experience in working with the private sector on community awareness campaigns. MoWIE has energy bureaus at the woreda level and at the kebele level which play a key role in facilitating community-level consumer awareness and citizen engagement activities. Under each ADELE component, EEU, MoWIE, DBE, mini-grid, and off-grid companies (including cooperatives and other private sector entities) will take the responsibility to lead consumer awareness and citizen engagement activities. Staff at the federal regional, woreda, and kebele levels will support implementation at the community level to ensure activities are rooted in local contexts and realities.

16. Tools that will be used include, among others, SAs, citizen score cards, surveys, work with independent monitoring entities, community education programs, and training opportunities. The citizen engagement approach will also focus on the feedback of consumers on service, grievance, transparency, integrity, and dialogue. MoWIE will oversee and supervise overall consumer awareness and citizen engagement activities. At the launch of the project, MoWIE will develop a consumer awareness and citizen engagement guideline and strategy for ADELE to be adopted and used by all ADELE component implementers (EEU, private sector, and MFIs). The following entry points have been identified across the components.

- **Component 1.** To ensure grid-connected urban households are receiving electricity services with adequate reliability and quality, focus will be placed on building on the comprehensive citizen engagement work program designed under ELEAP which EEU has been implementing for the past two years. Focus will be placed on consumer trust and information provision, community engagements, and customer satisfaction surveys.
- **Component 2.** To ensure mini-grid operators deliver on consumer awareness and citizen engagement priorities, they will need to include details of the proposed activities in the bid according to the strategy and guideline developed by MoWIE. The mini-grid companies that will be awarded tenders will need to attend citizen engagement trainings. The delivery of a community-level energy education program (including productive uses of energy) in local languages, with customized messaging and face-to-face events such as forums and as well using print, radio, and video display with farmers and field demonstrations in local languages will be key factors.
- **Component 3.** As MoWIE is responsible for managing and administrating the facility, OGS companies will report directly to MoWIE with regard to consumer awareness and citizen engagement activities. The OGS companies that will get financing through the facility will need to implement key consumer awareness and citizen engagement activities, for example, providing consumers information on basic maintenance of products, key company contact details in case faults occur in the technology, details of repayment terms, and so on. These minimum requirements and expectations will be clearly outlined in their financing agreement. The OGS companies will need to align their operational activities with the consumer awareness and citizen engagement guideline and strategy for ADELE (adopted by MoWIE under the project). They are expected to attend training and also collaborate on consumer awareness and community education campaigns in rural areas to ensure consumers are making informed decisions. Since OGS companies are also responsible to support scale-up and expansion of innovative business models, such as PAYGo, they will

conduct targeted community-level trainings for community leaders and customers on the PAYGo system. Key principles for ensuring consumers are safe when working with PAYGo include, for example, responsible sales and pricing, good consumer service, good quality products, personal data privacy, and fair and respectful treatment.[35]

- **Component 4.** In collaboration with MoWIE, EEU will hold public forums with selected social institutions to collect information on the overall usage and effectiveness of the stand-alone solar systems. It will also implement a consumer feedback mechanism with selected social institutions that are beneficiaries under the project to ensure entities and key citizens are fully consulted and can express their concerns, feedback, and grievances especially in relation to the quality, durability, and efficiency of the stand-alone solar system. For health centers and education centers, the citizen engagement activities will mainly examine how the stand-alone solar systems enhanced the services.
- **Component 5.** A consumer awareness and citizen engagement team will be established in MoWIE which will be tasked to lead, supervise, and oversee all consumer awareness and citizen engagement activities under each component of ADELE. Right after the launch of the project, the team will develop an ADELE-wide consumer awareness and citizen engagement strategy in consultation with various entities, private sector/cooperatives, OSG companies, MFIs, and EEU which are the implementing agencies of ADELE components.

