Program Information Documents (PID)

Appraisal Stage | Date Prepared/Updated: 23-Feb-2023 | Report No: PIDA272454

BASIC INFORMATION

A. Basic Program Data

Country	Project ID	Program Name	Parent Project ID (if any)
Ethiopia	P178895	Ethiopia Electrification Program Additional Financing	P160395
Region	**Estimated Appraisal Date**	**Estimated Board Date**	**Practice Area (Lead)**
EASTERN AND SOUTHERN AFRICA	01-May-2023	15-Jun-2023	Energy & Extractives
Financing Instrument	**Borrower(s)**	**Implementing Agency**	
Program-for-Results Financing	Ministry of Finance and Economic Cooperation	Ethiopian Electric Utility, Ministry of Water and Energy	

Program Development Objective(s)

The development objective is to increase access to electricity in Ethiopia and to enhance institutional capacity for planning and implementation of the Government's electrification program.

COST & FINANCING

SUMMARY (USD Millions)

Government program Cost	499.00
Total Operation Cost	250.00
Total Program Cost	250.00
Total Financing	250.00
Financing Gap	0.00

FINANCING (USD Millions)

Total World Bank Group Financing	250.00
World Bank Lending	250.00

B. Introduction and Context

1. **This program paper seeks the approval of the Board of Executive Directors to provide Additional Financing (AF), through an IDA loan in the amount of US$250 million to the Ethiopia Electrification Program (ELEAP, P160395).** The Program for Results (PforR) parent operation was approved on March 1, 2018, for an original amount of US$ 375 million with a closing date of July 7, 2023. The proposed AF seeks to build on the strengths of this successful program by expanding its scope and timeline and adjusting its disbursement linked indicators (DLIs) to efficiently deliver on its implementation. With a cumulative disbursement of over 76 percent, the program's current progress towards achieving its development objective as well as the program's implementation progress are satisfactory.

2. **The proposed AF aims to sustain and scale up the parent operation's impact along with an extension of the timeline.** The proposed AF would help finance the expenditures associated with: (1) An increase in grid connections to support the universal electricity target of the NEP; (2) The expansion and result modification (in response to lesson learnt during parent program implementation) across other key DLIs to incentivize investments around Program priorities and action-taking; (3) The introduction of a new DLI in support of enhanced utility performance and revenue collection.

3. **The proposed AF will be complemented by a restructuring which includes:** (1) Extension of the closing of the Program by 3 years in line with the proposed AF duration; (2) Closing of Standalone Systems activities under DLI2 and reallocation of funding in support of mini grids and additional grid connections; (3) Adjustments in elapsed and upcoming DLRs to better reflect the evolution and lessons during Program implementation; and (4) Reallocation of resources towards additional on grid connections. This would be the first restructuring of the program.

Country Context

4. **Despite Ethiopia's consistent economic success over the past decade, the COVID-19 pandemic, the drought, the war in Ukraine, and internal conflicts, have significantly decelerated economic growth in Ethiopia.** Over the last two decades (2000-20), Ethiopia's economy experienced strong, robust growth of about 10 percent per annum, which to a great extent was driven by large scale investment in public infrastructure and energy. Ethiopia was able to achieve a substantial expansion of energy, road, railway, and telecom infrastructure, financed by domestic and external public borrowing. However, there has been relatively slow progress in the development of a vibrant private sector, especially in manufacturing and modern services. In addition, there is growing indebtedness in major state-owned enterprises (SOEs), foreign exchange shortages and persistent inflation.

5. **Ethiopia remains one of the poorest countries in Africa, with a GDP per capita of US$925[1] in 2021 as poverty and vulnerability are worsened by internal conflict, the COVID-19 pandemic and natural disasters.** Though Ethiopia has made considerable progress in poverty alleviation as extreme poverty[2] declined from 30.8 percent in 2015 to 25.2 percent in 2020, the continuation of this trend remains uncertain.[3] According to the Macro Poverty Outlook 2022, the poverty trajectory is variable due to various

