



The World Bank

Additional Financing Ethiopia Electrification Program (P178895)

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TECHNICAL ASSESSMENT FOR THE
ADDITIONAL FINANCING ETHIOPIA ELECTRIFICATION
PROGRAM(P178895)

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ABBREVIATIONS AND ACRONYMS

ADELE	Access to Distributed Electricity and Lighting in Ethiopia
AF	Additional Financing
AMI	Advanced Metering Infrastructure
CE	Citizen Engagement
DAG	Development Assistance Group
DLI	Disbursement Linked Indicator
DLR	Disbursement Linked Result
DoE	Department of Electrification (restructured to the Electrification and Energy Information Lead Executive Office; EEILEO)
EEILEO	Electrification and Energy Information Lead Executive Officer (formerly Department of Electrification; DoE)
EEU	Ethiopian Electric Utility
EEP	Ethiopian Electric Power
ELEAP	Ethiopia Electrification Program
ENREP	Electricity Network Reinforcement and Expansion Project
ERP	Enterprise Resource Planning
ESS	Ethiopian Statistics Service (formerly Central Statistical Agency; CSA)
ESSA	Environmental and Social System Assessment
E&S	Environmental and Social
ESMS	Environmental and Social Management System
ETB	Ethiopian Birr
FEACC	Federal Ethics and Anti-Corruption Commission
FM	Financial Management
FY	Fiscal Year
GBV	Gender Based Violence
GDP	Gross Domestic Product
GERD	Grand Ethiopian Renaissance Dam
GHG	Greenhouse Gas
GIS	Geographic Information System
GoE	Government of Ethiopia
GRM	Grievance Redress Mechanism
GTP	Growth and Transformation Plan
IFA	Integrated Fiduciary Assessment
IFRS	International Financial Reporting Standards
IPF	Investment Project Financing
IPP	Independent Power Producer



IVA	Independent Verification Agency
KPI	Key Performance Indicators
kWH	Kilowatt hour
LV	Low Voltage
M&E	Monitoring and Evaluation
MoWE	Ministry of Water and Energy
MTF	Multi-Tier Framework
MTR	Mid-Term Review
MV	Medium Voltage
MW	Megawatt
NEP	National Electrification Program
NPV	Net Present Value
O&M	Operations and Maintenance
OGS	Off-grid Solar
PAP	Program Affected Persons
PDO	Program Development Objective
PforR	Program-for-Results
POM	Program Operational Manual
PP	Procurement Planning
PPE	Personal Protective Equipment
PPP	Public-Private Partnership
PV	Photovoltaic
REF	Rural Electrification Fund
RPP	Revenue Protection Program
RVR	Results Verification Report
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SAS	Standalone Solar Systems
SBD	Standard Bidding Document
SOE	State-Owned Entity
ToR	Terms of Reference
UEAP	Universal Electricity Access Program
WTP	Willingness to pay



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A. Strategic Relevance and Program Description

1. The strategic relevance of the proposed additional Financing (AF), as identified in the detailed technical assessment of the parent program remains valid.

Strategic Relevance

2. In 2021, the Government of Ethiopia (GoE) unveiled its 10-Year Development Plan (2020/21 - 2029/30) which replaced the previous Growth and Transformation plans (I and II)¹. The GTP (I and II) embarked on a structural transformation of the economy and society for Ethiopia to reach middle-income status by 2025. The 10-Year Development Plan sets a long-term goal for Ethiopia to become ‘Africa’s Beacon of Prosperity’ placing strong emphasis on economic and infrastructure sectors. For energy development, the main objectives presented include significantly increasing the electricity customer base from 5.8 million² to 24.3 million, expanding the coverage of grid-based electricity from 33 percent to 96 percent and reducing electricity loss. The overall focus of the energy development strategy is to provide electricity access that is equitable, affordable, reliable and expand high quality energy infrastructure.

Status of Ethiopia’s energy sector and electricity access agenda

3. **Although Ethiopia’s installed capacity does not face constraints in the near future, its distribution network will need rehabilitation.** Ethiopia’s clean based energy sector is an outlier in the region with over 91 percent of generation capacity sourced from hydropower. The country has made

¹ Ethiopian Monitor- *MPs Approve Ethiopia’s 10-year Development Plan.*

² As indicated in the GoE’s *Ten Year Strategy Document*. EEU indicates 4.3 million registered metered connections. The source of the discrepancy may stem from a combination of meter sharing, off-grid customers and unregistered EEU customers.



major strides in increasing generation capacity despite the setback from the pandemic and increased its installed capacity from 4,426 MW in 2016 to 5,256 in 2022. Looking forward, through 2025, the GoE plans to have installed a total of over 12GW of generation capacity, with the finalization and commission of the Grand Ethiopian Renaissance Dam (GERD) and Koyisha power plant- translating to an average available energy of roughly 40TWh. Over this same period, demand is expected to reach no more than 35TWh and 7GW during peak periods.³ Given that the supply mix is being diversified with additional solar, wind and geothermal resources, only significant delays in the commissioning of the GERD large hydro plant could cause demand to exceed available energy supply. Instead, the more pressing bottleneck will likely come from the utility's distribution capacity. It would be critical to assess whether the power evacuation system including the distribution network to demand centers are sufficiently available. EEU has already identified this potential constraint and has requested financing for rehabilitation of the grid under ADELE as well as additional financing from the World Bank. Additionally, DLI 4 of the ELEAP AF will support the development of a distribution master plan to enable EEU to better identify constraints in its distribution network.

4. **Despite making impressive strides in improving access, Ethiopia has a major access deficit.** In 2005, the Government of Ethiopia (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. Despite the success of the UEAP in connecting towns and villages, last-mile connections across the country did not keep pace and only 20 percent of Ethiopians had access in 2015. As of 2020, only 51 percent of Ethiopians have access to electricity, leaving close to 57 million people without electricity.⁴ Ethiopia still reports the third highest electricity access deficit in Sub Saharan Africa with the highest deficits 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. Most rural customers gain access through off-grid solutions. 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.

Contribution of ELEAP to Ethiopia's electricity access agenda

5. **ELEAP contributes to the electricity access agenda by supporting on-grid connection and strengthening sector capacity; complemented by concurrently implemented off-grid access programs.** To address the electricity access challenge, in November 2017, the GoE launched the National Electrification Program (NEP), that represents the investment roadmap and action plan for achieving universal electricity access by 2025. The updated version of the NEP (NEP 2.0) was launched in 2019 and presents a full-fledged integrated approach to electrification, building on best practices and incorporating off-grid solutions to complement grid electrification. The NEP is organized into three pillars that seek to address the dominant challenges of the sector: (a) Pillar 1: On-grid electrification; (b) Pillar 2: Off-grid service provisioning; and (c) Pillar 3: Sector capacity and institutional reform. Similar to the parent program, additional financing for ELEAP is fully aligned with the NEP in scaling up electricity connections

³ USAID- Ethiopian Power System Expansion Masterplan Study Demand Forecast

⁴ <https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?locations=ET>



in areas within the network reach under Pillar 1. Strong emphasis will be laid on Pillar 3 as strengthening the capacity of sector institutions is crucial to achieve grid electrification targets. The proposed additional financing will not target off grid access under pillar 2 as the recently effective (September, 2021) Access to Distributed Electricity and Lighting in Ethiopia (ADELE, P171742) program, would continue to expand off grid access, into underserved and vulnerable areas leveraging decentralized renewable energy technologies, in particular solar photovoltaic (PV) mini-grids, standalone solar systems and individual off-grid solar (OGS) systems for households, smallholder farmers, commercial and industrial users, and social institutions.

6. **The ELEAP Additional Financing will build on the strengths of the parent program- focusing on enabling more on-grid connections and strengthening the capacity of the sector by investing in capacity building, metering and billing infrastructure, and planning capacity.** The World Bank approved ELEAP on March 1, 2018. A US\$375 million Program-for-Results (PforR), ELEAP supports GoE in providing electricity access to citizens and enhancing its institutional capacity for planning and implementation of the electrification program. ELEAP provides financing for results achieved under the program. 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. Ethiopian Electric Utility (EEU) has remarkably achieved over 925,800 grid connections (with 118,000 additional connections under verification) out of the 1.08 million on-grid connections, benefiting over 4.6 million people. Based on this performance, EEU is expected to have an early achievement of its on-grid connections target by the next reporting cycle due July 7, 2023. EEU has also completed mini grids for the electrification of 10 rural towns/villages providing connections to close to 17,000 people. Overall, Ministry of Water and Energy (MOWE) and EEU have also made substantial progress in undertaking measures to strengthen their planning, monitoring, and fiduciary capacity. The proposed Additional Financing (AF) would expand on-grid connections, support improved utility performance (including through Advanced Metering Infrastructure (AMI) adoption, customer indexing, and the incorporation of a standardized prepaid billing system), place stronger emphasis on key actions and spending from the implementing entities building on the progress made under the original program, and extend the implementation timeline.

B. Technical Soundness

7. The technical soundness of the Additional Financing as described in the technical assessment of the parent program remains valid. As with the parent program, the Program features are not unique nor does the technical design include new or untested technology. Moreover, the AF has been designed to build on the successes of the parent program, under which EEU has demonstrated competence and important results building on-grid connections. The AF is leveraging EEU’s proven track record and capacity to deliver on grid connections through intensification activities, where EEU is showing acceleration of the electrification results. In addition, the AF will support the utility in scaling efforts to modernize its systems and distribution infrastructure by adopting AMI at scale and indexing customers, among other technologies to support enhanced revenue and reduced commercial losses.