17. The following key indicators will track the delivery of the citizen engagement priorities under the project:

Table 7.3. Citizen Engagement Indicators

Indicator name	Baseline	End Line
Components 1, 2, 3, and 4: Delivery of ADELE consumer awareness and citizen engagement strategy by MoWIE	No	Yes
Components 2 and 3: Number of trainings for mini-grid operators, off-grid companies and EEU staff on the minimum standards and requirements in terms of consumer awareness and citizen engagement (to be included in POM)	0	10
Components 2, 3, and 4: Energy information and education campaigns completed (Number) (Mini-grid sites, off-grid technologies, and public institutions) (to be included in POM)	0	3
Component 3: Consumer feedback mechanism established at MoWIE for off-grid customers (to be included in POM)	0	Yes

[35] Consumer Protection Insights Learnings and recommendations from the GOGLA Consumer Protection Code.

ANNEX 8: Activity of Development Partners in the Energy Sector in Ethiopia

COUNTRY: Ethiopia
Access to Distributed Electricity and Lighting in Ethiopia

Table 8.1. Donor-supported activities in the Energy Sector in Ethiopia

Support Area	Partners	Programs	Timeline
On-grid electrification	World Bank	• Investment in last-mile electrification (densification and regularization) and institutional capacity under the RBF program, ELEAP, and EEU connection rollout plan under ENREP.	FY2018–23
	USAID	• Continued capacity building for improved use of geo-spatial platform for analysis and planning. • Technical assistance to improve EEU procurement procedures, including SBDs. • Technical assistance to EEU to reduce the cost of connections and time required.	FY2018–22 FY2018–22 FY2019–22
	Agence Française de Développement	• Proposed investment in urban network modernization, to be confirmed.	TBC
Off-grid electrification	World Bank	• Investment in pilot-scale stand-alone solar and mini-grid projects under the RBF program, ELEAP. • Credit facility at DBE to provide access to financing to support off-grid SMEs (stand-alone solar) as well as households affordability through MFIs. • Gender and citizen engagement programs (EEU).	FY2018–23 FY2019–23 FY2018–23
	European Union (EU) delegation to Ethiopia	• Clean cooking and biogas programs—National Biogas Program Ethiopia (implementation SNV). • Blending for electrification (support private investment in off-grid electrification and infrastructure investments to support electrification, split to be defined).	FY2016–21 TBD
	DFID	• Africa Clean Energy (ACE) – Technical Assistance Facility (TAF): Preparation and update of the Energy Compact; technical assistance for affordability of off-grid technologies and adoption of quality standards; support to strengthen the national industry association; customs handbook and training; lab equipment and training. • Solar product quality assurance and consumer protection (including a testing lab in Ethiopia) – via Lighting Africa (International Finance Corporation, IFC).	FY2020–23 FY2019–22
	United Nations Development Programme	• Off-grid programs to support stand-alone solar and clean cooking including a collateral guarantee facility to support expanded access to finance to companies in the sector. • Supporting access to clean energy by increasing the	FY2018–22 FY2021–25

Support Area	Partners	Programs	Timeline
		financial viability and promoting scaled-up commercial investment in mini-grids in Ethiopia. • Biogas, Biomass and Solar Trilateral Cooperation (Transitioning to Sustainable Energy Uses in the Agro-Industry Sri-Lanka-China-Ethiopia).	FY2020–23
	GIZ	• National strategy on cooperative / community managed mini-grids. • Countrywide Mapping of Institutional solar PV for social infrastructure. • Off-grid programs to support stand-alone solar and mini-grids for HHs, SMEs and social infrastructure - incl. capacity building & market development - funded by EU & EnDev. • Improved Cookstoves dissemination, promotion and alternative fuel supply, incl. innovative financing for cookstoves (CDM) and innovative private sector financing for cookstoves (Results Based Financing, RBF) – funded by EU & EnDev. • Korea Foundation for International Health (KOFIH): Off-grid health center solar electrification and water supply. • Support to a roadmap of Battery recycling framework in Ethiopia improving the lifecycle of lead-acid batteries for off-grid solar systems and other applications. • Technical assistance for national off-grid policies and regulations and improved regulatory structures. • Energy Services for Displacement Settings (ESDS) and support to energy access regulatory framework in refugee (humanitarian) context – partner with UNHCR.	FY2019–22 FY2019–22 FY2017–22 FY2019–22 FY2014–21 FY2019–22 FY2019–22 FY2019–22
	African Development Bank (AfDB)	• Support for 25 public mini-grids. • Distribution of solar home systems and improved efficiency cook stoves.	FY2020-21 FY2020-21
	USAID	• Technical assistance to EEA for national off-grid policies and regulations and improved regulatory structures for mini-grid companies. • Technical assistance for off-grid companies, particularly SHS and micro-grid companies. • Technical assistance to optimize productive use appliances and equipment. • Gender and citizen engagement programs. • Technical assistance to investors to help mobilize more private financing for off-grid companies and projects. • Clean cooking and biogas programs.	FY2019–22 FY2019–22 FY2019–22 FY2019–22 FY2019–22 FY2016-21

