Report Number: ICRR0024656

1. Project Data

Project ID	Project Name
P161885	Nigeria Electrification Project
Country	**Practice Area(Lead)**
Nigeria	Energy & Extractives

L/C/TF Number(s)	Closing Date (Original)	Total Project Cost (USD)
IDA-62910	31-Oct-2023	322,976,078.37
Bank Approval Date	**Closing Date (Actual)**	
27-Jun-2018	31-Dec-2024	

	IBRD/IDA (USD)	Grants (USD)
Original Commitment	350,000,000.00	0.00
Revised Commitment	350,000,000.00	0.00
Actual	268,215,942.31	0.00

Prepared by	Reviewed by	ICR Review Coordinator	Group
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2. Project Objectives and Components

a. Objectives

The Original Project Development Objective (PDO) was “to increase access to electricity services for households, public educational institutions, and underserved micro, small and medium enterprises” (Financing Agreement, page 5). The PDO was phrased identically in the Project Appraisal Document (PAD) (PAD, page 1).

The PDO was revised during Restructuring 1 in December 2020 to read: “to increase access to electricity services for households, public institutions, and underserved micro, small and medium enterprises”.

The revision broadened the scope of the PDO from “public educational institutions” to “public institutions” to include health facilities, in response to COVID-19 related needs. This change introduced a new sub-objective but did not alter the substance of the PDO, or the scope or ambition of the Project. As such, it does not warrant a split efficacy evaluation before and after Restructuring 1 in December 2020. Therefore, this Implementation Completion and Results Report (ICR) Review will assess efficacy based solely on the revised PDO. However, key outcome targets were revised during Restructuring 2 in October 2023, requiring a split evaluation before and after that restructuring.

The PDO is parsed as follows:

PDO 1: To increase access to electricity services for households.

PDO 2: To increase access to electricity services for public institutions.

PDO 3: To increase access to electricity services for underserved micro, small and medium enterprises.

b. Were the project objectives/key associated outcome targets revised during implementation?
Yes

Did the Board approve the revised objectives/key associated outcome targets?
Yes

Date of Board Approval
27-Oct-2023

c. Will a split evaluation be undertaken?
Yes

d. Components
1. Original components

Component 1. Solar Hybrid Mini Grids for Rural Economic Development (cost at appraisal: US$330.0 million, of which US$150.0 million from IDA and US$180.0 million from private sector; cost at closure: US$130.3 million, of which US$108.5 million from IDA and US$21.8 million from private sector) aimed to adopt a market-based, private sector-led approach to develop mini grids for household and micro, small, and medium-sized enterprise (MSMEs) access. Most mini grids were to use solar generation with battery storage and diesel backup. There were two sub-components:

Subcomponent 1.1: Minimum Subsidy Tender for Mini Grids aimed to catalyze the mini grid market by identifying high-potential sites and offering capital subsidies to attract large-scale or international developers. Developers would bid for the lowest required subsidy. In addition, publicly financed projects with private participation were considered for commercially risky areas in northern Nigeria.

Subcomponent 1.2: Performance-Based Grants Program aimed to support operators of already planned mini grid sites through performance-based grants, disbursed on a rolling basis.

Component 2. Stand-alone Solar Systems for Homes and MSMEs (cost at appraisal: US$305.0 million, of which US$75 million from IDA and US$230 million from private sector; cost at closure: US$335.0 million, of which US$69.4 million from IDA and US$265.6 million from private sector) aimed to strengthen the market for stand-alone solar systems, replacing diesel generators. There were two sub-components:

Subcomponent 2.1: Market Scale-up Challenge Grants aimed to provide performance-based grants to large-scale companies to accelerate their sales of stand-alone systems

Subcomponent 2.2: Performance-based Grants aimed to provide grants of up to twenty percent of system installation costs to help cover recurring operational expenses. The grant amount would decrease as the market matured. A market assessment in the first year of the Project would determine if a credit line or other financing options can support working capital needs.

Component 3: Energizing Education (cost at appraisal: US$105 million from IDA; cost at closure: US$126.3 million from IDA) aimed to support the installation of solar power systems in seven federal public universities and teaching hospitals, replacing diesel generators. The Project would finance Phase 2 of the Energizing Education Program (EEP-2), building on Phase 1 (EEP-1), which was funded by the Government. Campus street lighting systems were also financed.

Component 4: Technical Assistance (TA) (cost at appraisal: US$25.0 million, of which US$20 million from IDA and US$5 million from counterpart funding; cost at closure: US$22.0 million from IDA) aimed to build institutional capacity and a framework for scaling rural electrification, as well as to support Project implementation. Specific activities included: capacity building for Rural Electrification Agency (REA), Nigerian Electricity Regulatory Commission (NERC), Federal Ministry of Power, Works and Housing (FMPWH), mini grid developers, solar firms, universities, and local financial institutions; support for a national electrification strategy, mini grid and off-grid market assessments; evaluation of financing instruments for mini-grids and Solar Home Systems (SHSs); support to mini grid regulations; and geospatial mapping,.

Revised Components:

- During Restructuring 1 in December 2020, ***Subcomponent 1.3: COVID-19 Response*** was added.
- During Restructuring 2 in October 2023:
  - Two subcomponents were dropped: ***Subcomponent 1.1: Minimum Subsidy Tender for Mini Grids*** and ***Subcomponent 2.1: Market Scale-up Challenge Grants***.
  - Two subcomponents were scaled down: ***Subcomponent 1.2: Performance-Based Grants Program*** and ***Subcomponent 1.3: COVID-19 Response.***

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Cost: The total project cost was estimated at US$765.0 million at appraisal, while actual disbursement amounted to US$613.6 million, reflecting a decrease of US$151.4 million. This difference is attributed to: (i) cost reduction during Restructuring 2 in October 2023, which lowered the total to US$558.2 million (Restructuring Paper, page 14); (ii) increased private sector participation; (iii) currency fluctuations;

and (iv) the depreciation of the SDR (the loan currency) against the US dollar, which reduced the available funds in US dollar terms.

Project Financing: The Project was financed by an IDA credit of US$350.0 million, with actual disbursement totaling US$326.2 million.

Borrower/Recipient contribution: While a US$5.0 million contribution was planned, no actual contribution was made.

Co-financing: Commercial unguaranteed co-financing was estimated at US$410.0 million at appraisal, with the actual amount of US$287.4 million disbursed at closure.

Project Dates: The Project was approved on June 27, 2018, and became effective on June 10, 2019. The mid-term review (MTR) was implemented in October 2022. The Project was restructured three times: (i) on December 23, 2020; (ii) on October 27, 2023; and (iii) on August 13, 2024. The original closing date was October 31, 2023. The Project was extended twice, for a total of 14 months (one year and two months), to December 31, 2024, which was the Project's actual closing date.

Restructurings: there were three restructurings, with the second one involving a scope reduction.