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Lessons learned from parent program

9. The design draws key lessons learned from the four years of implementation of the parent program, which have strengthened the technical soundness of the proposed operation. On DLI 1, EEU has resolved some of the major issues caused by the COVID-19 pandemic- especially related to supply chain constraints. The issues constraining the rollout pace in the early years of the program stemmed from the unavailability of meters in the local market, delayed deliveries from international providers, and the capacity of the EEU service centers. EEU overcame this by stocking on additional meters and improving the capacity of the staff in the service centers, thereby doubling their connections from an initial 145,000 connections in 2020 to over 372,000 connections in 2021. Additionally, the evolution of the connection costs along with EEU's annual connections targets have informed the AF. Relatedly, as EEU executes on these connection targets, the utility must also consider and plan for the readiness of the current grid infrastructure to accommodate the additional demands on the network and identify the investment needs for future additional energy demand. The utility must consider the ability of new customers to afford the connection costs, an issue that will become more pertinent as the grid approaches more remote areas of the country. EEU has identified this potential constraint and has taken steps to address it with grid rehabilitation support from the ADELE project, by requesting additional rehabilitation support from the World Bank and by placing resources for its distribution planning capacity under DLI 4 of the ELEAP AF.

10. The ELEAP AF draws on EEU's proven track record of making on-grid connections. During the ELEAP Mid-Term Review (MTR) completed in Q4 FY21, the Bank and client teams worked to assess the likelihood of completing the remaining activities under the program and devise a way forward. On DLI 2, the activities pertaining to the distribution of SAS were looked at closely, given that the model initially envisioned under ELEAP differed substantially from the one under the more recently approved off-grid project, ADELE. The assessment concluded that a restructuring of the SAS activities targeting households envisioned to be implemented by EEU is recommended. This is due to the substantial financing provided through ADELE to support access to SAS and the updated delivery models under the project, which will be through the private sector without participation from EEU. The shift of funds will allow EEU to achieve additional connections through its grid expansion activities. EEU has already demonstrated proficiency in delivering on-grid connections and the pace of connections has substantially accelerated. Hence, this reallocation will allow EEU to leverage its strengths in a way that maximizes connections and continues to build on its core competence and expertise.

11. A confluence of rising costs and poor revenue capture have heightened the need for ensuring the financial and operational performance of the utility. Rising global costs have posed an additional burden on the utility's operational and financial performance. This would affect the sector's ability to expand energy services in line with the demands of Ethiopia's vast and growing population, intensifying the critical need to improve the utility's financial and operational performance. As such, the need to



incorporate a new DLI (#8) focused on enhancing the financial and operational performance of the utility has been identified. EEU's high percentage of loss (~27 percent aggregate losses⁵) leads to lost revenue, with commercial losses contributing a significant portion of the total losses. These commercial losses are largely related to billing abnormalities, non-payments, unregistered energy meters, and unmetered consumption. Since energy sales constitute the main source of EEU's 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. A first phase of AMI roll-out has already been launched under ELEAP with successful results. Additional investments in AMI and IT infrastructure, among others, will further assist the utility in improving financial and operation performance as well as allow EEU to distinguish between commercial and technical losses more accurately- a measure that will allow the utility to identify and eliminate sources of commercial loss.

Connection targets and costs per connection

12. **EEU faces increasing costs of connection as it reaches more remote areas.** In order to achieve universal electricity access, it is crucial that the utility reaches also remote areas of the country, particularly where low-income households reside. While the utility connects customers in increasingly remote areas, planning for its grid connection costs will become more imperative. Connection costs per customer will not only increase as the utility reaches these areas but will also likely have more variability as some communities will need a relatively simple LV connection while others require more significant investments such as transformer erection and MV extension. In addition to the complexity of reaching more rural areas of the country, global, regional, and local circumstances have impacted the costs borne by EEU. These include the global COVID pandemic, the global supply chain crunch, and the conflict in the northern region of the country, which have all placed upward pressure on both the cost and complexity of extending the EEU's grid network.

13. **For the three years that comprise the AF period, ELEAP seeks to provide financing towards 861 thousand additional connections.** EEU has indicated this a feasible target in the life of the AF, given that supply chain constraints may limit their ability to deliver connections beyond that number, with a recent record of around 320-350 thousand a year. Their recent performance, as shown below in figure 1, demonstrates that the 861 thousand connections would present an attainable, albeit challenging, target for completion under the AF.

⁵ 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).

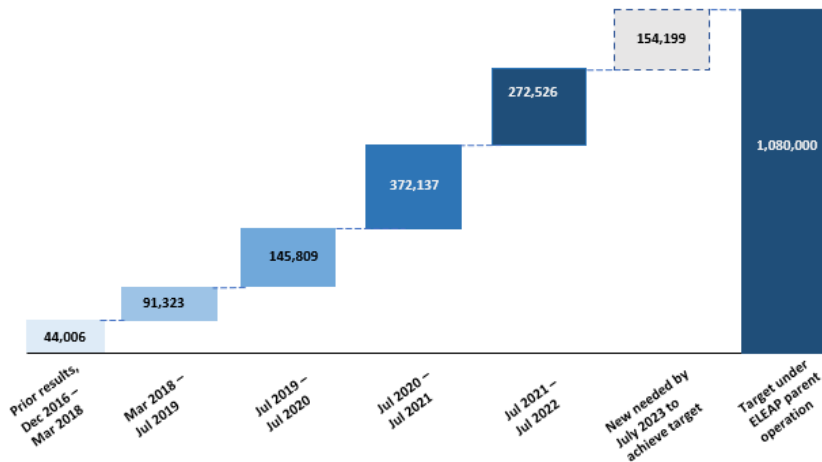


Figure 1: On-grid Connections delivered under ELEAP Parent Program⁶

14. **Analysis from EEU indicates the costs per connection (for connections with one wooden LV pole erection) have been US\$428.2.** Discussions with EEU have indicated that the preponderance of new connections will fit in this cost category, with some connections only needing a service drop and others needing additional poles. Hence, this cost has been used as the representative cost for new connections in the AF. Based on this, the total cost of 861,000 connections over this period is estimated at US\$ 368.7 million. Of this, a government contribution of 25.3 percent (US\$93.4 million) is expected, with customers contributing 19.1 percent of the cost (US\$70.3 million) and the WB bridging the gap with the remaining 55.6 percent (US\$205 million).

Table 1: Contribution to 861 thousand connections (FY 2023-26)

DLI 1	Contribution (US\$ million)	Contribution (percent)
Government contribution	93.4	25.3
Customer contribution	70.3	19.1
ELEAP AF Contribution	205	55.6
Total	368.7	100

⁶ ELEAP task team



15. Per EEU's estimated connection costs, an allocation of US\$205 million from the AF to DLI 1 will yield an estimated 861,000 connections.

Planning

16. **Inadequate load planning has led to deterioration of reliability and quality of grid supply.** Due to rapid increase in demand and inadequate load planning, the grid network faces high burnout of transformers, breach of thermal limits of conductors and frequent failure of protection equipment. The increased load on the electrical system is also caused by natural population growth, economic development, and a propensity to shift towards electricity from other energy sources owing to the low electricity tariffs. This phenomenon results in unreliable electricity supply nationwide. EEU indicates a transformer failure rate of 3 percent, a frequency of 882 interruptions per 100 km of distribution line per year and an average duration of 2,103 hours per 100 km of distribution line per year. Some of the factors contributing to the lack of reliability are aged distribution networks, overloaded substation and distribution feeders, poor workmanship, frequent burning of transformers, construction and rehabilitation standards and poor-quality distribution material in addition to lack of skilled manpower.

17. **Moreover, EEU does not approach its network planning in a systemic or strategic manner.** EEU's current planning practices are disjointed and misaligned; using primarily rudimentary Excel-based tools, rather than harmonized company-wide solutions. For example, there is no power flow and short circuit analysis software, except for Excel spreadsheets that developed and used by individual engineers. Practices like this need improvement in a uniform and corporate level, with coordinated planning approach. In line with this, the ELEAP AF has proposed a distribution master plan, coupled with supporting planning software that will allow EEU to approach its distribution planning in a modernized way.

Network reliability

18. **Additional connections will place additional strain to an already overloaded distribution network.** EEU will pursue an aggressive connection plan between FY 2023-25 as it strives to meet the targets set out by the NEP. Although these connections will play a critical role in executing on Ethiopia's universal electrification strategy, they will also place additional burden on a distribution network that already faces chronic issues with reliability and quality of service.

19. **As the utility works to meet its connection targets, it must also define and plan for the commensurate investments needed to upgrade and rehabilitate its backbone infrastructure in a manner that supports both current and future connections.** EEU, in collaboration with the World Bank has already begun planning support for this infrastructure. The ADELE project is already helping address some of the issues related to network reliability. Under Component 1 of ADELE (Network strengthening for improved reliability of supply in urban areas) US\$100 million will fund network upgrade and rehabilitation activities, which include infrastructure investments in Addis Ababa and 10 zonal towns⁷, including medium-voltage (MV) and low-voltage (LV) equipment as well as support for the Revenue Protection Program (RPP). Activities under this component 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. The RPP will help enhance the financial sustainability of the utility through

⁷ Ambo, Bishoftu, Asela, Nekemt, Asossa, Jigjiga, Hossana, Sululta, Dilla and Debre Berhan.



the incorporation of different tools (including IT software and the 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. To supplement this work, the GoE has requested additional financing from the World Bank to continue the rehabilitation work in additional towns across the country. In addition to these investments, the work under the newly introduced DLI 8, the ELEAP additional financing will support key aspects of network reliability by enabling EEU to invest in transformer metering- a measure aimed at allowing EEU to identify and resolve recurring issues with distribution transformers.