ANNEX 9: World Bank Group Response to COVID-19 in Ethiopia

COUNTRY: Ethiopia
Access to Distributed Electricity and Lighting in Ethiopia

Impact of the COVID-19 pandemic on the country and government response

1. **The outbreak of the Coronavirus Disease 2019 (COVID-19) pandemic has had a serious health impact.** As of early January 2021, over 128,000 COVID-19 cases with over 2,000 fatalities were registered, with a sharp acceleration in recent months. These figures are the second largest in absolute terms among Sub-Saharan African countries, after South Africa, though the caseload and mortality as a percentage of the population are near the median for the overall region. The pandemic has overstretched the health system and affected the delivery of essential health services. Other socio-economic impacts being felt across Ethiopia are already wide-ranging and serious, with the potential to become severe, depending on the combination of the pandemic's trajectory and the effects of countermeasures.

2. **COVID-19 is seriously threatening Ethiopia's gains in growth and poverty reduction.** Ethiopia grew at 6.1 percent in fiscal year (FY) 20, compared to 9 percent in FY19, as the impact of the COVID-19 pandemic took place largely in the final quarter of the fiscal year. However, the collapse in external demand experienced since the onset of the COVID-19 crisis, coupled with the effects of restrictions in domestic demand, is expected to result in a further growth slowdown in FY21. Merchandise exports, excluding gold, declined by 11.9 percent during July-September 2020 (year-on-year). Both exports and imports of services, dominated by air transport, recorded negative growth in FY20. Meanwhile, foreign direct investment has been severely hit, with inflows declining by 20 percent in FY20, contributing to weakening reserve levels. The consequent reduction in government revenue is putting pressure on its provision of social services. Government spending and investment has been an important engine of poverty reduction in the past and reduced spending resulting from decreased government revenue and foreign exchange may have detrimental long-term effects on the poor.[36]

3. **Economic impacts of COVID-19 are already being felt by households, and although impacts are more severe in urban areas, rural households are also affected.** High-frequency monitoring surveys of households conducted by the World Bank in Ethiopia since April 2020 shows that the COVID-19 pandemic is affecting economic activity, households' incomes, and food security. The survey results indicate that by April 2020 about half of households had experienced either a reduction or a total loss of income since the viral outbreak. Though fewer households have subsequently reported further income erosion, apparently income losses have not yet bottomed out: a quarter of them reported reductions between August and September. Food security is a major concern in Ethiopia, particularly for rural residents, and is at the heart of the country's social protection system. According to the COVID monitoring survey about four in ten rural households in Ethiopian were still experiencing moderate or severe food insecurity in September

[36] World Bank. 2020. "Covid-19: Potential Poverty and Social Impacts in Ethiopia and Policy Responses." *Poverty and Equity Global Practice: Ethiopia COVID Response Notes*.

compared to 30 percent in urban areas. An estimated 1.4 million jobs, accounting for 19 percent of current employment, were estimated to be threatened due to the crisis during the second half of 2020.