Restructuring 1 (December 23, 2020) involved adjustments to accommodate a COVID-19 response. The changes included:

- **Addition of a new *Subcomponent 1.3: COVID-19 Response*** to provide reliable electricity to health institutions: (i) COVID-19 isolation centers, and (ii) primary health care (PHC) facilities.
- **Reallocation of funds to the new subcomponent** in the amount of US$77.0 million, without altering the overall cost of the Project or its components.
- **Revision of the PDO to reflect the inclusion of health facilities, changing from:** "To increase access to electricity services for households, public educational institutions, and underserved micro, small and medium enterprises" to: "To increase access to electricity services for households, public institutions, and underserved micro, small and medium enterprises".
- **Update to the Results Framework (RF):**
    - **A new PDO indicator** "Public health facilities with new or improved electricity service" with a target of 500 health facilities was added.
    - **Two Intermediate Result Indicators (IRIs) were added**: (i) Number of COVID-19 isolation centers electrified; and (ii) Number of public health facilities electrified.

Restructuring 2 (October 27, 2023) involved a scope reduction. It was undertaken in response to cost overruns, over-commitment, and currency fluctuations, and included funding reallocations, significant revisions to the Results Framework (RF), and an extension of the closing date. The changes included:

- **Cancellation of two subcomponents:** *Subcomponent 1.1: Minimum Subsidy Tender for Mini Grids* and *Subcomponent 2.1: Market Scale-up Challenge Grants*.
- **Scaling down of two subcomponents**: *Subcomponent 1.2: Performance-Based Grants Program* and *Subcomponent 1.3: COVID-19 Response* (PHC connections were dropped).
- **Increased funding for:**
    - *Subcomponent 2.2: Performance-based Grants,* to respond to strong demand for SHS and cover over-committed grants.

  - *Component 3: Energizing Education Program,* to address cost overruns due to currency depreciation.
  - *Component 4: Technical Assistance*, to support new activities under *Component 1.3: COVID-19 Response* and expanded E&S responsibilities.
- **Reduced fund availability:** due to currency depreciation, IDA resources decreased from US$350.0 million to US$323.0 million.
- **RF revisions:**
  - **A new PDO indicator** "Private capital mobilized" was added to reflect the emphasis on leveraging private investment.
  - **Increased targets:**
  - Households provided with new electricity service (PDO indicator): from 500,000 to 1,060,000;
  - People provided with new electricity service (PDO indicator): from 2,500,000 to 5,300,000;
  - New stand-alone household connections (IRI): from 300,000 to 1,000,000;
  - New stand-alone generation capacity (stand-alone systems) (IRI): from 15 MW to 30 MW;
  - Percentage of women employed by mini-grid and off-grid companies (IRI): from 20 to 30.
  - **Reduced targets:**
  - MSMEs provided with new electricity services (PDO indicator): from 70,000 to 7,700;
  - Public health facilities with new or improved electricity service (PDO indicator): from 500 to 100 (due to the dropping of the PHC activity; COVID-19 isolation centers remained);
  - New household connections to mini-grids (IRI): from 300,000 to 60,000;
  - New mini-grid generation capacity (IRI): from 85 MW to 15.5 MW;
  - Volume of results-based financing to private sector (IRIs): (i) Mini-grid developers: from US$150.0 million to US$58.0 million; (ii) Stand-alone solar system providers: from US$75.0 million to US$69.0 million.
- **Extension of the closing date** by nine months, from October 31, 2023, to August 1, 2024, to allow for the completion of key activities.

Restructuring 3 (August 13, 2024) was needed to extend the Project closing date by five months, from August 1, 2024, to December 31, 2024, to accommodate delayed completion of *Component 3: Energizing Education Program*.

Split evaluation. A split evaluation is warranted due to the reduction in Project scope introduced under Restructuring 2 in October 2023. The Original Project is assessed using the RF as revised during Restructuring 1 in December 2020, which differs from the RF in the PAD through the addition of three new indicators on the electrification of health facilities. The Revised Project is assessed using the RF as defined under Restructuring 2 of October 2023.

3. Relevance of Objectives

Rationale

Country and Sector Context. At Project appraisal, Nigeria's economy was still recovering from the 2015 oil price crash, which triggered a recession in its heavily oil-dependent economy, highlighting the need for structural reforms. In response, the government adopted the National Economic Recovery and Growth Plan (ERGP) 2017–2020, prioritizing structural reforms and infrastructure investments, and identifying the energy sector as a priority and limited access to reliable electricity as a significant barrier to economic and human development. The electricity sector was in crisis, with 54 percent average technical and commercial losses in 2017, weak collections, below-cost tariffs, and a US$1 billion annual deficit. An estimated 80 million people – 40 percent of the population - did not have access to electricity, with rural communities relying on costly diesel generators or having no access at all. At the same time, the mini grid sector showed strong potential, with viable sites and private developers piloting cost-reflective projects. However, it lacked scale due to limited pre-investment support, insufficient viability gap financing, and weak market data. The standalone solar market also faced setbacks, as substandard products eroded consumer trust and discouraged lending. Recognizing the grid's limitations, the government approved the Rural Electrification Strategy and Implementation Plan (RESIP) in 2016, shifting focus to off-grid and mini grid solutions and emphasizing cost-effective, private sector–driven electrification with targeted subsidies. The Project supported this strategy by incentivizing private sector engagement in distributed renewable energy (DRE), including mini grids and stand-alone solar systems. (ICR, pages 1-2)

Relevance to Government Strategies at closure. The Project is aligned with Nigeria's National Development Plan (NDP) for 2021-2025, specifically *Chapter 12: Power and Alternative Energy*, which emphasizes the importance of supporting renewable off-grid electricity supply, particularly in rural areas. The NDP identifies a significant gap between grid electricity supply and demand, along with inadequate grid supply quality with frequent service interruptions that have led to the widespread use of fossil fuel generators. It also notes that nearly half of the country's population has limited or no access to the grid. To address these challenges, the NDP sets an objective to enhance RE-based power supply - particularly solar systems – with the target to increase RE share from 13 percent to 23 percent. The Project is recognized as one of the REA's key initiatives. (NDP, pages 83-86)

Relevance to the WBG's Assistance Strategies at closure. The Project's PDO was aligned with the WBG's Country Partnership Framework (CPF) FY2021-25, which remained in effect at closure. Specifically, it supported *Pillar 3: Promoting Jobs and Economic Transformation*, under *Core Objective 8: Increase Access to Reliable and Sustainable Power for Households and Firms*. This objective emphasizes support for increased access to reliable electricity through off-grid solar power and other renewable power generation options, as well as strengthening the policy, regulatory, contractual, and financing conditions for power sector companies. (CPF, pages 47-48)

Previous sector experience. The Project drew on lessons from previous World Bank's engagements in Nigeria's power sector, including prior TA to REA and EEP Phase I, which informed the design and scaling of EEP Phase II (Project Component 3). The Bank's global experience in electricity market development, support for off-grid solutions, and performance-based financing of electrification - including through the Lighting Africa and Infrastructure Development Company (IDCOL) programs - also played a key role in shaping the Project's design. (ICR, page 7) The Project was implemented in parallel with the Regional Off Grid Electrification Project for West Africa (P160708), the Agro-Processing, Productivity Enhancement and Livelihood Improvement Support Project (P148616), and another agricultural development operation - the Fadama III Project (P096572 and P131075). (ICR, pages 17, 19)

The Project aligned with Nigeria's needs and top government priorities, as well as the WBG's CPF at closure, building on prior WBG analytical and operational support for off-grid RE development. Accordingly, the relevance of objectives is rated High.

Rating
High

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective
To increase access to electricity services for households.