[1] https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=ET
[2] Extreme poverty is measured at the international poverty line of US$1.9 per day in 2011 purchasing-power-parity terms.
[3] 2015 and 2020 poverty rates based on the datasheet of the Macro Poverty Outlook, 2022, World Bank

offsetting factors. On one hand, armed conflict, persistent droughts in lowland regions, and rising inflation are expected to have driven a large number of people into poverty. On the other hand, growth in other sectors and parts of the country is expected to reduce poverty. Whether the poverty effect of growth can fully offset the impact of the conflict, droughts and inflation is unclear, but their intensity suggests that progress in poverty reduction will be lower than in previous periods. The magnitude of estimated household income losses in conflict affected woredas suggest the conflict could have pushed as many as 3 million people into poverty.[4]

6. **Ethiopia is highly vulnerable to river and urban flood, landslide, volcano, extreme heat, and wildfires**.[5] According to data from the International Organization of Migration (IOM) from December 2022, there are 2.73 million internally displaced people (IDPs) in Ethiopia.[6] Climate-induced displacement has become increasingly prominent in Ethiopia. The cyclic nature of drought conditions in Ethiopia has contributed to a dearth of water resources, deepening food insecurity in the country and in the wider East and Horn of Africa region. As of September 2022, drought was the primary cause of displacement for 18.9 percent of the IDPs concentrated in Somali, Oromia and Afar regions. Floods are another major cause of climate-induced displacement, particularly in low laying areas.

7. **Ethiopia aims to become 'Africa's Beacon of Prosperity' by improving income levels, raising the standard of living and upholding social dignity and freedom according to its 10-Year Development Plan (2021 – 2030).** The 10-Year Development Plan (2021 - 2030), based on the 2019 Homegrown Economic Reform Agenda, aims to sustain the remarkable growth achieved under the previous Growth and Transformation plans (GTP I and II)[7]. The GTP drove a structural transformation of the economy and society for Ethiopia with the aim to reach middle-income status by 2025. The 10-Year Development Plan places strong emphasis on economic and infrastructure sectors, targeting agriculture, construction, trade, manufacturing, transport, energy, and technology innovation industries. For energy development, the main objectives presented include significantly increasing the electricity customer base by quadrupling it, expanding the coverage of grid-based electricity from around 35 percent to 96 percent, and reducing electricity losses by half. The overall focus of the energy development strategy is to expand high quality energy infrastructure and provide electricity access that is equitable, affordable, and reliable.

Sectoral and Institutional Context

8. **Ethiopia has invested substantial resources in expanding generation capacity and grid network.** As a result, installed generation capacity has more than quadrupled, despite setbacks from the pandemic, from 1,100 MW in 2009 to 5,340[8] MW in 2022. Ethiopia's clean based energy sector is an outlier in the region with over 98 percent of generation capacity coming from clean sources, out of which 91 percent is sourced from hydropower**.** As a result, the bulk of grid-connected electricity generation is sourced from

[4] Ethiopia Resilient Recovery and Planning Framework (ERRRF. Volume B), January 2023
[5] https://thinkhazard.org/en/report/79-ethiopia

[6] IOM. 2022. Ethiopia National Displacement Report 14 (August – September 2022), published December 2022. URL: https://dtm.iom.int/reports/ethiopia-national-displacement-report-14-august-september-2022. Due to operational reasons Tigray isn't included in the national total.
[7] https://ethiopianmonitor.com/2021/03/23/mps-approve-ethiopias-10-year-development-plan/

[8] Data provided by the Ethiopian Electric Utility

renewable energy.[9] The 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.

9. **To mitigate its high dependence on large hydropower and to conserve scarce public resources, Ethiopia is now implementing a transition towards private sector driven development of solar, wind and geothermal power.** Although Ethiopia has a large and expanding hydropower capacity, the actual energy supplied from these plants is subject to variations in seasonal and annual rainfall amounts, as well as climate change. To mitigate the risk during an adverse hydrological year, Ethiopia plans to secure private investments in geothermal for a reliable baseload capacity, and in solar and wind for low-cost but variable renewable energy. The transition is underpinned by a 2018 Public Private Partnership (PPP) Proclamation by the Ethiopian parliament which also resulted in setting up of the PPP unit housed in the Ministry of Finance.