4. **The pandemic and associated containment measures have adversely impacted the private sector, particularly in the horticulture, hotel, tourism and travel sectors as well as manufacturing firms in the industrial parks**. In FY19, export revenues generated from the horticulture sector—which includes flowers, fruits, vegetables, herbs and spices—stood at US$ 318 million. Following the outbreak in early March 2020, most European and Middle Eastern countries closed their borders. As a result, the horticulture sector has suffered a significant loss. In a similar vein, the private sector in the apparel and garment industry experienced an unprecedented global demand shock. Disruptions to the global value chains continue to weigh on the supply of intermediate inputs and imported raw materials, which are vital for the manufacturing sector. Against this backdrop, several SMEs have shifted their production lines to fulfill the growing need for both personal protective equipment (PPE) and items for consumer use such as masks and hand sanitizers. As most workers in industrial parks are women, the pandemic weighs more adversely on women's participation in the labor force.

5. **The government health services response to COVID-19 has been robust.** The GoE declared a state of emergency under Article 93 of the constitution on April 8, 2020. It moved quickly to institute measures to limit the spread of COVID-19, including outreach activities for awareness raising and behavioral changes, expanding COVID-19 testing capacity and institutions to provide clinical care and quarantine for COVID-19 suspects and patients; and establishment of a multisectoral COVID19 response taskforce and coordination platforms at each level of government.

6. **The government has also adopted several measures to address the social and economic impacts of the pandemic.** Measures aimed at mitigating the impacts on people include additional expenditure on healthcare, indexation of safety net benefits, provision of temporary incomes support and/or emergency food aid to the vulnerable, introduction of guidelines to ensure the distribution of agricultural inputs. To support firms, authorities have adopted temporary tax exemptions and preferential access to currency for those firms importing raw materials and equipment to be used in the prevention and containment of COVID-19, and have allowed businesses to carry forward the loss incurred this fiscal year, as well as to take advantage from some tax deferrals and waivers. In the financial sector, the NBE has availed ETB 15 billion liquidity in support of private commercial banks, to allow them to provide debt relief and refinancing to customers in need, and forbearance limits have been extended. In addition, mobile banking limits at the CBE has been increased, and a new eTransactions proclamation has been adopted by the Parliament. The government adjusted quickly its rural and urban Productive Safety Net Programs (PSNPs) by waiving the work requirements, increasing coverage to more beneficiaries and increasing temporarily the benefit amounts paid to particularly vulnerable households. The government also decided to expand the urban PSNP to more cities more quickly to provide support for particularly affected urban poor households (including refugees and host communities), and also promote youth employment and enhance job search services to support the economic and social recovery. To address the negative impacts of the pandemic on education, the government is promoting adjustments in the sector such as advancing the establishment of digital learning platforms and providing additional school grants to support the re-opening of schools.

7. **The government is proactively managing its unanticipated financing needs.** Revenue mobilization at the federal level is estimated to have declined by the equivalent of 0.5 percent of GDP in

FY20, with domestic direct and indirect tax collection impacted by COVID-19. Preliminary data suggests despite the surge in healthcare spending in response to the pandemic, expenditure execution fell short from budgeted amounts. Overall, the federal government fiscal deficit is estimated to have widened from 2.5 percent of GDP in FY19 to 2.8 percent of GDP in FY20. The deficit is expected to further increase in FY21, to 3 percent of GDP, as the economic impacts of the crisis continue to be felt. Meanwhile, the external financing gap has increased by an estimate of US$ 1.8 billion with respect to pre-COVID-19 projections, to a total of about US$ 5.2 billion in FY21. Expected financing sources include official transfers and prospective budget support (US$ 2.3 billion, including IDA grants), IMF disbursements (US$ 0.9 billion), privatization proceeds (US$ 1.1 billion), debt service reprofiling (US$ 0.6 billion) and gains from the debt service suspension initiative (US$ 0.2 billion). As part of its response to the financing challenges, the government has performance and policy actions to adopt a state-owned-enterprise debt resolution framework to facilitate debt repayments and minimize risks to macroeconomic instability and implementation of a new Excise Tax Proclamation in FY21 aims to mitigating the fall in revenue.