Rationale
A Theory of Change (ToC) was not included in the PAD but was prepared for the ICR based on the Project's design at appraisal (ICR, page 3). It listed the Project's activities, outputs, intermediate outcomes, PDO outcomes, and long-term impact. To achieve Objective 1, the Project supported the following activities: (i) performance-based grants and minimum-subsidy tenders for mini grids; (ii) challenge grants and performance-based incentives for stand-alone systems; and (iii) TA. Expected outputs included: (i) new privately operated mini grids providing household connections; (ii) an expanded market providing stand-alone solar systems to households; and (iii) strengthened institutional capacity and policies for distributed renewable energy (DRE). Expected intermediate outcomes were: (i) improved business environment for private off-grid investment; (ii) increased access to affordable, reliable power for households; and (iii) a strengthened enabling environment for DRE. The expected PDO outcome was increased household access to electricity. The critical assumptions were: (i) continued government commitment to sector reforms; (ii) supportive regulatory framework in place; (iii) private developers and suppliers respond to incentives to invest in off-grid market; and (iv) consumer demand generating revenues for operators.

While the ICR's TOC clearly reflected the logic of the Project at appraisal, it did not incorporate changes from Restructuring 2, notably the cancellation of mini grid tenders and stand-alone system challenge grants.

The RF was consistent with the PDO and expected outcomes. Under Objective 1 - revised at Restructuring 1 – the RF included three PDO indicators (one of which was a gender-specific sub-indicator), four IRIs specific to Objective 1 (two of which were gender specific sub-indicators), and six cross-cutting IRIs applicable to both Objectives 1 and 3. The PDO indicators were: Households provided with new electricity services (of which: female-headed), and People provided with new or improved electricity service. The Objective 1-specific IRIs were: Households provided with access to electricity by mini grids (of which: female-headed), and Households provided with access to electricity by stand-alone solar systems (of which: female-headed). These PDO indicators were directly aligned with the PDO, measuring the core outcome of increased household access. The IRIs supported the PDO indicators by tracking intermediate outcomes and outputs - separately for mini grids and standalone systems – on household access, installed solar capacity, and financing provided to private developers. Overall, the RF was logical, provided comprehensive coverage of results on increased access, and maintained alignment with the PDO. However, two result areas were not measured: on private capital mobilization (added at Restructuring 2) and on TA.

As stated in section 2.a, the efficacy of the Original Project is assessed using the RF revised at Restructuring 1 in December 2020, which added three indicators on the electrification of health facilities to the PAD's original RF. The Revised Project is evaluated based on the RF defined at Restructuring 2 in October 2023.

Efficacy under Objective 1 - Original Project:

IRI results:

Household access (Objective 1):

1. "Households provided with access to electricity by mini grids (Number)" (baseline: zero, target: 300,000). The achievement at closure was 146,517 households. The target was 48.8 percent (partially) achieved. The gender specific sub-target (female-headed households) was 10 percent, and the actual achievement was 13 percent, exceeding the target. According to the ICR (p. 29), currency depreciation and rising import costs necessitated higher per-connection grants. Additionally, funding was reallocated away from mini-grid activities. As a result, the target was revised downward to 60,000 households at Restructuring 2.

2. "Households provided with access to electricity by stand-alone solar systems (Number)" (baseline: zero, target: 300,000). The achievement at closure was 1,082,281 households, exceeding the target. The gender specific sub-target (female-headed households) was 10 percent, and the actual achievement was 43 percent, exceeding the target. This result was driven by strong private sector demand for performance-based grants and growing interest in investing in stand-alone systems, which led to increased funding for *Sub-component 2.2: Performance-based Grants* at Restructuring 2 (ICR, page 30).

Cross-cutting (Objectives 1 and 3):

1. "New generation capacity of renewable energy (solar) installed (MW) (mini-grids)" (baseline: zero, target: 85 MW). The achievement at closure was 19 MW. The target was 22.6 percent (barely) achieved. The target was revised downward to 15.5 MW at Restructuring 2, reflecting increased costs and the reallocation of funding away from mini grid activities.

2. "New generation capacity of renewable energy (solar) installed (MW) - stand-alone systems" (baseline: zero, target: 15 MW). The achievement at closure was 46.4 MW, exceeding the target. This result was driven by strong private sector's interest in investing in stand-done systems.

3. "Volume of results-based financing channeled to private sector mini grid developers (US$)" (baseline: zero, target: US$150,000,000). The achievement at closure was US$82,775,900. The target was 55.2 percent (partially) achieved. This target was reduced to US$58 million at Restructuring 2 due to increased costs and reduced funding for mini grid activities.

4. "Volume of results-based financing channeled to private sector stand-alone solar system providers (US$)" (baseline: zero, target: US$75,000,000). The achievement at closure was US$69,397,824. The target was 92.5 percent (almost fully) achieved. This strong performance was attributed to robust private sector interest in investing in stand-alone systems.

5. "Percentage of women in total number of people employed by mini grid and off-grid companies (%)" (baseline: 16, target: 20). The achievement at closure was 32 percent, exceeding the target.

6. “Annual publication of feedback received from citizens reached through the consumer education and citizen engagement program (Yes/No)”. The target was not achieved. The ICR noted limited capacity for collating feedback data and delays in implementing the consumer education and citizen engagement program as the main reasons for this shortfall (ICR, page 29).

PDO outcomes:

Household access (Objective 1):

1. “Households provided with access to electricity services (Number)” (baseline: zero, target: 500,000). The achievement at closure was 1,228,798 households, exceeding the target. The gender specific sub-target (female-headed households) was also exceeded.

2. “People provided with new or improved electricity service (Number)” (baseline: zero, target: 2,500,000). The achievement at closure was 6,143,990 people, exceeding the target.

Cross-cutting (Objectives 1 and 3):

No indicators.

Overall, both PDO-level outcome targets under Original Project were exceeded. Of the two IRI targets on household access, one was partially achieved and the other exceeded, while both gender specific sub-targets surpassed. Among the six cross-cutting IRIs, three were exceeded or almost fully achieved, one was partially achieved, one barely achieved, and one not achieved. This mixed performance on IRI targets reflected target revision and funding reallocation made during Restructuring 2 in October 2023, which responded to on-the-ground realities – a combination of strong private sector demand and emerging challenges. Developers showed greater interest in: (i) performance-based grants over minimum subsidy tenders, and (ii) stand-alone systems versus mini grids. Challenges included cost overruns due to currency depreciation, rising import costs, and higher-than-expected construction bids and grant claims. In response, Restructuring 2 involved the cancellation of some sub-components, downward target adjustments, and reallocation of funding toward high-demand activities. As a result, stand-alone system targets were exceeded, while mini-grid targets were not fully met. Separately, the Project succeeded in reaching female beneficiaries and exceeding gender-specific targets. This was supported by outreach and training activities, community engagement, data-driven gender-inclusive design, outreach, and financial inclusion strategies.

Rating. The PDO targets and most IRI targets under Objective 1 of the Original Project were exceeded, met, or almost fully achieved. Overall household access surpassed the target, thereby achieving Objective 1. This was primarily due to strong performance on stand-alone systems, while underachievement on mini grids reflected the strategic shift away from mini-grid activities during Restructuring 2. Accordingly, the efficacy rating is Substantial.