10. **Ethiopia is positioned to become a regional energy superpower which would provide additional revenue to the sector and generate much needed foreign exchange**. In the fiscal year ending July 2022, Ethiopia secured over US$95 million in revenue from exports to Sudan and Djibouti. This amount comes at a critical time when foreign exchange reserves are dwindling due to insufficient exports and heavy dependence on imports. The Eastern Electricity Highway Project (EEHP), which connects the power grids of Ethiopia and Kenya with nearly 1,000 km of a 500 kV high-voltage power transmission line is capable of up to 2,000 MW of bi-directional power transfer. The Power trade between Ethiopia and Kenya achieved commercial operation in November 2022 with an initial flow of 160 MW to be scale-up over three years as grid constraints on the Kenyan side are alleviated. A first of its kind in Sub-Saharan Africa, this power transmission line, is the flagship of power trade in the Eastern African Power Pool (EAPP) region, with electricity generated largely from renewable energy sources.

11. **Despite progress made in recent years, Ethiopia still reports the third highest electricity access deficit in Sub Saharan Africa[10] with the lowest access found in rural and deep rural areas.** As of 2020, only 51 percent of Ethiopians have access to electricity, leaving close to 57 million people without electricity services.[11] About 93 percent of urban households are connected to the grid (99.9 percent in Addis Ababa), while only 40 percent of rural households have access to electricity services, with a big proportion of rural customers gaining access through off-grid solutions. The highest deficits are experienced in deep-rural areas (beyond 25 km from the existing grid), where 5-10 percent of people have access to electricity; followed by rural areas (between 2.5 km and 25 km from the grid), with 10-15 percent of access; and the peri-urban areas (within 2.5 km from existing MV lines), where 20-30 percent of people have access.

12. **Challenges in the utility's operational and financial performance affect the sector's ability to sustainably expand energy services in line with the demands of Ethiopia's vast and growing population**.

[9] Updated NDC of Federal Democratic Republic of Ethiopia, July 2021. https://unfccc.int/sites/default/files/NDC/2022-06/Ethiopia%27s%20updated%20NDC%20JULY%202021%20Submission_.pdf

[10] Tracking SDG 7: The Energy Progress Report. 2022.

[11] https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?locations=ET

EEU's aggregate losses currently stand at 27.2 percent[12], resulting in substantial lost revenue as they are largely related to billing abnormalities, non-payments, unregistered energy meters, and unmetered consumption. Since energy sales is the main source of revenue, strengthening billing and collection is critical to improving the financial and operational health of the utility. To reduce commercial losses, installing Advanced Metering Infrastructure (AMI) at distribution transformers, streetlights, and commercial and industrial customers would be crucial to not only detect and minimize losses, but also save money and improve revenues in the long run. A lack of appropriate billing IT infrastructure has also contributed to substantially poor revenue collections. Therefore, increasing the adoption of EEU's digital payment platform would improve operational performance by increasing efficiency and bringing down operational expenditures related to billing and collection. The first phase of AMI roll-out has already been launched under ELEAP. Additional investments in AMI and IT infrastructure and customer indexing, among others, will further assist the utility in improving financial and operational performance.

PforR Program Scope

13. **The proposed US$250 million AF will scale up the existing DLIs, with emphasis on increasing grid connections, and extend the duration of the program by 3 years**. Based on the Program achievements and the results from the MTR and follow-on discussions, the scope of changes that will be introduced through this Additional Financing include: (1) Additional US$250 million to expand results achieved around grid and off-grid connections and other key DLIs to incentivize investments around Program priorities. The proposed AF would also allow the provision of additional 861,000 on-grid connections, a critical support required to help the GoE advance towards their access targets; (2) Introduction of a new DLI in support of enhanced utility performance through the preparation, adoption, and implementation of operational procedures together with the tracking of selected key performance indicators (KPIs) to improve performance and enhance revenue collection. Actions financed would include the adoption at scale of AMI for large commercial and industrial customers, adoption of standardized prepaid billing system, and customer indexing. This is key to enhance the operational and financial performance of EEU, fundamental to enhance the sector's ability to expand energy services in line with the demands of Ethiopia's vast and growing population.