Utility performance

20. **Although EEU's investment in its ERP have yielded internal operational improvements, additional work is needed to improve customer-centered improvements such as outage management.** Although, EEU has made substantial efforts to improve customer service, the electricity supply is still affected by significant power interruption (high frequency and duration), poor complaint handling mechanism and poor communication with customers. The ERP has already delivered operational improvements including the digitization and automation of key processes such as internal HR, finance and project management processes as well as external processes such as new service requests, billing, collections and complaint handling. EEU has seen improved billing and collection efficiency of ~78 and ~77 percent, respectively. EEU expects customer service to improve as a result of the ERP, with an SAP Customer Relationship Management supported call center providing customers 24/7 support and automated maintenance tickets generated via the call center. Despite these advances, as per the latest available report from April 2021, only 19.3 percent of complaint cases had been resolved.

21. **In addition to EEU's poor management of outages, the utility is currently unable to measure and track the duration and frequency of outages.** Ideally, EEU would be able to measure the average frequency and duration of outages across the grid- System Average Interruption Frequency Index (SAIFI) and System Average Interruption Duration Index (SAIDI). However, due to the lack of critically useful customer indexing data, the measure for network reliability uses an alternative method of measurement. In lieu of estimating SAIFI and SAIDI, the alternative KPIs use the number of transformer failures per year, the frequency of interruptions per 100 km of distribution line per year, and the duration of interruptions per 100 km of distribution line per year. The newly introduced DLI 8 seeks to fund customer indexing and AMI metering installation, which will enable EEU to measure SAIFI and SAIDI and focus on improving the reliability of the network by identifying the main factors contributing to poor reliability.

22. **DLI 8 has been designed to improve EEU's ability to track, manage and reduce the frequency and duration of service interruption.** Efforts under DLI 8 seek to address issues on enabling EEU to measure and improve these reliability KPI by drafting and adopting operational procedures. This work will be underpinned with customer indexing and network mapping activities, which will enable EEU to measure, track and improve on reliability KPIs.

Affordability

23. **End-customer affordability of the connection fee is expected to become a challenge as EEU further expands its densification efforts to more remote areas.** EEU has indicated that, although



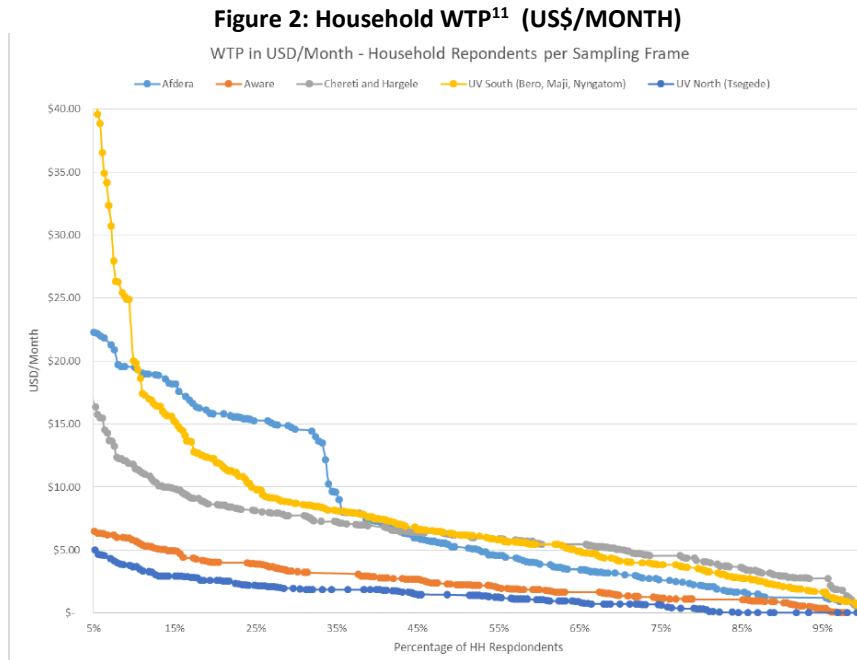
affordability constraints have not kept them from making new connections to date, they anticipate affordability may present a constraint in the medium-to-long term. Namely, as the grid reaches more remote areas, the cost of new connections is expected to rise (with lower population density in unelectrified areas)⁸. Simultaneously, disposable income of potential customers in these areas will likely decrease as the grid reaches increasingly remote areas. These two factors combined are expected to present an affordability barrier and this requires further investigation to identify the capacity that potential customers will have to afford connections, as well as to identify ways to mitigate the potential impact through potential cross-subsidization of the connection fee. Given that recent and reliable data on affordability of connection costs does not exist, both EEU and the World Bank have recognized the need to conduct a connection cost affordability study to be conducted in the first year of the proposed operation.

24. **Despite the lack of utility data, a 2017 study on affordability⁹ can provide some approximate insight.** This survey of 150 unelectrified towns across 4 regions studied the willingness to pay (WTP) for electricity services by households. The results of the survey indicate wide variability in WTP within towns as well as across town. Within towns, the figure below shows a steep decline in WTP after ~15 percent, followed by gradual decline thereafter. Similarly, the survey also found variability across towns. The study cites that a 30 percent benchmark is typically used in tariff setting for initial market penetration. At this 30 percent mark, WTP varied across the towns from US\$ 1.93 /month to US\$ 14.58 /month. These factors combined lend credence to the idea presented by EEU, that affordability does not present a barrier in the short-term but may do so in the long run.¹⁰ As such, EEU needs to closely examine the affordability question with a survey on connection fees targeted on households in areas to be connected in the next 2-3 years.

⁸ EEU sets the customer connection fee based on an estimate which an EEU technician conducts on-site.

⁹ Willingness to Pay Completion Report; USAID Ethiopia/ Beyond-the-grid (August 2017).

¹⁰ There are limitations with this data as the figures are 5 years old and indicative of WTP for electricity on a monthly basis rather than for costs of connection.



25. In addition to the need to further understand the affordability challenge, EEU can already explore solutions for the oncoming affordability constraints. For this, EEU can apply learnings from neighboring countries. This includes potential solutions implemented in Kenya, such as allowing customers to pay for the connection fees on a payment plan or waiving part or all of the connection fees for new low-income customers, as is done in Mozambique. The proposed affordability study should address the most effective way of addressing any affordability constraints.

C. Program Definition and Boundaries and Description of Changes

26. 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.

27. 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.

28. DLI 1, "Establish on-grid electricity connections", will result in an increase in funding and hence an increase in the connections provided. DLI 2, "Establish off grid electricity access", will be restructured. DLR 2.1. (mini-grids) has already been achieved, well before the current closing date of the parent

¹¹ Willingness to Pay Completion Report; USAID Ethiopia/ Beyond-the-grid (August 2017).



program, whereas DLR 2.2. (Standalone solar systems, SAS) has not commenced, and the utility requested its closing. DLI 3, “Strengthen sector institutional capacity”, will be restructured and receive AF to place additional emphasis on securing the capacity and staffing of the Electrification and Energy Information Lead Executive Officer (EEILEO; formerly Department of Electrification) throughout the duration of the program. DLI 4, “Strengthen sector planning capacity”, will be continued during the remaining duration and see an expanded scope to support adoption of digital tools to strengthen planning capacity in the utility. DLI 5, “Strengthen fiduciary systems”, will undergo a restructuring and receive AF for financial management and procurement DLRs. DLI 6, “Improve gender and citizen engagement”, will be restructured to place greater emphasis on the implementations of key actions related to the citizen engagement and gender program at the utility, as well as increase spending towards continuing the support for key identified priorities and new activities such as the hiring of women’s employment expert in HR and development on a women’s employment strategy (that goes until 2026). DLI 7, “Strengthen safeguards systems”, will be restructured based on the findings of ESSA addendum. The AF will also introduce a new DLI, DLI 8 “Strengthen operational and financial performance of the utility”.

29. **The AF’s program boundaries remain the same as in the parent program and the AF will support the GoE’s government program with the same exceptions as in the parent program.** The AF will extend the existing DLIs and introduce a new DLI. The newly introduced DLI 8 will support results area 3 of the parent program (Sector Capacity and Institutional Reform) and remain within the existing Program Boundaries.

Revised scope under DLI 3: “Strengthen sector institutional capacity”

30. **DLI 3 of the AF will build on the success of the establishment of the DoE by investing in capacity building for the DoE.** Under the parent program, DLI 3 supported the establishment of the Directorate of Electrification (DoE; department title changed to EEILEO after MoWE restructuring) under MoWE. This has strengthened the sector’s institutional capacity by establishing a department with a mandate to guide and oversee the electrification agenda under the umbrella of the NEP, coupled with Monitoring and Evaluation (M&E) tools at its disposal to track impact. Building on the successes of DLI 3 under the parent program, the AF will focus on further building the capabilities of the EEILEO and meeting its staffing and equipment needs. In support of these core elements of the EEILEO’s mandate, MoWE has performed a preliminary capacity building needs assessment. The assessment based its foundation on the core mandate of the EEILEO, followed by an assessment of the current structure of the EEILEO and its capacity building needs in order to execute on its mandate. Based on this, MoWE and the World Bank jointly identified specific areas for capacity building. Using this preliminary assessment as its foundation, the work under this DLI will include the adoption of a capacity building plan for the DoE, followed by an implementation of the plan- both in the form of training for the EEILEO or, as needed, engaging consultancies to provide additional capacity to the EEILEO as identified in the capacity building plan.

31. **With this revised scope, the DLI will feature two new DLRs to support the operational effectiveness of the EEILEO.** The first DLR will focus on the finalization and adoption of the preliminary capacity building plan within the first year of the AF. Thereafter, the implementation of the plan will be the expected result in the second year of the AF.