World Bank Group support for responding to the crisis

8. **The WBG's approach in Ethiopia has been adjusted to meet the challenges posed by COVID-19 while maintaining a longer-term strategy to sustain transformational structural reforms embedded in the CPF for Ethiopia for FY2018-22 (CPF).** These adjustments have been made within the CPF's focus areas and objectives, particularly the second focus area of Building Resilience and Inclusiveness which includes objectives to improve safety nets, healthcare systems, basic education, water supply & sanitation, and management of natural resources which impacts livelihoods. Focus Area 1 also provided strategic underpinning for addressing COVID-19 impacts, particularly in improving access to finance and agricultural productivity As a result, support is being provided across four pillars consistent with the overall World Bank Group approach: (a) Saving lives, (b) Protecting poor and vulnerable people, (c) Ensuring sustainable business growth and job creation, and (d) Strengthening policies, institutions and investments. World Bank Group support has been primarily focused on the first two of the three expected stages of crisis response: relief—emergency assistance to confront the immediate threat to public health, as well as short-term economic, financial and social impacts; restructuring—strengthening health systems, restoring human capital, and pursuing economic reforms, debt resolution, and recapitalization of firms and financial institutions; and resilient recovery—exploiting new opportunities for more inclusive, resilient, and sustainable longer-term development.

9. **World Bank lending has been rapidly adjusted to support Ethiopia across several dimensions of its response to the pandemic.** Ethiopia was among the first countries to receive financing from the World Bank's COVID-19 rapid response facility, with a $US82.6 million COVID-19 operation approved on April 2, just weeks after the crisis became evident in the country. This operation is already two-thirds disbursed and has been critical in providing medical supplies; capacity building; information outreach; and supporting quarantine, isolation, and treatment centers. This was followed by the rapid preparation of a supplemental US$ 250 million Development Policy Financing approved in June 2020 to augment an earlier US$ 500 million approved in March 2020 to support the country's growth and competitiveness agenda. New social protection operations were fast-tracked and levels of financing were increased, with the US$ 400 million Urban Productive Safety Net and Jobs Project (UPSNJP, P151712) approved in September and the US$ 512.5 million Strengthening Ethiopia's Adaptive Safety Net Project (SEASN, P172479) approved in November 2020. These operations build on preceding support for productive safety nets and support

cash transfers, food aid, public works, self-employment through start-up grants, and labor market integration of youth. Employment and development in the agriculture and rural areas were pursued through US$ 80 million in Additional Financing of the Second Agriculture Growth Project (P148591) approved in September 2020 and a US$165 million Additional Financing for the Ethiopia Resilient Landscapes and Livelihoods Project (P163383) in December 2020, financed by the Green Climate Fund. These latter two operations had been previously planned but were accelerated and design was adjusted to meet COVID challenges. A US$14.9 million COVID-19 Education Response project, financed by the Global Partnership for Education, was approved in August 2020 to complement the ongoing General Education Quality Improvement Project (P163050). Finally, a new US$ 100 million Additional Financing for the Women Entrepreneurship Development Project (P122764) was rapidly prepared and approved in December 2020.

10. **The World Bank's lending pipeline in the latter half of FY2021 similarly reflects changes to address COVID-19 impacts.** A second phase under the COVID-19 Emergency Response MPA is under preparation to support Ethiopia's anticipated rollout of vaccines in 2021. Support for small businesses and jobs creation is being fast-tracked through a previously unplanned US$ 200 million Additional Financing for Small and Medium Enterprise Support Project, both of which are to be delivered in Q3 FY21. In addition, preparation of the US$200 million Digital Foundations Project has been accelerated, recognizing the central role of connectivity to help overcome the human development and commercial impacts of COVID-19 restrictions. Similarly, preparation of the US$500 million Access to Distributed Electricity and Lighting, central to improving connectivity, was fast-tracked. Finally, a new US$250 million additional financing for the Enhancing Shared Prosperity through Equitable Services Program for Results operation is planned to help sustain service delivery improvements at the local level. Development policy lending as well as an integrated agriculture and rural development program as well as support for the financial sector and human capital development are being planned for FY2022.