14. **The parent program will be restructured through:** (1) Extension of the closing date by 3 years in line with the proposed AF duration from a current close date of July 7, 2023, to July 7, 2026; (2) Closing of the Standalone Systems activity under DLI2 and reallocation of funding in support of mini grids and additional grid connections; (3) Adjustments in elapsed and upcoming DLRs to better reflect the evolution and lessons during Program implementation; and (4) Reallocation towards additional on-grid connections. Changes under the restructuring are required to provide flexibility to the Program and adapt to better reflect the latest service delivery models and priorities for institutional and planning capacity. The original program boundaries and results framework will be maintained and updated to reflect the AF. The type of expenditures supported under the AF remains the same as in the parent operation and will consist of on-grid electrification efforts along with strengthening the sector's institutional and planning capacity, strengthening fiduciary systems, improving gender and citizen engagement systems, and strengthening safeguards systems

[12] EEU can currently only estimate their aggregate energy losses (technical and commercial), which stand at about 27.2 percent. Aggregate energy loss for Ethiopian Calendar Year 2013; including technical and commercial losses. Under the ELEAP AF, EEU will undertake activities to more accurately discern between commercial and technical losses (i.e. customer indexing, network mapping, transformer metering).

Table 1: Program Boundaries for the PforR

		For the PforR					
Government program[13]		**Original PforR**		**Original PforR after Restructuring**	**With AF**		**PforR after restructuring + AF**
Results Area	US$ million	Area, note exclusions	US$ million	US$ million	Area, note exclusions	US$ million	US$ million
1. On-grid Electrification	2,100	**Densification (all included):** 1. Last mile connections 2. Health and education sector electrification 3. Low/medium voltage network expansion and reinforcement **Expansion (excluded):** 4. Medium/high voltage network expansion and reinforcement	324	329.6	Same as original PforR	205	534.6
2. Off-grid Service Provisioning	2,500	**Stand-Alone Solar** 1. Public sector program (included) 2. Private sector engagement (excluded) **Mini-Grids** 3. Public sector program (included) 4. Private sector concessions (excluded) 5. Other PPP/co-op models	14.5	13.5	Same as original PforR	0	13.5

[13] Presents total investments including GoE contribution (US$1,500) and syndication (US$3,150). Source: NEP 2.0

		(excluded)					
3. Sector Capacity and Institutional Reform	50.0	No exclusions	36.5	31.9	Same as original PforR with the addition of financial and operational performance of the utility	45	76.9
Total	**4,650**		**375**	**375**		**250**	**625**

C. Program Development Objective(s)

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The development objective is to increase access to electricity in Ethiopia and to enhance institutional capacity for planning and implementation of the Government's electrification program.

15. **The PDO will remain unchanged.** The Program Development Objective (PDO) is to increase access to electricity in Ethiopia and enhance institutional capacity for planning and implementation of the Government's electrification program. The PDO remains relevant and remains unchanged under the AF. The current program area is also retained in the AF as the current geographic scope remains relevant.

16. The following outcome indicators, which are maintained from the parent operation, will be used to measure the achievement of the PDO.

i. **PDO Indicator 1:** Number of people provided with on grid electricity services;
ii. **PDO Indicator 2:** Number of people provided with off-grid electricity services;
iii. **PDO Indicator 3**: Improved planning and capacity of the electricity sector.

D. Environmental and Social Effects

17. Environmental and Social System Assessment Addendum (ESSA Addendum) is prepared by the World Bank team for the "Additional Financing Ethiopia Electrification Program (AF- ELEAP) (P178895)" in accordance with the six 'core principles' and in line with the Bank's Guidance for PforR Financing ESSA (Sep. 2020). This ESSA will add on to the findings of the ESSA that has been

prepared in 2018 for ELEAP parent program. The ESSA assessed the government's institutional capacity to plan, monitor, and report on environmental and social management measures and address social and environmental issues associated with the Program, particularly under the targeted institutions; the Ethiopian Electric Utility (EEU) and the Ministry of Water and Energy (MOWE), and the respective regional offices and city level counterparts.