Rating
Substantial

OBJECTIVE 1 REVISION 1

Revised Objective
To increase access to electricity services for households (same as in the Original Project).

Revised Rationale
Please see the discussion of the TOC and RF indicators under Objective 1, Original Project. One additional PDO indicator - Private capital mobilized (a cross-cutting indicator for Objectives 1 and 3) - was introduced during Restructuring 2. Overall, the RF was logical, provided comprehensive coverage of results on increased access and market development, and remained consistent with the PDO. However, results related to TA were not measured.

The following IRI's targets were revised:

Household access (Objective 1):

1. "Households provided with access to electricity by mini-grids (Number)" (baseline: zero, revised target: 60,000). The achievement at closure was 146,517 households, exceeding the target. The gender specific sub-target (female-headed households) was 10 percent, and the actual achievement was 13 percent, exceeding the target. According to the ICR (p. 29), this strong result was supported by a robust private sector response, improved regulatory clarity, effective community engagement, and an increase in the per-connection grant—from US$350 to US$600 (later adjusted to US$450)—to offset currency depreciation and rising import costs. These cost pressures contributed to the downward revision of the original target from 300,000 to 60,000 households during Restructuring 2.

2. "Households provided with access to electricity by stand-alone solar systems (Number)" (baseline: zero, revised target: 1,000,000). The achievement at closure was 1,082,281 households, exceeding the target. The gender-specific sub-target (female-headed households) was 10 percent, and the actual achievement was 43 percent, exceeding the target.

Cross-cutting (Objectives 1 and 3):

1. "New generation capacity of renewable energy (solar) installed (MW) (mini-grids)" (baseline: zero, revised target: 15.5 MW). The achievement at closure was 19 MW, exceeding the target. The target was significantly reduced during Restructuring 2 - from 85 MW to 15.5 MW - due to limited private sector interest in investing in mini grids.

2. "New generation capacity of renewable energy (solar) installed (MW) (stand-alone systems)" (baseline: zero, revised target: 30 MW). The achievement at closure was 46.4 MW, exceeding the target.

3. "Volume of results-based financing channeled to private sector mini grid developers (US$)" (baseline: zero, revised target: US$58,000,000). The achievement at closure was US$82,775,900, exceeding the target. The target was significantly reduced at Restructuring 2 - from US$150 million to US$58 million, due to limited private sector interest in investing in mini grids. (ICR, page 30)

4. "Volume of results-based financing channeled to private sector stand-alone solar system providers (US$)" baseline: zero, revised target: US$69,000,000). The achievement at closure was US$69,397,824, exceeding the target.

5. “Percentage of women of total number of people employed by mini grid and off-grid companies (%)” (baseline: 16, revised target: 30). The achievement at closure was 32 percent, exceeding the target.

The following PDO outcome targets were revised or indicators introduced at Restructuring 2:

1. “Households provided with access to electricity services (Number)” (baseline: zero, revised target: 1,060,000). The achievement at closure was 1,228,798 households, exceeding the target. The gender specific sub-target (female-headed households) was also exceeded.

2. “People provided with new or improved electricity service (Number)” (baseline: zero, revised target: 5,300,000). The achievement at closure was 6,143,990 people, exceeding the target.

Cross-cutting (Objectives 1 and 3):

1. “Private capital mobilized (US$)” (baseline: zero, target: US$250,000,000). The achievement at closure was US$287,427,217, exceeding the target.

Overall, all three PDO outcome targets and all IRI targets under the Revision 1 Project were met or exceeded. Of the six cross-cutting IRIs, five were exceeded. The one target not achieved - on the annual publication of citizen feedback - does not directly contribute to the achievement of Objective 1. These strong results were supported by the strategic adjustments made during Restructuring 2, which responded to the on-the-ground realities. These included both strong private sector demand and emerging challenges, such as cost overruns driven currency depreciation, rising import costs, and higher-than-expected construction bids and grant claims. As a result, the Project shifted away from *Minimum-Subsidy Tender for Mini Grids* and *Market Scale-up Challenge Grants* (Sub-components 1.1 and 2.1) toward performance-based grants (Sub-components 1.2 and 2.2), aligning more closely with private sector preferences. (ICR, pages 5-9)

Rating. All PDO and IRI results contributing to the achievement of Objective 1 under the Revision 1 Project were met or exceeded. Accordingly, the efficacy rating is High.

Revised Rating
High

OBJECTIVE 2
Objective
To increase access to electricity services for public institutions.

Rationale
A Theory of Change (ToC) was not included in the PAD but was prepared for the ICR based on the Project’s design at appraisal (ICR, page 3). It listed the Project’s activities, outputs, intermediate outcomes, PDO outcomes, and long-term impact. To achieve Objective 2, the Project supported: (i) construction of solar hybrid systems for universities and teaching hospitals; and (ii) TA. Expected outputs were: (i) reliable power supply to selected universities and teaching hospitals; and (ii) strengthened institutional capacity and policies for distributed renewable energy (DRE). Expected intermediate outcomes were: (i) enhanced quality of education and health services; and (ii) a strengthened enabling environment for DRE. The expected PDO

outcome was the provision of new or improved electricity services to public institutions. Please see the critical assumptions under Objective 1, Original Project.

The ICR's TOC clearly presented the logic at appraisal. However, it did not reflect changes made at Restructuring 1, which affected the Original Project under Objective 2. Two new activities were added: (i) provision of reliable electricity to COVID-19 isolation centers; and (ii) provision of electricity to PHC facilities. These led to two additional expected outputs – reliable power for COVID-19 centers and PHC facilities - which fed into the existing intermediate outcome of enhanced quality of education and health services.

The RF indicators were consistent with the PDO and expected outcomes. The RF under Objective 2 - as revised at Restructuring 1 - included two PDO indicators and five IRIs. The PDO indicators were: (i) federal universities and university teaching hospitals with new or improved electricity service; and (ii) public health facilities with new or improved electricity service. The PDO indicators were directly linked to the PDO, measuring improved access to reliable electricity for public institutions. The IRIs supported the PDO indicators by measuring increased reliable access separately for universities, universities with teaching hospitals, COVID-19 centers, and PHC facilities, as well as new generation capacity installed in public institutions. Overall, the RF was logical, aligned with the PDO, and provided comprehensive coverage of results on reliable power access. However, results on TA were not measured.

Efficacy under Objective 2 - Original Project:

IRI results:

Public institutions access (Objective 2):

1. "Federal universities with new or improved electricity service (Number)" (baseline: zero, target: seven). The achievement at closure was seven universities. The target was achieved.

2. "Federal universities with a teaching hospital with new or improved electricity service (Number)" (baseline: zero, target: two). The achievement at closure was two universities. The target was achieved.

3. "New generation capacity of renewable energy (solar) installed (MW) (public institutions)" (baseline: zero, target: 19). The achievement at closure was 32 MW, exceeding the target. (ICR, page 31).

4. "Access to reliable electricity for facilities providing isolation and treatment services for the COVID-19 outbreak (Number)" (baseline: zero, target: 100). The achievement at closure was 100 facilities. The target was achieved.

5. "Access to reliable electricity for primary healthcare facilities (Number)" (baseline: zero, target: 400). The related task was later dropped; this target was not achieved. The related activity was dropped at Restructuring 2.

