Report Number : ICRR0024080

1. Project Data

Project ID P162849	**Program Name** India Energy Efficiency Scale-up Program
Country India	**Practice Area(Lead)** Energy & Extractives

L/C/TF Number(s)	Closing Date (Original)	Total Program Cost (USD)
IBRD-88570	30-Sep-2022	187,608,626.00
Bank Approval Date	**Closing Date (Actual)**	
17-May-2018	30-Sep-2023	

	IBRD/IDA (USD)	Grants (USD)
Original Commitment	220,000,000.00	0.00
Revised Commitment	220,000,000.00	0.00
Actual	187,608,626.00	0.00

Prepared by	Reviewed by	ICR Review Coordinator	Group
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2. Program Context and Development Objectives

a. Objectives

The Program Development Objective (PDO) of this Program-for-Results (PforR) operation was **"to scale up energy savings in residential and public sectors, strengthen the Borrower's institutional capacity, and enhance its access to commercial financing"** (Schedule 1, page 6, Loan Agreement). The PDO statement was identical to that in the Program Appraisal Document, except that the PAD specified the Borrower as Energy Efficiency Services Limited (EESL) (PAD, para 22). EESL is a public corporation, formed under

Government ownership to facilitate the implementation of energy efficiency (EE) projects in partnership with private Energy Services Companies (ESCOs), state level institutions, and other companies (PAD, para 35).

The PDO statement remained the same but the key associated outcome targets were revised through restructurings during implementation.

This ICR Review (ICRR) will assess the following PDOs:

Objective 1. To scale up energy savings in residential and public sectors.

Objective 1 Revision 1. To scale up energy savings in residential and public sectors. The Objective remained the same while targets of relevant PDO indicators and DLIs were revised.

Objective 2. To strengthen the Borrower's institutional capacity.

Objective 2 Revision 1. Same as Objective 2.

Objective 3. To enhance its access to commercial financing.

Objective 3 Revision 1. Same as Objective 3.

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

Yes

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

No

c. Will a split evaluation be undertaken?

Yes

d. Components

Results Area 1: Energy Savings and Energy Efficiency (EE) Market Transformation in the Residential Sector. Scaling-up EE delivery in the residential sector under the Unnat Jyoti by Affordable LEDs for All (UJALA) program, focusing on light-emitting diode (LED) bulbs, tube lights, and ceiling fans. The DLIs used for disbursement for this results area were:

- DLI1: Number of LED bulbs and tube lights sold by EESL under the UJALA program; and
- DLI2: Number of EE ceiling fans sold by Energy Efficiency Services Limited (EESL) under the UJALA program.

Results Area 2: Energy Savings and EE Market Transformation in Public Street Lighting. Delivering investments in EE public street lighting, under the Street Lighting National Program (SLNP), as measured by:

- DLI3: Number of LED streetlights installed by EESL under the SLNP.

Results Area 3: Development of Sustainable Business Models in new EE Market Segments. Supporting up-stream program development and incorporation of technical, environmental, and social sustainability elements into the design of the new initiatives, such as air-conditioning, agriculture demand side management, and Buildings Energy Efficiency Program (BEEP), which required additional preparatory work before sustainable scale-up; but expressly excluding the actual capital investments for such new initiatives. The relevant DLIs were:

- DLI4: EESL implementation of EE Air Conditioner sustainability actions; and
- DLI5: Business model for collaboration with private sector Energy Services Companies in the implementation of EESL's BEEP.

Results Area 4: Institutional Strengthening for Sustainable EE Scale-Up. Strengthening and developing the institutional capacity of the Borrower, especially with respect to financial, technical, managerial, procurement, environmental, and social capacity and practices. Progress was tracked using:

- DLI6: Establishment of Sustainable Development Unit, and report on updated Environmental, Occupational Health, and Safety, and Social Manual covering all EESL's programs under implementation.

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

Program Cost: At appraisal, the total cost of the Program was estimated to be US$ 1,348 million (PAD, table 1, page 6). The actual expenditures at the time of closing were about US$768 million (ICR, page 2). The difference between the estimate and the actual expenditure was partially due to a cancellation of IBRD loan as described below (The TTL/ICR team's response to IEG's inquiry received on May 31, 2024, hereafter, Team's Response).