Revised Scope under DLI 4: “Strengthen sector planning capacity”



32. **DLI4 will build on the success of the annual rollout plan from the parent program by complementing these rollout plans with a Distribution Master Plan.** Under DLI 4, EEU adopted connection roll-out plans annually from FY18 to FY22. These annual plans have been recognized by EEU as a good internal practice for planning electrification activities and resources needed to deliver connections. EEU has also identified opportunities under this DLI to go beyond preparation of the annual plans leveraging planning tools to accelerate its pace of connections. As such, the Program will continue to support preparation of the annual plans, which provide the utility with a structured framework for logistical, technical and operational requirements around planning and rolling out the annual connection targets. In addition, and following EEU's request, the AF will support the adoption of distribution master plans supported by digital planning tools.

33. **To modernize the EEU's planning practices, the utility needs a comprehensive corporate-wide distribution master plan, underpinned by planning software that allows the utility to make informed planning decisions.** The need for such support has been identified by a key issue in EEU's planning approach- the planning department's inability to perform technical planning activities in a strategic and systematic way. The current planning practice has lacked any significant strategy, whether for load growth or for correction of problematic feeders. Feeder management considers only thermal loading on conductors and not voltage performance. Load growth, particularly of large commercial load, can be constrained by network capacity for significant periods of time. All planning is currently determined based on the thermal capacity of distribution conductors and transformers. This entails shifting loads from feeders as they reach their thermal limit or, if shifting loads is not feasible, constructing a new feeder. Instead, modernizing this practice requires a systematic process of assessing the supply and demand gap with expansion opportunities. This should be systematically analyzed and planned followed by technical analysis in load flow, short-circuit and distribution loss as design criteria for all non-electrified villages/ towns. This requires not just an annual rollout plan, but the adoption of a distribution master plan that incorporates planning software solutions. As such, the scope of this DLI under the AF will include the continuation of the annual connection rollout plan, the procurement of digital planning solutions to underpin a distribution master plan, the development and implementation of a distribution master plan.

34. Based on these identified needs, the proposed new DLRs will include the preparation and adoption of annual connection rollout plan for each year of the AF, the procurement and implementation of key software solutions to support the development of the master plan by the first year of the and the development and adoption of a distribution master plan by the end of the second year of the AF- July 2025.

Scope under DLI 8: "Strengthen operational and financial performance of the utility"

35. **The utility's aggregate energy losses, which currently stand at 27.2 percent, are mainly driven by unmetered consumption, unregistered meters, meter malfunction, meter reading error, billing abnormalities and non-payment.** EEU is currently measuring losses at an aggregate level (technical and commercial) and does not have any metrics in place for measuring system losses by feeder or for the entire distribution system. This gap is the result of the absence of a reliable methodology to measure system losses, as well as the absence of metering infrastructure at key points in the network that would allow for accurate and timely measuring. The delivery point meter for power delivery into the 15-kV or 33-kV distribution network is often old, generally not calibrated on any schedule, and in some cases is missing entirely.



36. **EEU is in urgent need to update and modernize the digital and infrastructure tools to allow for accurate and disaggregate loss measurement, as well as to identify and adopt actions for loss reduction and performance improvement.** To measure system losses, it will be necessary not only to develop an upgraded delivery point meter to determine power deliveries to EEU, but also upgrade the feeder meter so that losses by feeder can be accounted for. Ideally, these upgrades would be implemented in the form of smart meters so that data can be time-coordinated, and the results can be disaggregated in ways that would provide metrics for operating regions and eventually for feeders. In addition, the availability of a digitally mapped network, the possibility of getting network asset database from GIS initiatives, customer indexing data, and the meter-to-cash pilot project will provide the utility with better loss value estimation and allow it to design an informed plan for reducing commercial losses.

37. **The operational and financial performance improvement supported under DLI 8 focuses on reducing EEUs non-technical losses, thereby increasing the utility's revenue collection.** This is done by making certain that the EEU accurately measures what it buys and what it sells. The utility can achieve this by improving service to the customer, reducing commercial energy losses, improving billing and collections, and settlement of arrears and accounts receivable, proper demand side management, and technical system improvements. Actions will include (i) deployment of AMI at transformer level and for large commercial and industrial customers to systematically track losses, monitor consumption and adopt corrective action as needed, including detailed definition and implementation of operational procedures for revenue protection using information provided by AMI; (ii) the universalization of use of prepaid metering, including interconnection of vending platform with information system supporting commercial functions companywide; and (iii) re-engineering of processes and activities for commercial functions and management and resolution of complaints from customers in incidents related to electricity supply (iv) customer indexing (linking each customer meter data to low voltage lines, distribution transformers, and substation feeder lines) to carry out energy balances and detect areas of high losses, including processes for incorporation of new customers through execution of electrification programs. Lastly, the DLI will (v) introduce reporting on and improving KPIs related to installation of AMI infrastructure, network reliability, and reduction of commercial losses. Implementing AMI at key commercial and industrial customers' level will help to protect revenue leakage due to theft and significantly reduce the distribution transformers' failure rate due to overloading and unauthorized/illegal connections. This, in turn, will support the utility in enhancing revenue collection and reducing non-technical losses. There is overwhelming evidence that these devices curb payment defaults, considerably ease bill collection by eliminating manual meter reading, detect outages, and enable utilities to resolve power-quality problems more quickly. On top of this, customer indexing will help EEU to identify areas with high losses and quantify amounts of energy consumed but not sold.

38. **In line with this defined scope, the DLI will feature three DLRs to support the financial and operational performance of EEU.** The first DLR will focus on the adoption of operational procedures within the first year of the program. The subsequent DLRs will focus on the implementation and reporting of actions as identified in the operational procedures for the second and third year of the AF.

Table 2: Summary of ELEAP AF technical DLIs

DLIs	Unit disbursed against	Expected results	Allocation (US\$ m)
DLI 1: Establish	Connections	861,000 on grid connections	205



DLIs	Unit disbursed against	Expected results	Allocation (US\$ m)
on-grid connections			
DLI 3: Strengthen institutional capacity	Milestones	- EEILEO capacity building plan finalized and adopted - Capacity building plan implemented	3
DLI 4: Strengthen sector planning capacity	Milestones	Preparation and adoption of annual connection rollout plan (July 2024) Adoption of key software solutions to support the development of the master plan (by January 2025) Preparation and adoption of annual connection rollout plan (July 2025) Development and adoption of a distribution master plan (by January 2026) Preparation and adoption of an annual connection rollout plan that incorporates the elements of the distribution master plan (July 2026)	5
DLI 6: Improve gender and citizen engagement (CE)	Milestones	- EEU publishes a report on CE and gender - Customer satisfaction survey -Dedicated and specialized staffing for Gender and CE	3
DLI 8: Strengthen operational and financial performance of the utility	Milestones	Definition and adoption of operational procedures (allowing for prior results) (July 2024) Implementation and reporting of actions as identified in the priority areas of the operational procedures under the program (July 2025) Implementation and reporting of actions as identified in the priority areas of the operational procedures under the program (July 2026)	29

Program’s expenditure framework

Based on the proposed changes, the Additional Financing will incorporate the following expenses:

Table 3: ELEAP AF expenditures for Technical DLIs

DLI	End target (July 2026)	Description of expenses	Allocation under AF (US\$ million)
DLI 1: Establish on-grid connections	861,000 on-grid electricity connections established	Materials for LV extension and last-mile connection including: 1. Meters 2. LV cables 3. Poles Labor for LV extension and last mile connection	205



DLI 2: Establish off-grid connections	NA	SAS proceedings under the ELEAP parent operation will be reallocated in support of 4 mini-grids and additional on-grid connections. No resources from the AF are allocated to this DLI.	0
DLI 3: Strengthen sector institutional capacity	<ul style="list-style-type: none"> - EEILEO capacity building plan finalized and adopted - Capacity building plan implemented 	<ul style="list-style-type: none"> - Preparation of capacity building needs assessment - Trainings for the EEILEO - Consultancies to the EEILEO as identified in the capacity building needs assessment - Works and goods 	3
DLI 4: Strengthen sector planning capacity	<ul style="list-style-type: none"> - Annual connection rollout plans adopted - Distribution master plan adopted 	<ul style="list-style-type: none"> - Development of a distribution master plan - Procurement of a Planning Software - Operating costs - Consulting services 	5
DLI 6: Improve gender and citizen engagement (CE)	<ul style="list-style-type: none"> - EEU publishes a report on CE and gender - Customer satisfaction survey 	<ul style="list-style-type: none"> - Staffing for both a women’s employment expert and a citizen engagement expert for the remaining project timeline - Costs associated with roll-out of gender equality and citizen engagement program e.g. running childcare centers, internship program scholarships, consumer education, training. Costs can include hire of experts, consultants, equipment and materials and travel. - Citizen engagement survey costs associated with hire of independent firm 	3
DLI 8: Strengthen operational and financial performance of the utility	<ul style="list-style-type: none"> - Definition and adoption of operational procedures (allowing for prior results) - Implementation and reporting of actions as identified in the operational procedures - Implementation and reporting of actions as identified in the operational procedures 	<ul style="list-style-type: none"> - Consultancy services - Design, supply, installation, testing, commissioning and support for prepayment electricity metering system and procurement of STS compliant meters - Supply & installation of meter mounting box, current Transformer with GPRS three-phase energy meter - Supply and adoption of software tools (HES & MDMS) and Integration with existing EEU system - Supply and installation of IT infrastructure (hardware and software) and associated training - Installation of transformer metering and monitoring system, as well as procurement of meters 	29
Capitalized Front End Fee			
Total			245



D. Program Implementation Capacity

39. **DLIs 3 and 4 will focus on ensuring implementing entities have the capacity to implement key aspects of the program.** Capacity to implement and monitor results will continue to be key to ensure Program success and effectiveness. Through the parent program, MOWE and EEU as implementing entities have developed and maintained frameworks to monitor on grid and off grid connections supported under the program, as well as performance in other areas around institutional, planning, fiduciary and safeguards capacity, as well as gender and citizen engagement. As with the parent operation, the EEU will be mandated to implement the main activities related to capital expenditures (on-grid electrification). MOWE and the EEILEO will continue to provide coordination, reporting, and Program oversight for the Program. Although this implementation arrangement has resulted in the satisfactory implementation of the parent program, weaknesses in the implementing capacity of both entities have been identified. As such, DLIs 3 and 4 will focus on ensuring both EEU and MoWE have the capacity building support needed to ensure EEU and MoWE are prepared to execute their implementation responsibilities.