Table 9.1. Ethiopia World Bank Program lending adjustments triggered by COVID-19 Impacts

				COVID-19 Impacts Addressed			
Operations	**Adjustment triggered by COVID-19 Impacts**	**Commitment amount, millions USD**	**Approval**	Saving lives	Protecting poor and vulnerable	Business growth and jobs	Strengthen policies and institutions
Approved Since April 2020							
COVID-19 Emergency Response (Health Services)	New (not planned prior to pandemic)	82.60	Apr-20	X			X
Supplemental DPF	New	250.00	Jun-20			X	X
COVID-19 Education Response Project	New	14.85	Aug-20		X		
Urban Productive Safety Net and Jobs Project	Fast-Tracked	400.00	Sep-20		X	X	X
Strengthen Ethiopia's Adaptive Safety Net	Fast-Tracked	512.50	Nov-20		X		X
AF Women's Entrepreneurship Development Project	New	100.00	Dec-20			X	

Planned in Remainder of FY2021							
AF Small and Medium Enterprises Finance Project	New	200.00	Q3 FY21			X	
Access to Distributed Electricity and Lighting	Fast-Tracked	500.00	Q3 FY21			X	X
Ethiopia Digital Foundations Project	Fast-Tracked	200.00	Q3 FY21			X	X
2nd phase, COVID-19 Emergency Response (prep for vaccination)	New	200.00	Q3 FY21	X			X
Additional Financing to GEQIP-E for Refugees Integration (Partially funded by Global Partnership for Education)	Design adjusted	122.50	Q3 FY21		X		
AF for the Enhancing Shared Prosperity through Equitable Services	New	250.00			X		X

11. **Implementation of several ongoing operations has been adjusted to address COVID-19 impacts.** With respect to saving lives, the Ethiopia Health Millennium Development Goal Program-for-Results (PforR) operation is financing critical inputs to the national response, such as PPE for frontline health workers. Ongoing operations supporting the water sector (One WASH), the Second Urban Water Supply and Sanitation Project (restructured) and urban development have had implementation adjusted to focus more on addressing emergency water rehabilitation, providing access to WASH services in priority health institutions and quarantine centers and hygiene interventions to curb the potential spread of the virus. The rural and urban PSNPs temporarily waived the work requirements to allow for social distancing. Payments to beneficiaries were made in advance for three months instead of monthly payments, and protective gear was adjusted the needs of the pandemic. Hygiene measures, protective gear and intensive information accompanied the implementation of the safety net programs. Implementation support by the World Bank has been similarly constrained owing to distancing requirements. In addition to supporting connectivity for World Bank staff in Ethiopia as well as key operational counterparts within the framework of projects, the Ethiopia program is accelerating the use of the geo-enabled monitoring system and analogues in its operations, particularly in the transportation and agriculture sectors.

12. **IFC's FY2020-24 strategy for Ethiopia is incorporating responses to COVID-19 to protect livelihoods and minimize destruction of markets.** Prior to the onset of the COVID-19 pandemic, the strategy envisaged investment adjustments in the Financial Institutions Group (FIG), Manufacturing Agribusiness and Services (MAS) and infrastructure sectors for FY20-FY24. At present the economic and humanitarian impacts of the pandemic has pushed IFC's work in sectors to scale back investment services targets and increase advisory services in order to protect, and then support the subsequent recovery and creation of, new markets. In particular, based on the findings of IFC deep dive on two Ethiopian banks prior to the COVID-19 pandemic, risks associated with the Ethiopian financial sector were considered very high. With COVID-19, these risks have become even higher (e.g. higher NPLs, increased liquidity crunch, higher impact on capital adequacy). Regarding MAS sectors, IFC is looking to provide working capital lines to firms with headroom to take on debt. In particular, the MAS team is supporting clients operating in the agribusiness sector to enter new regional export markets with the aim to increase diversification and

minimize longer supply chain risk. The infrastructure sector, given the specific case of Ethiopia, private sector involvement is already limited so there is not much to protect/restructure as a result of the COVID-19 pandemic As of June 2020, IFC's potential program size in Ethiopia stands at US$ 285 million in Investments Services (IS) (base case) and US$ 25.5 million in Advisory Services (AS) for the five-year period. In line with IFC's COVID-19 response framework, going forward the strategy will aim to reduce market destruction and subsequently restructure and create new opportunities in the tourism, agribusiness and health sectors.