PDO outcomes:

Public institutions access (Objective 2):

1. "Federal universities and university teaching hospitals with new or improved electricity service (Number)" (baseline: zero, target: seven). The achievement at closure was **seven** universities. The target was achieved.

This result was supported by a significant increase of funding for university electrification activities at Restructuring 2, enabled by reallocating funds from other components and the dropped PHC activity.

2. “Public health facilities with new or improved electricity service (Number)” (baseline: zero, target: 500). The achievement at closure was 100 facilities. The target was 20 percent (barely) achieved. This shortfall was due to the cancellation of one of the two underlying activities—provision of reliable electricity to PHC facilities—during Restructuring 2.

Overall, the targets for both the PDO-level outcomes and IRIs on university electrification were achieved. However, results for healthcare facilities were mixed: one of the two IRI targets – on electrification of COVID-19 isolation centers - was reached, while the other – on electrification of PHC facilities - was not, resulting in the PDO outcome being barely achieved. These mixed results stemmed from adjustments made during Restructuring 2, including the cancellation of the PHC electrification activity and reallocation of funds to other activities. These changes were necessary to address cost overruns caused by currency depreciation, rising import costs, higher-than-expected construction bids and grant claims, and local procurement challenges (ICR, pages 7, 35).

Rating. The expected results for Objective 2 under the Original Project were only partially achieved. Accordingly, the efficacy rating is Modest.

Rating
Modest

OBJECTIVE 2 REVISION 1

Revised Objective
To increase access to electricity services for public institutions (same as in the Original Project).

Revised Rationale
Please see the discussion of the TOC and RF indicators under Objective 2, Original Project. Changes made during Restructuring 2 involved the cancellation of one activity added at Restructuring 1: the provision of reliable electricity for PHC facilities. As a result, the corresponding output - reliable power for PHC facilities - was removed from the TOC under the Revision 1 Project, and the related IRI was dropped. Overall, the RF remained logical, provided comprehensive coverage of results on increased access and market development, and its indicators were consistent with the PDO. However, results on TA were not measured.

The following IRI’s targets were revised:

Public institutions access (Objective 2):

1. “Federal universities with new or improved electricity service (Number)” (baseline: zero, target: seven). The achievement at closure was seven universities. The target was achieved.

No PDO outcome target was revised.

Overall, all PDO indicator and IRI Objective 2 targets under Revision 1 Project were met. These strong results were due to the meaningful adjustments of Project design and RF targets at Restructuring 2, which were needed to cover cost overruns that occurred mainly due to currency depreciation and higher than anticipated costs. The adjustments included dropping the PHC electricity systems activity (and reducing the target for the PDO indicator on health facilities) and a significant reallocation of funding to the remaining activities. Increased funds helped preserve the intended outcome of improved power supply in universities and teaching hospitals, which remained central to Objective 2, while the Project's support to healthcare facilities focused on the most vital COVID-19 centers (ICR, pages 7, 35).

Rating. All targets on university and healthcare facility electrification under Objective 2 of the Revision 1 Project were achieved. Accordingly, the efficacy rating is High.

Revised Rating

High

OBJECTIVE 3

Objective

To increase access to electricity services for underserved micro, small and medium enterprises (MSMEs).

Rationale

A Theory of Change (ToC) was not included in the PAD but was prepared for the ICR based on the Project's design at appraisal (ICR, page 3). It listed the Project's activities, outputs, intermediate outcomes, PDO outcomes, and long-term impact. To achieve Objective 3, the Project supported the following activities: (i) performance-based grants and minimum-subsidy tenders for mini grids; (ii) challenge grants and performance-based incentives for stand-alone systems; and (iii) TA. Expected outputs included: (i) new privately operated mini grids providing MSME connections; (ii) an expanded market for stand-alone solar systems providing new MSME connections; (iii) strengthened institutional capacity and policies for distributed renewable energy (DRE). Expected intermediate outcomes were: (i) improved business environment for private off-grid investment; (ii) increased access to affordable and reliable power for MSMEs; and (iii) a strengthened enabling environment for DRE. The expected PDO outcome was increased access to electricity for MSMEs. The critical assumptions were: (i) continued government commitment to sector reforms; (ii) a supportive regulatory framework; (iii) private developers and suppliers respond to incentives to investing in off-grid market; and (iv) consumer demand for affordable, reliable power brings revenues to operators.

The ICR's TOC clearly presented the logic of the Project at appraisal. However, it did not reflect changes introduced at Restructuring 2, notably the cancellation of activities related to minimum-subsidy tenders for mini grids and challenge grants for stand-alone systems.

The RF indicators were consistent with the PDO and expected outcomes. The RF under Objective 3 - as revised at Restructuring 1 - included two PDO indicators (one of them was a gender-specific sub-indicator), five IRIs specific to Objective 3 (two of them were gender specific sub-indicators), and six cross-cutting IRIs shared by Objectives 1 and 3. The PDO indicators were: MSMEs provided with new electricity services (of which: female-headed). The IRIs specific for Objective 3 were: MSMEs provided with access to electricity by mini grids (of which: female-headed), and by stand-alone solar systems (of which: female-headed). The PDO indicators directly measured the intended outcome - expanded MSME access to electricity. The IRIs supported the PDO indicators by tracking the following intermediate outcomes/outputs, separately for mini grids and standalone systems: increased MSME access, installed solar capacity, and financing to private developers. Overall, the RF was logical, aligned with the PDO, and provided comprehensive coverage of results related to increased access and market development. However, two areas were not measured: (i) private capital mobilization (added only at Restructuring 2), and (ii) technical assistance.

Efficacy under Objective 3 - Original Project:

IRI results:

MSMEs access (Objective 3):

1. “MSMEs provided with access to electricity by mini grids (Number)” (baseline: zero, target: 30,000). The achievement at closure was 15,120 MSMEs. The target was 50.4 percent (partially) achieved. The gender specific sub-target (female-headed MSMEs) was 10 percent, and the actual achievement was 38 percent, exceeding the target.

2. “MSMEs provided with access to electricity by stand-alone systems (Number)” (baseline: zero, target: 40,000). The achievement at closure was 6,543 MSMEs. The target was 16.4 percent (barely) achieved. The gender specific sub-target (female-headed MSMEs) was 10 percent, and the actual achievement was 28 percent, exceeding the target.

3. “Increased productive uses of electricity for female headed businesses and female famers etc. (%)” (baseline: zero, target: five). The achievement at closure was 11 percent, exceeding the target. The ICR noted that this result reflected strong demand for reliable power in the agricultural and small-scale industrial sectors, particularly among women (ICR, page 30).

Cross-cutting (Objectives 1 and 3): Please see the information under Objective 1, Original Project.

PDO outcomes:

MSMEs access (Objective 3):

1. “MSMEs provided with new electricity services (Number)” (baseline: zero, target: 70,000). The achievement at closure was 21,663 MSMEs. The target was 30.9 percent (partially) achieved. The gender specific sub-target (female-headed MSMEs) was 7,000, and the actual achievement was 7,578 MSMEs, exceeding the target. The ICR noted that the partial result was due to a reduced focus on MSME access during Restructuring 2.

Cross-cutting (Objectives 1 and 3):

No indicators.