Capacity building at EEU

40. **Capacity at the EEU's planning department has had constraints, but support under DLI 4 will allow for improved capacity of the department.** The EEU distribution operations currently have limited manpower, technical expertise, planning and design capacity (hardware and software) underpinning the low voltage rollout. Activities under the proposed AF operation are designed to support the utility in their efforts to ensure sufficient planning and operational capacity is available to prepare and execute the roll out of connections and provide adequate customer services to its client base. To ensure the planning department has sufficient capacity, DLI 4 has allotted resources not just for the development of the distribution master plan, but also for the associated training on the planning software that will underpin the planning activities.

Capacity building at MoWE

41. **EEILEO Mandate:** As defined by MoWE's recently completed restructuring exercise, the EEILEO will be the main responsible party for electrification developments, Rural Electrification Fund Management, coordination of Government and non-government Electrification activities in the nation. Its mandate includes both Grid and off-grid electrification activities including developments and implementation of national electrification strategies and policies and implementation of follow up electrification projects and coordinate public and private sector actors engaged in the electrification sector. As such, the EEILEO plays a fundamental role in the implementation of ELEAP. In the ELEAP institutional arrangement, MoWE has the following mandate, which is maintained under the AF:

- i. Coordination, tracking, Monitoring and Evaluation (M&E) of the ELEAP as well as M&E of other related activities in the country
- ii. Verification of on-grid and off-grid electric connection via the Independent Verification Agency (IVA)
- iii. Supporting sector capacity and institutional reform in the government's electrification program.
- iv. Adoption of planning and monitoring of on-grid and off-grid electrification status through the use of GIS tools
- v. Strengthening the knowledge base of MoWE through the management of an energy access database (i.e. Total number of grid and off-grid connected households, service, commercial



centers)

- vi. Identification of major gaps and implementable solution measures, which shall be conducted with a package of transferring knowledge to MoWE counterpart teams/staff.

42. **EEILEO Structure:** To execute on this mandate, MoWE has developed a staffing structure during its recent organizational restructuring which has been approved by the Civil Service Commission. The approved structure is depicted on the table below.

Table 4: Approved Staffing Structure of the EEILEO

Position	Rank
Desk Head	XVIII
Electrification Expert IV	XV
Electrification Expert IV	XV
Electrification III	XII
Electrification III	XII
Electrification Expert II	X
Economist IV	XIV
GIS Analyst IV	XIII
GIS Analyst III	XI
Statistic and Information Expert IV	XII
Environment Impact Assessment Expert IV	XIII

43. **EEILEO Capacity Building Needs:** By comparing the defined mandate of the EEILEO with its approved structure, the EEILEO /MoWE and the World Bank have jointly identified the training needs for the EEILEO, which include general program management skills and more technical energy planning skills listed below:

Program management

1. Program coordination, management, financial management, M&E, verification
2. Data base management
3. Good governance, CE, Gender & ESME

Energy planning

- i. Verification of on-grid and off-grid electric connections via the Independent Verification Agency



(IVA)

- ii. Using key tools for grid and off-grid Electrification planning, tracking, M&E, verification
- iii. GIS planning, monitoring and verification of electricity connection
- iv. Rural electrification strategy including financing mechanism, subsidy policy
- v. Attracting private sector investment in the energy sector (managing IPPs, PPAs, etc)

Based on these key inputs, the following preliminary training plan has been proposed:

Table 5: Staffing Structure of the EEILEO and proposed training plan

Position	Training planned	Cadence
Desk Head	Management training (including program coordination, good governance, CE and gender etc.)	Quarterly
	Electrification planning (including rural electrification strategy and using key tools for grid and off-grid Electrification planning)	Semi-annual
	Energy policy planning	Annual
Electrification Experts (II-IV)	Electrification planning	Quarterly
	Energy policy planning	Semi-annual
	Monitoring and evaluation of electrification projects (incl. Verification of on-grid and off-grid electric connections)	Annual
GIS Analysts (III, IV)	Data science	Semi-annual
	Electrification planning	Semi-annual
	GIS for energy planning	Quarterly
Statistic and Information Expert IV	Data science	Quarterly
	Data management and business intelligence for the energy sector	Quarterly
	Data mining and data collection	Semi-annual
Environment Impact Assessment Expert IV	Establishing and maintaining ESMS	Quarterly
	Electrification planning	Annual
	Social and environment impact of electricity connections (grid and mini-grid)	Quarterly

44. **Implementation arrangements will align with the arrangements in the parent program.** MoWE (via EEILEO) will be tasked with the overall coordination and reporting, EEU will report achievements of its tasked activities through the EEILEO. EEU’s Planning Department already monitors utility’s key performance indicators (KPIs), while the Quality Control and Process Excellence Department monitors KPIs from each of its regional departments. EEU prepares quarterly and monthly reports for the Board and MoWE. The EEU also has a grievance handling mechanism in place and carries out routine customer satisfaction surveys.

45. **In line with the Bank’s policy for PforR, MOWE will retain independent verification agencies (IVAs) on terms of reference (ToRs) acceptable to the Bank to verify the achievement of DLI results.** MOWE will continue to engage the Ethiopian Statistics Service (ESS) as independent verification agent to conduct surveys with an agreeable sample size for connections to be verified under DLI 1 and 2. ESS will verify that connections comply with acceptable quality standards as established by EEU. An independent verification agent) will be hired to verify the achievements of all remaining DLIs 3, 4, 5, 6, 7 and 8. Verification will be carried out on an annual basis. DLI 3 will also further strengthen the verification capacity of the ESS, including by allowing for additional technical expertise needed to verify the quality of electricity connection provided under the Program. During implementation, the Bank will carry out



periodic reviews of the ESS and IVA reports, as necessary, and evaluate the overall appropriateness of the verification arrangements, taking mitigation measures, as needed.

Institutional arrangements

46. The institutional arrangements for the AF will remain unchanged from the parent operation as they remain relevant.

Program implementation arrangements

47. **The program builds on strong Government ownership and is being managed by two established and high-capacity institutions: MOWE and EEU.** In continuation of the arrangements under the parent program, MoWE will be responsible achieving the targets of ELEAP, as well as for coordinating overall program monitoring and reporting and overseeing results. Under MoWE, the responsible body will continue to be the EEILEO. The EEILEO will continue to rely on other sector agencies, notably EEU, to facilitate successful implementation of the goals and objectives of the ELEAP. In addition, a Steering Committee will provide high-level strategic direction and policy guidance to the EEILEO. The main implementing agency for the majority of the ELEAP activities will be EEU. For Results Area 1 (on-grid access), activities will be implemented by EEU's Retail and Wiring Unit (under the Distribution Department) as well as the UEAP. Results Area 2 (off-grid access) will be implemented by EEU's UEAP (with technical support from relevant MoWE departments). Activities under Results Area 3 will be implemented either by EEU or MoWE, as relevant.

Role of Development Partners in Program Implementation

48. The WBG has been leading the coordination efforts with other DPs and to assist GoE in coordinating and developing the electrification program in the country. Given the pace of the ongoing reform program, and the increased engagement of the DPs with the GoE in the energy sector, the Bank has supported close coordination of the DPs through an Energy Sector Roundtable. This Roundtable is proposed to be included as a sub-group under the official DAG of Ethiopia which is chaired by the Bank.

49. Based on this coordination, the matrix of support across the energy sector has been mapped. Specific areas of DP support include the distribution network strengthening efforts, in which AfDB has active projects in network rehabilitation and extension of the distribution network. The energy planning efforts under the parent program as well as the additional financing have the possibility of further coordination with the Danish Energy Agency and the International Energy Agency, which will support the GoE on its energy planning practices. Lastly, overarching technical assistance and capacity building support will be coming from Ikea Foundation, The European Union and GIZ.

E. Description and Assessment of Program Results Framework and M&E

50. The basic premise of the results chain, introduced in the parent program, remains valid. The results chain of the AF links sectoral challenges to the AF's activities, outputs, outcomes and related DLIs.