13. Going forward, the unprecedented global nature of the COVID-19 crisis, coupled with Ethiopia's structural bottlenecks, hamper prospects for private sector engagement in key sectors.

- *Financial Sector*. The COVID-19 fallout will likely exacerbate shortage of foreign exchange, in part due to reduced exports, remittances, and tourism receipts. In addition, giving the financial sector's mounting vulnerabilities, the pandemic will likely result in a local currency liquidity crisis, putting additional strain on the private sector's limited access to finance. Lastly, financial institutions (FIs) will likely require additional working capital to provide liquidity support to their SME clients.
- *Agribusiness*. A prolonged COVID-19 outbreak in Ethiopia, including protracted containment measures and transport restrictions will impede farmers' access to markets and disrupt fresh food supply chains, thereby exacerbating food shortages created by the ongoing locust invasion. On the demand side, the closure of restaurants and street food outlets removes a key market for many producers and processors that may result in a temporary glut or trigger upstream production cuts as shown in some countries in the meat and beverage (malt) sectors.
- *Manufacturing.* The COVID-19 crisis has adversely impacted the sector, as evidenced by a decline in investment inflows, disruption in supply chains, and a loss of revenue and jobs as a result of a contraction in global economic growth and demand.

14. **The WBG's knowledge agenda has similarly been adjusted to support Ethiopia on evidence and analysis for dealing with the pandemic's impacts.** The World Bank has supported several rounds of rapid phone surveys administered to firms (eight rounds) and households (seven rounds) between April and November 2020. The results of these surveys have been communicated with the Jobs Commission. Online briefs highlighting the main findings in each round and special topic reports focusing on firm's behavior during the pandemic, and gender effects and have been published on the website of the World Bank Group. The findings have also been used to inform the response to COVID in World Bank Group operations. A policy note synthesizing the survey findings to inform policies for enhancing household welfare recovery from the COVID crisis is planned for FY21 Q3 The World Bank's regular biannual Ethiopia Economic Update (the 8th in the series) issued in the summer of 2020 assesses the macroeconomic and microeconomic impacts and policy responses to COVID-19. In addition, a Country Economic Memorandum is under preparation for completion in early FY22 and will help identify additional reforms to support inclusive and sustainable growth going forward. Analytical work in HD sectors, particularly health, has been recalibrated to address the changed circumstances for service delivery.

15. The WBG's efforts are closely coordinated with other development partners. The World Bank coordinated closely with the IMF as well as major bilateral partners of Ethiopia on financing support to cushion against the impacts of COVID-19 in the context of the government's robust policy response. This included the US$250 million supplemental Development Policy Financing (following the approval in March

2020 of the previously prepared US$500 million Second Growth and Competitiveness DPF) alongside the IMF's approval in May 2020 of a Rapid Credit Facility of US$410 million which supplemented its own three-year US$ 2.9 billion program for Ethiopia. With respect to financing for health services to save lives, the World Bank's provision of US$82.6 million complemented by support from the Global Fund, GAVI, the Jack Ma foundation and other bilateral and multilateral donors. The World Bank also place a central coordination role for managing financing for the productive safety nets programs. In particular, the rural safety nets program will be complemented by US$190 million in financing in FY21 from eight other development partners (and US$967 million over five years). The World Bank also plays a similar coordinating role for development partner funding for water and sanitation via the One WASH program and basic education through the General Education Quality Improvement Project. For One WASH the World Bank mobilized additional grant funding from the Dutch government and is in talks to mobilize additional resources from the Danish government for WASH interventions.

ANNEX 10: Map of Ethiopia

COUNTRY: Ethiopia
Access to Distributed Electricity and Lighting in Ethiopia