Overall, the achievement of MSME access targets was partial. The PDO indicator and one of the three Objective 3 -specific IRI targets were achieved partially, the second IRI was barely met, while the third IRI was exceeded. Both gender-specific sub-targets were exceeded. Among six cross-cutting IRIs, four were exceeded, achieved, or almost fully met, though these mostly reflect Objective 1 outcomes rather than Objective 3. The partial achievement of MSME targets resulted from the Project’s reduced focus on MSME access and significant downward revision of targets during Restructuring 2. This shift responded to slower-than-expected market uptake and the need to prioritize high-demand activities under Objectives 1 and 2, with corresponding fund re-allocations.

Rating. The expected results for Objective 3 under the Original Project were partially achieved. Accordingly, the efficacy rating is Modest.

Rating
Modest

OBJECTIVE 3 REVISION 1

Revised Objective
To increase access to electricity services for underserved micro, small and medium enterprises (MSMEs) (same as in the Original Project).

Revised Rationale
Please see the discussion of the TOC and RF indicators under Objective 3, Original Project. One PDO indicator was added at Restructuring 2: Private capital mobilized (a cross-cutting indicator for Objectives 1 and 3). Overall, the RF was logical and provided comprehensive coverage for results on increased access and market development. The indicators were consistent with the PDO. However, results on TA were not measured.

The following IRI's targets were revised:

MSMEs access (Objective 3):

1. "MSMEs provided with access to electricity by mini grids (Number)" (baseline: zero, revised target: 2,300). The achievement at closure was 15,120 MSMEs, exceeding the target. The gender specific sub-target (female-headed MSMEs) was 10 percent, and the actual achievement was 38 percent, exceeding the target.

2. "MSMEs provided with access to electricity by stand-alone systems (Number)" (baseline: zero, revised target: 5,000). The achievement at closure was 6,543 MSMEs, exceeding the target. The gender specific sub-target (female-headed MSMEs) was 10 percent, and the actual achievement was 28 percent, exceeding the target.

Cross-cutting (Objectives 1 and 3): Please see the information under Objective 1, Revision 1 Project.

The following PDO outcome target was revised:

MSMEs access (Objective 3):

1. "MSMEs provided with new electricity services (Number)" (baseline: zero, revised target: 7,700). The achievement at closure was 21,663 MSMEs, exceeding the target. The gender specific sub-target (female-headed MSMEs) was 7,000, and the actual achievement was 7,578 MSMEs, exceeding the target.

Cross-cutting (Objectives 1 and 3): Please see the information under Objective 1, Original Project.

Overall, all PDO indicator and IRI targets under Objective 3 of the Revision 1 Project were met, except for one cross-cutting output target on the annual publication of feedback. This indicator does not directly contribute to the achievement of Objective 3. The strong results were driven by meaningful adjustments of the RF targets at Restructuring 2, which accounted for cost overruns due to currency depreciation and increased costs. Additionally, there was a reduced focus on MSME access, while emphasis shifted towards high-demand activities under Objectives 1 and 2 during Restructuring 2.

Rating. All PDO and IRI results contributing to the achievement of Objective 3 under the Revision 1 Project were exceeded. Accordingly, the efficacy rating is High.

Revised Rating
High

OVERALL EFFICACY

Rationale
For the Original Project, the rating is Modest. Objectives 1 (household access) was substantially achieved, while both Objective 2 (public facility access) and Objective 3 (MSME access) were modestly (partially) achieved. This outcome reflects significant adjustments to the Project design and the RF targets, as well as the re-allocation of financing across activities introduced during Restructuring 2. These adjustments aimed to increase focus on high-demand activities and address challenges such as cost overruns caused by currency depreciation, rising import costs, higher-than-anticipated construction bids and grant claims, and local procurement issues. Specific changes included: (i) an increasing focus on household access and electricity services for universities and COVID-19 isolation centers, while reducing focus on MSME access and dropping PHC electrification activity; and (ii) a shift toward high-demand stand-alone systems while a downsizing of mini-grid activities.

Overall Efficacy Rating	**Primary Reason**
Modest	Low achievement

OVERALL EFFICACY REVISION 1

Overall Efficacy Revision 1 Rationale
For the Revision 1 Project, the rating for efficacy is High. All PDO and IRI results contributing to the achievement of Objectives 1, 2, and 3 under the Revision 1 Project were met or exceeded.

Overall Efficacy Revision 1 Rating

High

5. Efficiency

a. Economic Analysis (PAD, pages 30-32, ICR, pages 10-11, 38-39):

A cost-benefit analysis (CBA) was conducted at both appraisal and closure, using consistent methodology and assumptions. Three investment areas were assessed initially: solar mini grids, stand-alone solar home systems (SHS), and solar systems for universities and teaching hospitals. At closure, health centers were added as a fourth area. Benefits considered included avoided costs of kerosene, gasoline, dry cell batteries, and diesel based on existing usage. Appraisal costs were based on private developer estimates, covering generation, distribution, fuel, operations and maintenance (O&M), imports, retail networks, marketing, and warehousing. At closure, the same approach was used, but with actual cost data replacing estimates. A discount rate of five percent was applied.

Results at appraisal. Economic Internal Rates of Return (EIRRs) were: 26.8 percent for mini grids, 46.9 percent for SHS, and 12.9 percent for EEP. The overall EIRR was 25 percent (or 34 percent with CO_2 benefits), with a Net Present Value (NPV) of US$749 million (or US$989 million with CO_2 benefits).

Results at closure. EIRRs were 29.0 percent for mini grids, 59 percent for SHS, 16 percent for EEP, and 8.5 percent for health centers. The overall EIRR was 28 percent (or 41 percent with CO_2 benefits), with a Net Present Value (NPV) of US$700 million (or US$990 million with CO_2 benefits).

Overall, EIRRs were higher at closure than at appraisal, indicating a least-cost implementation. In all cases, the EIRRs exceeded the opportunity cost of capital (i.e., the discount rate), suggesting the Project's economic viability.

b. Administrative Efficiency:

The ICR highlighted that the Project was implemented within budget and benefited from technically robust preparation, drawing on geospatial and demand studies, lessons from EEP-I, and other programs such as Lighting Africa, the Infrastructure Development Company, and Kenya's mini-grid scale up. The Project design was logical and clear, with technologies well-suited to rural electrification. TA supported regulatory development and introduced innovative financing instruments, particularly performance-based grants. The Project successfully navigated a complex institutional landscape, coordinating multiple stakeholders - REA, the Federal Ministry of Finance (FMoF), the Federal Ministry of Power, and private sector actors. Government ownership, strong leadership by REA, and a capable Project Management Unit (PMU) were key to effective implementation. The RF was well designed, and the monitoring and evaluation (M&E) responsibilities were well integrated within REA, supported by a dedicated M&E unit. The use of the REA-Odyssey data platform enhanced data management. Substantial risks were identified at appraisal - including macroeconomic, political, sector policy, and technical and business model design risks – and were mitigated through stakeholder engagement, policy support, and TA. The Project also adapted effectively to emerging challenges through restructurings. These addressed currency depreciation and rising costs by restructuring subsidies, disbursing grants in hard currency, focusing on high-demand activities, and scaling down other activities. In response to actual private sector demand, the Project increased its focus on performance-based grants and stand-alone systems (over mini grids), and prioritized electrification for households, universities, and COVID-19 centers, while reducing emphasis on MSMEs. (ICR, pages 11-16, 18-20)