Table 6: AF Results Chain



Results Area	Activities	Intermediate Indicators/Outputs	Outcomes
Results Area 1: Increase access to on-grid electricity in areas covered by the power grid	<ul style="list-style-type: none"> Service drops, including meters, and ready-boards LV lines constructed or rehabilitated 	<ul style="list-style-type: none"> Cumulative number of residential grid electricity connections under the Program [DLI1] Cumulative number of non-residential grid connections under the Program Households connected to the grid under the Program that are female-headed 	<ul style="list-style-type: none"> Increased number of people provided with on-grid electricity services
Results Area 2: Increase access to off-grid electricity	<ul style="list-style-type: none"> Preparation of feasibility studies and implementation plans for mini-grids and SAS Installation of renewable energy/hybrid mini-grids Installment of SAS 	<ul style="list-style-type: none"> Households provided with electricity through mini-grids Cumulative number of mini-grids installed [DLI2a] Cumulative capacity of renewable energy installed through mini-grid projects under the Program 	<ul style="list-style-type: none"> Increased number of people provided with off-grid electricity services
Results Area 3: Strengthen sector capacity and institutional reform	<ul style="list-style-type: none"> Developing a refined capacity building plan for the EEILEO Staff training and annual capacity-building activities Development of the annual connection rollout plan Development of a distribution master plan Preparation of studies on: <ul style="list-style-type: none"> Affordable customer connection policy Long-term financial sustainability Power system rehabilitation Establishment of minimum entry conditions for procurement Establishment of a gender and citizen engagement (CE) framework Deployment of tools and infrastructure to improve financial and operation improvement Development of customer indexing to enable improved measurement of KPIs (i.e. SAIFI/SAIDI and energy loss) 	<ul style="list-style-type: none"> EEILEO has defined and adopted a capacity building plan [DLI3] Implementation of capacity building plan [DLI3] Annual connection rollout plans adopted by EEU [DLI4] Distribution master plan adopted by EEU [DLI4] Adoption of key software solutions to support the development of the master plan [DLI4] Development and adoption of a distribution master plan [DLI4] Finalization and implementation of affordable connections study along with revision of connection policy [DLI4] Audited financial statements (compliant with International Financial Reporting Standards [IFRS]) submitted [DLI5a] Updated minimum entry and procurement and audit performance conditions [DLI5b] Hire of women's employment and leadership expert in HR at EEU [DLI6a] 	<ul style="list-style-type: none"> Strengthened sector institutional capacity Improved cost-effectiveness of Program Strengthen sector planning capacity Improve gender and CE systems Strengthen safeguards system Improved operational and financial performance of the utility



		<ul style="list-style-type: none"> · Development of women’s employment strategy focused on supply and demand (for 2023-2026) and subsequent adoption by HR [DLI6a] · Adoption of Gender and CE work program and annual Gender and CE reports; [DLI6a] · Hire of full-time citizen engagement expert at EEU [DLI6b] · Adoption of customer grievance handling and incident response strategy [DLI6b] · Consumer education program delivered [DLI6b] · Women in STEM: Increase women’s employment at EEU · EEU will maintain and operationalize the established Environmental and Social Management System (ESMS) at the national and regional levels; establish the ESMS at the district level [DLI7] · Definition and adoption of performance improvement plan (PIP) [DLI8] · Implementation and reporting of actions as identified in the PIP [DLI8] · Measurement and reporting of total losses [DLI8] 	
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F. Program Economic Evaluation

51. **Program economic evaluation:** The Bank team has carried out an economic analysis which is an update of the economic assessment conducted for the parent program and includes financing for Results Area 1 and Results Area 2 (the cost benefit analysis also includes the restructuring). The rationale for additional public sector financing and World Bank value added are presented through a quantitative assessment.

52. **Cost benefit analysis:** Based on the analysis of available documentations (power sector master plans, data from Ethiopia Electricity Utility, MTF survey, among others) and technical working sessions with program’s stakeholders, an update to the economic analysis of the parent program was carried out for the economic evaluation (or standard cost-benefit analysis) under Results Area 1 which includes 878,008 grid connections (includes the 17,008 connections and 4 PV/hybrid mini-grids under the restructuring) and Results Area 2 which includes off-grid investment for 4 PV/diesel mini-grids. The results are presented to demonstrate the economic impacts, which total US\$376 million in a three-year period



between 2024 and 2026.

53. **Avoided greenhouse gas emissions.** GHG accounting is undertaken for different results areas. Results Area 1 of 878,008 grid connections are projected to reduce GHG emissions by an estimated net total of 15,416,771 tCO₂e over 26 years (2024–2050). This estimate is based on the following assumptions: (a) 878,008 household connections by 2026; (b) a service level of 1,001 kWh per year per household; (c) Program emissions associated with grid connections of 3,060,015 tCO₂e from generation and associated distribution loss over 26 years till 2050³⁸; and (d) avoidance of diesel-based generator emissions of 18,476,787 tCO₂e over 26 years, which are assumed would occur without grid densification.

Table 7: Greenhouse Gas Impact over Project Lifetime

Component	Period of impact	Emissions avoided
Grid densification	2024 - 2050	15.4 MtCO ₂ e
Mini grid	2024 - 2042	7,642 tCO ₂ e

54. **Economic Rate of Return.** The EIRR was calculated by valuing benefits using low, medium, and high estimates of the shadow price of carbon. (According to the World Bank Guidance Note on Shadow Price of Carbon in Economic Analysis from November 12, 2017) Using a low SPC value, at a discount rate of 7¹² percent, the economic NPV of the Program is US\$407 million and the benefit-cost ratio is 1.3. The EIRR is estimated at 18 percent. The Program is economically viable. The analysis also valued benefits by switching to medium and high shadow price of carbon. Using medium values under SPC, the economic NPV of the Program is US\$586 million and the benefit-cost ratio is 1.4. The EIRR is estimated at 23 percent. Using high values under SPC, the economic NPV of the Program is US\$766 million and the benefit-cost ratio is 1.5. The EIRR is estimated at 28 percent. Without valuing environmental benefits, the program would remain viable with an EIRR of 8 percent.

55. Additional economic benefits from grid connections include improved health services and education, improved communications and connectivity, better lifestyle, and reduced gap in quality of life between city and rural residents, potentially more business and income-generating opportunities, etc. A key benefit is a significant reduction in indoor pollution resulting from the burning of traditional fuels. These benefits are commonly recognized and yet difficult to quantify.

56. **Project sensitivity to capital costs and exchange rate distortions:** A project sensitivity to capital costs and exchange rate distortions: The switching value of the project is when capital costs exceed US\$830 million (a 220 percent increase from current costs). If capital costs were to exceed this amount, the investment would no longer be economically viable. The project was also assessed for its sensitivity to exchange rate devaluations that correct for the existing and large foreign exchange market distortion. Two scenarios, a 60 and 100 percent devaluation in the foreign exchange rate, were considered. Both scenarios lead to a reduction in the EIRR due to an increase in the local currency costs of acquiring imported capital. However, under both scenarios, the project remains economically viable and the EIRR remains comfortably above the hurdle rate.

¹² Minimum savings rate in Ethiopia.



Table 8: Sensitivity analysis on devaluation of the ETB

Exchange Rate	EIRR	C/B ratio	NPV (US\$ M)
Scenario 1: Official Exchange Rate	18.4 percent	1.35	407
Scenario 2: 60 percent devaluation of the official exchange rate	15 percent	1.24	266.89
Scenario 3: 100 percent devaluation of the official exchange rate	13 percent	1.20	220.98

G. Technical Risk Rating and Mitigation Measures

57. **Technical Design.** The Program features are not unique nor does the technical design include new or untested technology. The activities under Results Area 1 involve last mile drop off connections in already electrified areas, which does not require any specialized technical capacity and can be done by in-house teams in EEU.

58. **Implementation of the program shall be done in a timely and cost-effective manner.** Some uncertainties may arise from program preparation up to implementation. The identified risks that may arise need to be anticipated and mitigated. The risk that has been identified and relevant measures that have been identified are described below.

59. **Supply chain constraints.** EEU has indicated that the ongoing global supply chain disruptions have placed a hindrance on their ability to complete new on-grid connections at the pace needed to meet their connection targets. EEU has had particular difficulty with the supply of meters and concentric cables and further constrained by the container shortage that has inhibited supply of a wider range of inputs. EEU has already commenced application of mitigating measures for these risks. EEU has placed bulk orders and built redundancies in its contracts to ensure it has put in place agreements with backup suppliers- especially for key inputs. EEU has supplemented this with additional follow-up to ensure suppliers meet the terms of the existing supply contracts. Finally, EEU has collaborated with the national cargo shipping company, Ethiopian Shipping Lines, to ensure containers are available for EEU’s future shipments. The ELEAP AF will further bolster EEU’s response to this by improving EEU’s planning capacity under DLI 4- a measure that will allow EEU to better identify key bottlenecks in its supply of inputs for on-grid connections.

60. **Capacity of implementing agency.** Technical design will be informed by ongoing on-grid and off-grid electrification activities in Ethiopia and around the world. The main risks lie in inadequate capacity and resources to adequately plan for and roll out new connections, ensure maintenance and quality services and lack of customers’ resources to afford connections costs. Mitigation measures include: (i) continued capacity strengthening of sector utilities in fiduciary and technical aspects; (ii) establishing a sustainable mechanism to ensure affordability of connections; and (iii) developing and implementing capacity building plans for MoWE.

61. **Network reliability.** The team has identified technical risks related to the reliability of the existing network, including overloaded substations and feeders and high outage frequency, which may lead to inability to connect new customers and will increase resources for technicians and maintenance. To mitigate this potential risk, the ENREP project will continue its support of rehabilitation of key towns



across Ethiopia, with 8 towns already complete and a 6 to be completed by the end of 2023. In addition to the ongoing efforts, EEU has identified this potential constraint and has taken steps to address it with grid rehabilitation support from component 1 of ADELE, by requesting additional rehabilitation support from the World Bank and by placing resources for its distribution planning capacity under DLI 4 of the ELEAP AF.

62. **Shared meter:** Despite some positive features of indirect household connections, there are some significant drawbacks. The main ones include poor technical household installations, dangerous wiring, and an uncontrolled number of indirect connections to a single meter. Due to the low connectivity rate of EEU, EEU has not enforced its penalty policy for illegal connections. In the future, EEU will have to improve monitoring connections under the Program to avoid technical and safety risks related to illegal connections. EEU has already recognized this issue and has taken measures to identify these connections, which it sees as “low-hanging fruit”, since they only need a service drop to be registered as EEU customers. The EEU head office has given direction to all regions to continue identifying and connecting such customers and has already seen results from this campaign.