18. The E&S performance rating of the parent Program is Satisfactory (Dec 2021). This performance rating is mainly attributed to the establishment of Environmental and Social Management System (ESMS) established at federal and regional levels; maintenance of the ESHS structure; preparation of the Environmental and Social Management System Guideline (ESMSG), Resettlement System Guideline (RSG), Environmental and Social Policy and Procedure as well as Health and Safety Policy and Procedure; Occupational Health and Safety and E&S management efforts for off-grid projects including E&S screening, instruments preparation, consultations; GRM established at corporate EEU level through call centers, webpage, in person complaints at any EEU district offices, and comment boxes at EEU offices; implementation of OHS measures is comparatively better across projects, particularly PPE distribution and usage by EEU workers and consultants for off-grid projects.

19. The performance limitations of other aspects (particularly on on-grid projects) are reflected in the ESSA. Although the parent program established an ESMS and maintained the ESHS staff at federal and regional levels, there is a break in implementation of the ESMS, particularly for on-grid projects. This is due to a lack of E&S screening and instruments preparation for on-grid projects, no supervision and monitoring, failure to brief program affected communities on environmental, social, health, and safety risks of the program. Moving forward, these issues are to be addressed and the ESMS should be fully implemented as per the adopted guidelines of the POM which will be updated for the AF. However, there is a gap in maintaining consistency in the areas of environmental and social screening, preparation of E&S instruments, field supervision, monitoring during the performance of program activities, stakeholders' consultation, and addressing grievances at all levels.

20. Detailed recommendations are provided in the ESSA as part of the program action plan. This includes; (i) Extending the on-grid projects screening and instrument preparations; (ii) Close follow-up and monitoring of E&S measures during projects implementation (extending the ESHS structure up to the district level through focal persons and preparation and implementation of Capacity Building Action Plan (iii) Enhance Safety management activities by continuing PPE provision, emphasizing safe work procedures; development of COC, incorporating detailed clauses in contractors contract documents on workers and public safety, giving more attention to public safety on top of workers safety, and undertaking of rigorous supervision and monitoring on workers and public safety implementation, particularly by contractors (iv) Improving accessibility and establishing grievance committee for on-grid projects (v) Enhancing timely and appropriate consultation, compensation and resettlement for PAPs if any. Based on the review of relevant documents, consultations with the implementing agencies and other key stakeholders, and field observations, a SWOT analysis has been performed for the environmental and social system assessment. Thus, the key findings of the Environmental and Social Systems Assessment (ESSA) Addendum reacknowledge the sufficient legislative and regulatory basis availability and the need for the institutions to ensure consistency with the six core principles of the PforR.

E. Financing

21. From the total US$413.7 million envisaged, IDA is expected to finance US$250 million of the total expenditure and the rest by Government (US$88 million) and connection fees (US$75.7 million). Table showing financing is below.

Table 2: Program Financing (US$ millions)

Financing Source	Parent Program (M US$)	AF Program (M US$)	Total (M US$)
GoE	247.5	88	335.5
Connection Fees	54.0	75.7	129.7
IDA	375.0	250.0	625.0
TOTAL	**676.5**	**413.7**	**1090.2**

Program Financing (Template)

Sources	Amount (US$ Million)	% of Total
International Development Association (IDA)	**250.00**	**100.00**
IDA Credit	250.00	100.00
Total Program Financing	**250.00**	

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CONTACT POINT

World Bank

Name :	Maria Alejandra Arango Campo		
Designation :	Energy Specialist	Role :	Team Leader(ADM Responsible)
Telephone No :		Email :	marango@worldbank.org

Name :	Lara Born		
Designation :	Senior Energy Specialist	Role :	Team Leader
Telephone No :	458-7676	Email :	lborn@worldbank.org

Borrower/Client/Recipient

Borrower :	Ministry of Finance and Economic Cooperation		
Contact :	Abebe Tadesse	Title :	Director IFI
Telephone No :	251111113247	Email :	atadessef@mofed.gov.et

Implementing Agencies

Implementing Agency :	Ethiopian Electric Utility		
Contact :	Shiferaw Telila	Title :	Chief Executive Officer
Telephone No :	251111550811	Email :	shiftelsen@gmail.com

Implementing Agency :	Ministry of Water and Energy		
Contact :		Title :	
Telephone No :		Email :	

FOR MORE INFORMATION CONTACT

The World Bank
1818 H Street, NW
Washington, D.C. 20433
Telephone: (202) 473-1000
Web: http://www.worldbank.org/projects