However, the Project faced several inefficiencies, leading to a 14-month completion delay. Currency depreciation reduced the value of grants, delaying financial close for developers and causing cost overruns. In response, REA switched to disbursing grants in US dollars after 2022, and the Project was restructured in October 2023, reducing the scope and focusing on high-demand activities within the same budget. Delays were also caused by slow disbursement, procurement issues, and capacity constraints at REA, particularly early on. Challenges included unfamiliarity with Bank procurement guidelines, adapting procurement templates for the minimum subsidy approach, using the Systematic Tracking of Exchanges in Procurement (STEP) system, and shortages in financial, contract, and environmental and social safeguards (E&S) staff. These were addressed through targeted staffing, external consultants, and capacity building. Other bottlenecks included limited access to credit, which was resolved through PMU engagement with banks and developers, and delays in regulatory clearances, mitigated by TA support to agencies. Initial mistrust of private operators by local authorities was addressed through public sensitization and community engagement. (ICR, pages 11-16, 18-20)

On balance, while the Project experienced delays and scope adjustments, it benefited from strong preparation, improved supervision in later stages, targeted capacity building, regulatory support, and stakeholder engagement. Accordingly, the efficiency rating is Substantial.

Efficiency Rating

Substantial

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	34.00	96.70 ☐ Not Applicable
ICR Estimate	✓	41.00	0 ☑ Not Applicable

* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

	Original Project:	Revision 1 Project:
Relevance of objectives	High	
Efficacy	Modest	High
Efficiency	Substantial	
Outcome	Moderately unsatisfactory	Highly Satisfactory
Outcome value	3	6

Amount disbursed, US$ million	180.99	142.0
Disbursement percentage	56.0%	44.0%
Weight value	1.68	2.64
Total weights	4.32	
Overall outcome rating	Moderately Satisfactory	

The relevance of objectives is High, while efficacy is Modest for the Original Project and High for the Revision 1 Project, and efficiency is Substantial. Based on the shares of the disbursed funds before and after Restructuring 2 (US$180.99 million or 56.0 percent and US$142.0 million or 44.0 percent), the overall Project outcome rating is Moderately Satisfactory* (0.56*3+0.44*6=4.32).

* Based on a six-point scale, where: 1 = Highly Unsatisfactory, 2 = Unsatisfactory, 3 = Moderately Unsatisfactory, 4 = Moderately Satisfactory, 5 = Satisfactory, and 6 = Highly Satisfactory.

a. Outcome Rating

Moderately Satisfactory

7. Risk to Development Outcome

Macroeconomic. The Project was negatively affected by currency depreciation, which necessitated – among other adjustments – a reduction in scope. Looking ahead, currency volatility poses a continued risk to the scale-up of Project-financed installations, as it reduces the affordability of imported solar components and undermines the financial viability of mini grids. (ICR, page 20)

Financial. Ensuring the durability and sustained performance of systems established under the Project is critical for maintaining development outcomes. Post-construction service gaps in public institutions, particularly universities, highlight the need for longer-term O&M arrangements. The one-year Engineering, Procurement, and Construction (EPC) warranties have proven insufficient, prompting the REA to explore longer-term “energy-as-a-service” contracts that integrate maintenance financing with performance incentives. (ICR, page 21)

Institutional capacity. Project implementation benefited from capacity building within the REA, deployment of the Odyssey data platform, and a robust tiered verification process managed by the Independent Verification Agent (IVA) to authorize results-based grant disbursements. Sustaining these systems beyond Project closure is essential for future scale-up and will require adequate budgetary support, retention of skilled staff to preserve institutional knowledge, and continued compliance from private developers. (ICR, page 20)

8. Assessment of Bank Performance

a. Quality-at-Entry

The Project's preparation was thorough, drawing on geospatial and demand studies, global best practices, and lessons from international access programs such as Lighting Africa, IDCOL, and Kenya's mini grid scale-up. The selected technologies were appropriate for rural electrification and tailored to the Project's specific context. The Bank facilitated preparatory activities under a Project Preparation Advance, which supported the early recruitment of procurement and financial management (FM) specialists, the development of a procurement strategy, and the establishment of financial reporting systems and disbursement protocols prior to implementation. Key risks related to technical complexity, financial and procurement capacity, and market readiness were identified and mitigated through a phased implementation strategy, pre-verification of sites, results-based grants, and support to regulatory development. A multi-disciplinary team - including specialists in energy access, procurement, safeguards, FM, and M&E - supported preparation. Early engagement with REA and other government stakeholders strengthened ownership and readiness. The RF was well designed, and monitoring and evaluation (M&E) responsibilities were well integrated within REA, supported by a dedicated M&E unit. The use of the REA-Odyssey data platform enhanced data management. (ICR, pages 11-16, 18-20)

However, some risks could have been mitigated better, as implementation faced challenges including slow disbursement, procurement delays, capacity constraints at REA, and difficulties integrating multiple data systems and offline records (ICR, pages 15, 19).

Quality-at-Entry Rating

Satisfactory

b. Quality of supervision

The ICR noted that the Bank team remained focused on development outcomes throughout implementation, closely monitoring electricity connectivity results and effectively engaging with multiple government and private sector stakeholders. The team provided strong policy and market development support. In response to early procurement and financial management issues, the Bank delivered targeted support that resolved the problems. Safeguards oversight remained robust throughout implementation. Supervision was intensive, combining field missions, technical reviews, and virtual engagements. Over 6.5 years of implementation, 12 Implementation Status Reports (ISRs) were filed, containing candid and well-verified data. The team demonstrated flexibility during restructurings, which effectively addressed rising costs and private sector demand by restructuring subsidies, disbursing grants in hard currency, and focusing on high-demand activities. (ICR, pages 12-15, 19)

During supervision, several challenges emerged. Currency depreciation led to cost overruns and prolonged financial closure for developers. Slow disbursement, procurement delays, and insufficient REA's capacity created bottlenecks. Specific difficulties included a steep learning curve in applying Bank procurement guidelines, adjusting procurement templates, and using the STEP system. Staffing gaps in fiduciary and E&S functions caused further inefficiencies. Reluctance of local financial institutions to lend to solar developers created a barrier. The Bank team mitigated these issues through restructurings, disbursement of grants in US dollars, capacity building, external consultancy support, and stakeholder engagement. (ICR, pages 14-16, 19-20)

Overall, the Bank performance is rated Satisfactory. The design was strong, with minor shortcomings, and while the implementation faced challenges, these were addressed through restructurings and hands-on supervision.

Quality of Supervision Rating

Satisfactory

Overall Bank Performance Rating

Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The RF was well-designed, clear, and aligned with the Project's intervention logic in the PAD, the PDO, and expected outcomes. The RF indicators measured objective results, were mostly quantitative with one binary (Yes/No) indicator, time-bound, measurable, specific, and attributable to the Project. Intermediate indicators supported the PDO indicators through tracking results on access and financing by activity type, separately for mini grids and standalone systems, as well as for universities, university hospitals, and health centers. The ICR noted that a major design strength was the use of the centralized Odyssey data platform, where developers uploaded real-time output data and IVAs conducted randomized site inspections to validate new connections (ICR, page 16). M&E responsibilities were integrated within REA's routine processes and supported by a dedicated M&E unit.