63. **Supply-demand.** Through 2025, the GoE plans to have installed a total of over 12GW of generation capacity, with the finalization and commission of the Grand Ethiopian Renaissance Dam (GERD) and Koyisha power plant- translating to an average available energy of roughly 40TWh. Over this same period, demand is expected to reach no more than 35TWh and 7GW during peak periods.¹³ Given that the supply mix is being diversified with additional solar, wind and geothermal resources, only significant delays in the commissioning of the GERD large hydro plant could cause demand to exceed available energy supply. Instead, the more pressing bottleneck will likely come from the utility’s distribution capacity. It would be critical to assess whether the power evacuation system including the distribution network to demand centers are sufficiently available. EEU has already identified this potential constraint and has requested financing for rehabilitation of the grid under ADELE as well as additional financing from the World Bank. Additionally, DLI 4 of the ELEAP AF will support the development of a distribution master plan to enable EEU to better identify constraints in its distribution network.

64. **Affordability of connection fees.** End-customer affordability of the connection fee is expected to become a challenge as EEU further expands its densification efforts to more remote areas. As such, the team has identified the completion of an affordability study as a critical milestone in the first year of the operation. Upon completion of the study, and a more precise definition of the nature and depth of the constraint, the EEU can explore a range of mitigation measures including the use of cross-subsidization, allowing for installment payments of the connection fees or partial-to-full subsidization of connection costs.

H. Gender and Citizen Engagement

65. **Gender:** The ELEAP and ELEAP AF build on a 5- year in-depth engagement to close key gender gaps across the energy sector in Ethiopia. The parent ELEAP operation allocated US\$4.5 million of results-based financing targeting the achievement of key DLRs to close gender gaps and advance citizen engagement. ELEAP met the corporate requirement on the Gender Tag and was awarded the WBG Presidents Award for Excellence in June 2018 for its gender work.

¹³ USAID- Ethiopian Power System Expansion Masterplan Study Demand Forecast



66. EEU is fostering women's entry and career advancement by implementing a multi-pronged strategy. The strategy includes enhancing women's employment through affirmative action measures, partnerships with universities for student internships, and scholarships for existing women staff to take up full advanced degrees and short training courses at universities. Activities towards career advancement include short-term on-the-job technical training as well as soft skills training for women technicians, leadership training for women managers, and mentorship and coaching. The provision of quality childcare for employees has been rolled out as a priority. Capacity-building initiatives have included training on gender equality for senior management at national and regional levels, and training on gender-based violence (GBV). EEU has been the first infrastructure entity in Ethiopia to conduct a companywide GBV assessment, adopt codes of conduct and a stand-alone company policy on GBV, and develop communication materials. These collective efforts have led to women's employment at the EEU now standing at 25 percent (February 2022), which represents an increase in over 800 new female staff, including engineers.

67. ELEAP AF will build on the gender activities under the ELEAP parent operation, placing a stronger focus on overcoming bottlenecks to delivery through new DLRs targeting hiring of a women's employment expert in HR (senior management level), development of a women's leadership employment strategy that maps supply and demand (until 2026), and employee engagement through data collection.

68. **Citizen Engagement:** Long-term development of the electricity sector requires effective and transparent public-sector institutions. The centrality of customer service is among the top four priorities of the EEU's strategic themes, and customer engagement is important for new connections, billing and collection, maintenance, and complaints management. Strong focus has been placed under ELEAP through a US\$4.5 million of results-based financing targeting the achievement of key DRLs to close gender gaps and advance citizen engagement. ELEAP met the corporate requirement on citizen engagement and ELEAP AF builds on the comprehensive utility-wide efforts to shift thinking and approaches to citizen engagement at EEU.

69. EEU has adopted a Citizen Charter which outlines the understanding between citizens and the EEU on the quality of service and the provision of grievance redress. The utility has also established various mechanisms for customers to voice input and grievances including public forums, suggestion boxes, customer satisfaction surveys, call centers, and a vigilance office. Customer feedback is currently received through surveys, face-to-face feedback, feedback forms, public fora and posts, fax, and telephone. The following CE engagement measures are part of ELEAP, incentivized through DLIs and a company-wide adopted Program Action Plan (in 2017): (i) strengthening of community-level CE activities; (ii) community-based electricity education program; (iii) consumer awareness media campaigns; (iv) consumer-centric capacity building for the EEU staff; and (v) commercial performance improvement training.

70. ELEAP AF will build on the citizen engagement activities under the ELEAP parent operation, and a stronger focus will be placed on overcoming bottlenecks faced in the delivery of the citizen engagement actions through new DLRs for the hire of dedicated staff on citizen engagement (at senior management level), shifting to more in-depth customer education efforts, improving grievance handling, data collection, and management of complaint.



I. Inputs to the Program Action Plan

Action Description	Due Date	Responsible Party	Completion Measurement	Updated Status by September 2022	Action for new PAP (Completed/carried over/new)
Technical aspects					
Power system rehabilitation plan	January 7, 2019	EEU	Plan adopted by EEU Board	Completed	Completed
Off-grid strategy	July 7, 2019	MoWE	Strategy adopted by Minister MoWE	Completed	Completed
Low-cost standards and affordability policy and customer connection policy	December 7, 2020	EEU	Adopted by EEU Board	Completed	Completed
Low-cost standards and revised customer connections policy	July 7, 2025	EEU	Policy adopted by EEU Board		New
Fiduciary aspects					
Planning and Budgeting					
<ol style="list-style-type: none"> 1. Address the delay of annual budget approval by EEU Board - align the budget calendar of the EEU and Board regular meeting dates with that of the Federal Government. 2. Produce budget execution reports based on actual expenditure data and according to planned physical activities from the system regularly addressing current backlogs; 3. Amend the CoA structure to capture expenditures according to Program activities. 	Continuous	EEU	Annual budgets are approved and disseminated on time; Budget execution reports and amended CoA structure	<ol style="list-style-type: none"> 1. <i>Not yet resolved.</i> 2. <i>Resolved</i> 3. <i>Not yet completed</i> 	<ol style="list-style-type: none"> 1. Carried over 2. Completed 3. Carried over
Transparency: Disclose entity and ELEAP budget and financial statements to the public through the MoWE and EEU's website (this includes budgets, yearly budget execution reports, and audit reports).	Continuous	EEU and MoWE	Disclosure of annual budget and financial statements including budget execution reports and audit reports	<i>Not done</i>	Carried over
Treasury management and fund flow: Unpredictability of Program funds should be addressed - financing gap should be carefully considered and addressed by the Government/MoF.	Continuous	MoWE and MoF	Planned fund allocation disbursed to IAs	Not resolved	Carried over
Accounting and financial reporting:					
<ol style="list-style-type: none"> i. Resolve lack of updated FM manual - engage a consultant 	June 30, 2024	EEU	<ol style="list-style-type: none"> 1. Having updated manual 	<ol style="list-style-type: none"> 1. <i>Done</i> 2. <i>Done</i> 	<ol style="list-style-type: none"> 1. Completed 2. Completed



<ul style="list-style-type: none"> firm to assist transition to IFRS and update the procedure manuals. ii. Engage a consultant firm as planned to assist on fixed asset count and valuation. Clear backlog reconciliations. iii. Fill the vacant posts and design a capacity-building mechanism. 		<p>EEU</p> <p>EEU/MoWE</p>	<ul style="list-style-type: none"> 2. Complete fixed asset valuation and updated reconciliations 3. Positions filled as per structure 	<ul style="list-style-type: none"> 3. <i>Partially done</i> 	<ul style="list-style-type: none"> 3. Carried over
<p>Internal controls:</p> <ul style="list-style-type: none"> i. The MoWE and EEU resolve internal control inadequacies as reported in external audit reports and internal audit findings. ii. Clear recording backlogs of material consumption data and bank reconciliations by program effectiveness and resolve issues noted in the audit report and report the status to the World Bank on a quarterly basis. iii. Internal auditors conduct internal audits on the entity and on the Program and report to management on findings and follow up to have them resolved. 	Continuous	EEU/MoWE	<ul style="list-style-type: none"> 1. Having cleaning reports by addressing issues; 2. Having up-to-date recording, reconciliation and clean audit reports on internal controls 3. Audit performed, reports issued and shared, and findings addressed 	<ul style="list-style-type: none"> 1. <i>Not fully resolved</i> 2. <i>Partially done</i> 3. <i>Partially done</i> 	Carried over
<p>Reporting: Improve program reporting by including adequate analysis of variance</p>	Continuous				New
Procurement Aspects					
<p>Legal Framework: Update of the EEU's procurement policy and procedures</p>	End of Year 1	EEU	Preparation and distribution of the revised version of the Policy to all regional offices	Completed	Completed
<p>Weakness in the procurement legal frameworks and procedures Debarment under the Program shall be done following the FPPA's debarment procedures, and the firms debarred by the World Bank shall be ineligible to participate in a tender.</p>	Continuous	EEU	The updated procurement policy and procedures and all bidding documents include provisions of the World Bank's and FPPA's debarment procedures.	Completed	Carried over