A minor shortcoming was the absence of measurement in two areas: (i) private capital mobilization (added only at Restructuring 2), and (ii) technical assistance. The ICR also noted that setting precise targets for households and MSMEs proved challenging, given the private sector-led nature of those components. This limitation represented a shortcoming in the M&E design (ICR, page 16).

b. M&E Implementation

The ICR found M&E implementation adequate. Developers uploaded sales and installation data into the Odyssey platform. In areas with unstable internet, offline reports were submitted and manually entered into Odyssey by REA. The IVA used tiered verification, including remote monitoring via phone and meters, random on-site inspections to confirm installations, and final validation. To authorize results-based grant disbursements, REA compared developer data with IVA validations, verifying unaligned data.

Despite the strengths of the Odyssey platform, delays and inconsistencies from offline submissions highlighted the need for stronger data protocols and training. (ICR, page 17)

c. M&E Utilization

The ICR reported that operational decisions and grant disbursements were data-driven, using the Odyssey dashboard and IVA reports to release results-based financing tranches. M&E data also supported Project restructurings and adaptive management, such as revising developer eligibility criteria and adjusting grant amounts. Furthermore, it influenced national policy, contributing to the 2023 update of the Nigeria's Mini Grid Regulation with the new "clustered settlement" tariff. Project experience also prompted the Ministry of Finance to denominate future DRE grants in U.S. dollars to mitigate against exchange rate risks. The Project's monitoring systems, including Odyssey templates, were adopted by successor programs. Overall, M&E evolved into a management tool supporting incentive design, real-time adjustments, and policy development. (ICR, page 17)

The M&E Quality is rated as Substantial. The M&E design, implementation, and utilization were adequate, with minor shortcomings in design and implementation noted above, specifically the absence of measurement for private capital mobilization at appraisal (added only at Restructuring 2) and technical assistance, challenges with setting targets for household and MSME access, and delays and inconsistencies from offline submissions during implementations.

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

Environmental and Social (E&S) Safeguards. At appraisal, the Project was classified as Environmental Category B (Partial Assessment), and the following safeguards policies were triggered: Environmental and Social Assessment (OP/BP 4.01) and Involuntary Resettlement (OP/BP 4.12). An Environmental and Social Management Framework (ESMF) and a Resettlement Policy Framework (RPF) were prepared and disclosed during preparation. Full Environmental and Social Impact Assessments (ESIAs) were conducted for mini grids in higher-risk biodiversity areas and for EEP institution systems, while lower-risk sites required Environmental and Social Management Plans (ESMPs), which were prepared as needed. An independent E&S audit firm evaluated compliance for EEP sites and 20 percent of mini-grid sites post-implementation. Land acquisition was minimal, and site-specific Resettlement Action Plans (RAPs) were prepared and followed where required. A grievance redress mechanism operated mainly at the community level, with most complaints—ranging from land boundaries to tariff issues—resolved locally. The safeguards ratings for both OPs were Satisfactory in the last six ISRs. (PAD, page 36; ICR, page 18)

b. Fiduciary Compliance

Financial management (FM). The ICR reported that FM performance was robust and responsive. The Project's results-based financing model required Independent Verification Agent (IVA) reviews before disbursements, ensuring strong accountability. Although early delays occurred due to fiduciary bottlenecks, performance improved with targeted Bank support. Annual audits revealed no major financial irregularities, and minor recommendations such as improving documentation for partial disbursements were addressed mid-course. (ICR, page 18) The FM rating was Moderately Satisfactory in the last six ISRs.

Procurement. The ICR noted that procurement faced initial challenges but improved significantly over time with targeted staffing and capacity-building efforts. Early delays stemmed from a learning curve in applying Bank procurement guidelines, adapting procurement templates for the minimum subsidy tender approach, and utilizing the STEP system. These issues initially affected the award of key EPC contracts under the Energizing Education Program and several large mini-grid packages. Once resolved, procurement processes became more efficient. (ICR, page 18) The final procurement rating was Satisfactory, upgraded from Moderately Satisfactory.

c. Unintended impacts (Positive or Negative)

The ICR noted no unintended outcomes or impacts resulting from the Project.

d. Other

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11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Moderately Satisfactory	Incorrectly applied ICR's efficacy analysis, lacking separate discussions of the Original and Revised projects.
Bank Performance	Satisfactory	Satisfactory	
Quality of M&E	Substantial	Substantial	
Quality of ICR	---	Substantial	

12. Lessons

The following lessons were derived from the ICR (ICR, page 21):

1. In electrification projects that use performance-based grants and market development subsidies, it is essential to design these instruments as adjustable to achieve access goals

and reach underserved populations - particularly in remote, low-density areas. The Project initially applied flat, untargeted subsidies, which led to installations being concentrated in urban and peri-urban areas, while low-income, remote communities remained underserved. This was later corrected by adjusting grant levels based on implementation experience. The Project would have benefited from a design where subsidy size was linked to site difficulty and household vulnerability, using geospatial data and social registries to target support where the viability gap was greatest.

2. Results-based electrification financing requires accurate forecasting, adaptive ceilings, and strategies to mitigate currency risk. The Project's results-based grants attracted private investment and unlocked capital. However, disbursement patterns were uneven – initially slow, then accelerating and exceeding available funding. Local currency depreciation reduced the value of disbursements, deterring lenders. These challenges could have been mitigated through better forecasting of funding demand, mechanisms for gradual subsidy ceiling adjustments, and disbursement of grants in hard currency or with exchange rate indexing.

3. Targeted geographic planning with pre-identified sites promotes mini-grid deployment in underserved areas. The Project allowed developers to self-select mini grid sites, which led to investments concentrated in accessible, commercially viable areas, with limited reach into remote or conflict-affected zones. Attempts to use competitive tenders to redirect financing to underserved areas faced delays and low uptake. These challenges could have been mitigated by pre-identifying viable sites in underserved locations and pairing them with fixed or tiered subsidies.

4. Centralized digital data platforms significantly improve implementation, monitoring, and transparency, supporting both scale and quality. In the Project, the Odyssey data platform streamlined company onboarding, application review, verification, disbursement, and reporting, enabling high transaction volumes while maintaining transparency and auditability. Further enhancements could include modules for geospatial analysis, real-time performance tracking, and automated grant management.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR contains extensive detail across various aspects of implementation. The discussion is sufficiently technical and analytical, offering valuable and candid information on factors affecting Project performance, restructurings and their justification, PDO relevance, economic analysis, M&E quality, safeguards and fiduciary compliance, and risks to Project outcomes. The report is internally consistent and offers valuable lessons for similar operations.

However, there are some shortcomings. Although a split rating is correctly noted and a table provided, two sets of results are not analyzed separately, leaving the basis for ratings unclear. The efficacy section lists PDO indicator achievements without summarizing the broader evidence, including from annexes or synthesizing findings. Also, incorporating Restructuring 2 changes in the ToC would have been useful.

On balance, given the ICR's overall high technical quality, the rating is Substantial, despite the shortcomings mentioned.

a. Quality of ICR Rating

Substantial