<p>Procurement Capacity: Maintaining the minimum number of skilled procurement staffing</p>	Continuous	MoWE, EEU	<p>- Both EEU and MoWE availed the minimum required number of skilled procurement staffing during verification of the minimum entry conduction but currently due to restructuring activities in MoWE still not assigned the required procurement staffs for the central procurement units established through the new Ministry organizational structures. EEU project portfolio management office established a central procurement directorate responsible for all projects of EEU, currently the procurement director is assigned but other required staffs shall be assigned, and the directorate shall fully engage in each PIU project procurement performances. Partially Done</p>	Partially done	Carried over
<p>Technical assessment to support comprehensive improvement on procurement and FM issues and to provide intensive procurement</p>	Continuous	MoWE	<p>- Procurement and Contract management</p>	Pending	Carried over



contracts management training to the staffs of the regional offices			trainings are given to 100 EEU regional staffs through EMI but it's not adequate. Partially done		
Preparation of a comprehensive POM for day-to-day guidance of staff	One month after effectiveness	MoWE	Preparation and distribution of the manual to regional offices. Done	Completed	Completed
The EEU should review the job level for procurement staff.	Year 2	EEU	Reviewed job level for procurement staff.	Completed	Completed
Establish procedure for advance orientation of staff in procurement and contract management	Continuous	EEU	Done	Completed	Completed
Establishment of procurement and contract management and monitoring system	Continuous	EEU	Pending	Pending	Carried over
TA to support comprehensive improvement on procurement and financial management issues	Continuous	EEU	Pending	Pending	Carried over
Transparency and fairness:					
The EEU will use bidding documents, adapted from the SBDs of FPPA, with preset evaluation and qualification criteria.	Continuous	EEU	Done	Not done	Carried over
No direct procurement including MSEs and SOEs will be used without adequate justifications and safeguards and the approval of the contract award committee	Continuous	MoWE/EEU	EEU is still using MSEs on direct contracting basis. Discussion shall be made with EEU..	Partially Done and will be included as Revised Minimum condition for AF	Carried over
ICB contracts should also be published in the international media like UNDB online.	Continuous	EEU	EEU starts publishing procurement notices for ICB contracts through international media like UNDB online. Done	Completed	Carried over
Competitiveness:					
The procedures to ensure transparency, fairness, and value for money of awarding direct contracts to SOEs and MSEs should be	January 7, 2024	MoWE/EEU	- EEU still outsource directly to MSEs and	Pending	Carried over



agreed with the MoWE and EEU and be included in the POM:			<p>Local contractors who have a long work relation with EEU regional offices, throughout ELEAP project, EEU still did not follow its direct procurement procedure set in the revised procurement manual even if the revised procurement manual is distributed to all regions for implementations. Not Done and will be included as Additional Minimum condition for AF.</p> <ul style="list-style-type: none">- EEU agreed to participate non-MSEs with same level of capital and qualification with the existing MSEs but still it's not practical in all region offices of EEU. Not Done- The agreed procedures to participate MSEs is reviewed and included in Program Operating Manual but		
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			not implemented. Not Done		
Accountability, integrity, and oversight:					
Provide facilities for procurement staff and secured space for procurement record.	Continuous	EEU	Facilities are provided.	Completed	Carried over
EEU shall prepare standard bidding document for each procurement category encompassing the complaint handling procedures and other necessary amendments that reflect the procurement categories. The bidding document shall also include a guidance note to bidders to report any procurement related fraud and corruption cases whenever they experience during procurement process to FEAC, Federal Policy and Auditor General, so that these three entities will investigate and take the necessary actions.	Year 1			Pending	Carried over
EEU shall revise its procurement policy and procedures manual to accommodate the responsible body to approve evaluation reports and contract award recommendations. The body responsible for review and approval of the same shall be EEU's procurement endorsing committee in line with the federal public procurement directives PEC duties and responsibilities.	Year 1		EEU established bid endorsing committees who are responsible to review and endorse the evaluation and selection process, but practically evaluation and contract awards approval are done by EEU senior managements not by the endorsing committee. Partially Done and will be included as Additional Minimum condition for AF.	Pending	Carried over
EEU shall reestablish and strengthen its procurement endorsing committee in a way that the procurement endorsing committee shall be entitled to give the final approval and guidance in the evaluation and selection process.	Year 1		Practically, evaluation and contract awards approval are done by EEU senior managements not by the endorsing committee. Partially Done and will be	Partially done	Carried over



			included as Additional Minimum condition for AF.		
EEU's complaint handling procedures shall follow the Federal public procurement Complaint handling procures, and the Federal Complaint handling Board shall review and endorse complaints logged to the board after the CEO review response	Year 1		EEU did not establish a well-functioning independent complaint handling system Not done	Pending	Carried over
Procurement Performance progress reports shall be submitted to world bank on Bi-quarterly and yearly bases for follow-up and monitor progresses. In this report EEU shall submit sample used bidding documents, evaluation process reports and procurement complaints, and provided response to the complaints, to verify the recommendation and suggestion specified in the project POM by the Bank is implemented.	Year 1-2				New
Governance: 15 ethics and anticorruption officers or vigilance officers assigned in the 15 EEU regional centers, regional and state levels, UEAP, and MoWE. Additional two experts are recruited at the MoWE's ethics follow-up office.	July 7, 2018	MoWE, EEU	Officers assigned and training completed	Completed	Carried over
Introduce guidelines on the F&C control and grievance-handling functional adjustment, relationship, and reporting arrangement from the lower level to the EEU and MoWE.	July 7, 2024	MoWE, EEU	Guideline issued	Completed	Carried over
Establish the entry/website for exchange of debarment lists and disclosure of complaint handling and update data.	May 15, 2018	MoWE, EEU	Website established	Completed; EEU has established a website www.eeu.gov.et/ so that it will be published on websites .and Same applies to MoWE, https://www.mowe.gov.et/	Completed



<p>Develop adapted training module on F&C and complaint handling recording and follow-up and subsequently provide cascaded training for the concerned staff at the ministry level, EEU, region, district, and satellite levels.</p>	<p>January 7, 2024</p>	<p>MoWE, EEU</p>	<p>Training manual and report on training provided</p>	<p>Training has been provided for 2016 managers and employees on Ethical principles, and corruption prevention mechanisms in all 11 regions. The Ministry has conducted a training on F&C and complainant handling in collaboration with FEACC. The World Bank received documentation that indicates the number of participants and list who have received training on Ethical principles, ethical leadership, and corruption prevention mechanisms</p>	<p>Completed</p>
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Improve recording and increase responsiveness to complaints/requests related to power drop/interruptions, installation of connection line/meter, and transformer damages, and so on.	Continuous	EEU	As part of annual complaint report	Completed	Completed
MOWE to submit Complaint Handling and F&C bi-annual report on the program to FEACC and FEACC, in turn, verify and submit it to the Bank (This is the program requirement in the application of the ACG of the Bank.)	Bi-annually	MoWE	This is the program requirement in the application of the ACG of the Bank. This action still needs to be continued in this AF		Carried over
Provide training on complaint handling and F&C recording and reporting mechanisms to Ethics officers working at different level of the program implementation	Year 1-2 of the AF		Pending	Pending	Carried over
Maintain call centers for anonymous hot lines and vigilance offices and ensuring that the bi-annual reports include cases and actions taken by these offices	Continuous	EEU and MoWE	Maintenance of call centers and submission of biannual reports		New
Safeguards aspects					
Maintain positions on environment, social safeguards, and safety at the national level and regional level.	Continuous	EEU	Minimum 1 environmental and social safeguards specialist and minimum 1 occupational health and safety specialist is maintained in EEU headquarters and regional offices; Added as recommendation to support completion with	Ongoing	Carried over



			the following documentation: EEU HR data; on spot verification on availability and qualification of assigned specialists; annual reports:		
Performance review and environment, social, and safety audit	July 7 of each year of Program operation	EEU	Annual performance review and environment, social, and safety audit completed. Added as recommendation to support completion with the following documentation: Meeting records, Quarter/ Annual report, reviewed and cleared performance review and audit reports.	Ongoing	Carried over
Use of safety protection material and tools; PPE	Continuous	EEU	100 percent of contract agreements include full consideration of health and safety regulation or articles; and 0 percent of incidents reported of lack of PPE and safety materials and tools in subprojects. Added as recommendation to support completion with the following documentation: Contract Documents, safety audit and incident reports	Ongoing	Carried over



Increase community awareness of social, environmental, and safety impacts of subprojects.	Continuous	EEU	Percentage of communities briefed on social, environmental, and safety impact of the subprojects Added as recommendation to support completion with the following documentation: Reports on community awareness activities, material used, trainings, and others.	Ongoing	Carried over
Establish GRM.	July 7, 2024	EEU	GRM committee is established and guidelines have been prepared.	Completed	Completed
Timely and appropriate consultation, compensation, and resettlement for PAPs (Program affected people)	Continuous	EEU	All PAP-related actions according to prepared safeguards documents have been completed. Added as recommendation to support completion with the following documentation: Consultation reports, compensations, quarter/annual performance reports.		Carried over
Strengthen and maintain the Environmental and Social Management System (ESMS) from national to district level and Ensure Its Functionality	Biannually for reviews and annually for audits	MOWE, EEU			New



Pre-screening of · Maps and data on EEU and During Projects pre-projects for risks on natural habitats and PCRs	During Program implementation	MOWE, EEU	Maps and data on natural habitats/areas and PCRs will be used to pre-screen projects at the project management level (PPMD)		New
Workers and Public Safety Management		MOWE, EEU			New
Ensure proper compensations for any form of property or Land-Acquisitions and strengthening GRM	Three different timelines	MOWE, EEU	<p>Reconsideration of EEU’s policy on distribution line related loss (portion of land, crop or economic trees).</p> <p>Preparing compensation procedures and manuals for distribution-line related loss or impacts</p> <p>Accessibility of the GRM will be improved through providing additional outlets and awareness creation on the existing GRM</p> <p>GRM committee will be established for on-grid projects at kebele level or project specific locations</p>		New
Inclusion of indigenous peoples and vulnerable groups	Three different timelines	MOWE, EEU	<p>Developing inclusion policies and manuals to ensure equitable treatment of indigenous people</p> <p>Devising mechanisms</p>		New



			which improves service affordability Separate Consultations targeting vulnerable groups		
Prevention and management of social conflict	Three different timelines	MOWE, EEU	Making social conflict/security risk assessments part of E&S screening Repeated and timely consultations with community elders & youth groups when new connection is appraised in areas with border or territorial disputes Conduct security risk assessment and preparation of SMP for conflict-prone project areas		New



The World Bank

Additional Financing Ethiopia Electrification Program (P178895)