Financing: At appraisal, the Program was planned to be financed by a loan of US$220.0 million from the International Bank for Reconstruction and Development (IBRD) through its Program for Results (PforR) financing instrument and a guarantee of a maximum amount of US$80.0 million through its Investment Project Financing (IPF) instrument. The guarantee was expected to raise an estimated US$200.0 million by mobilizing commercial financing (PAD, para 26). An additional US$50 million in results-based finance was to be secured through the Transformative Carbon Asset Facility (TCAF) administered by the World Bank (PAD, para 27). Moreover, an estimated US$380.0 million to support the EESL's broader program was to be provided from Agence Française de Développement (AFD), Asian Development Bank (ADB), Kreditanstalt für Wiederaufbau (KfW), and United States Agency for International Development (USAID) (PAD, para 28). At closing, the Program disbursed the IBRD loan amount of US$187.6 million without any commercial financing mobilized by the guarantee (ICR, annex 3, page 40). The 15 percent shortfall in utilization of the loan might be attributed to the following reasons, most of which were beyond the control of EESL: (i) EESL lost about a year and a half of loan implementation time due to the COVID-19 pandemic; (ii) the markets for traditional energy efficient lighting products have matured and investment appetite has plateaued during implementation; (iii) procedural delays in obtaining approvals for executing amendments for reallocation and loan extension; and (iv) the management of EESL changed (ICR, pages 56-57). Other multilateral and bilateral agencies provided additional financing of US$229.2 million (ICR, annex 3, page

40). The breakdown of the additional financing was: US$134.5 million from ADB, US$39.1 million from AFD, US$12.5 million from KfW, and US$42.9 million by other creditors (Team's Response).

Borrower Contribution: The Government committed to contribute US$548.0 million at appraisal (PAD, table 1, page 6). At closing, US$351.1 million was disbursed (ICR, annex 3, page 40).

Dates and Restructurings: The program was approved on May 17, 2018 and became effective on November 6, 2018. The Mid Term Review (MTR) mission was conducted from September to November in 2022. The program was originally scheduled to close on September 30, 2022 but was extended by 12 more months to close on September 30, 2023.

There were two restructurings.

- ***First restructuring*** (July 27, 2022): This restructuring introduced changes to the Results Framework and the Disbursement Linked Indicators (DLI) matrix and reallocated funds from DLIs 1 and 2 to DLI 3, as described in section 3.b. The main changes to the Results Framework were:
  - *Program Development Objective (PDO) indicator 1:* Projected lifetime energy savings from LED bulbs, tube lights, EE ceiling fans and LED streetlights sold via EESL programs (GWh). The end target decreased from 403,400 to 331,900.
  - *PDO indicator 2:* Avoided CO2 emissions associated with projected lifetime savings from LED bulbs, LED tube lights, energy efficient ceiling fans and LED streetlights sold via EESL programs (Metric ton). The end target decreased from 326,800,000 to 269,200,000.
  - *Intermediate Results (IR) indicator IR 1.1 (DLI 1):* Number of LED bulbs and tube lights sold via EESL program. The end target decreased from 437,000,000 to 351,186,649.
  - *IR indicator 1.2:* Estimated number of beneficiaries (of which women) of LED bulbs sold via EESL program. The end target decreased from 656,000,000 to 550,190,000.
  - *IR indicator 1.3 (DLI 2):* Number of energy efficient ceiling fans sold via EESL program. The end target decreased from 6,408,000 to 2,300,316.
  - *IR indicator 2.1 (DLI 3):* Number of LED streetlights installed under SLNP. The end target increased from 9,167,000 to 12,900,000.
  - *IR indicator 2.2:* Number of municipalities/towns/villages/gram panchayats with LED streetlights installed through SLNP. The end target increased from 1,250 to 1,500.
- ***Second restructuring*** (September 30, 2022): This restructuring extended the project closing date for 12 months from September 30, 2022, to September 30, 2023. In line with the project duration extension, changed relevant dates indicated in the Results Framework and the Program Action Plan (Team's Response).

Split Rating: Given the substantial reduction in targets during the first restructuring, this ICR Review is based on a split rating of objectives, when 82 percent of the loan (US$ 154.53 million) was disbursed before restructuring and 18 percent after restructuring.

3. Relevance

a. Relevance of Objectives

Rationale

Country and Sector Contexts: At appraisal, India's energy efficiency (EE) potential was largely untapped, in part due to limited availability and high cost of financing for EE investments (PAD, para 5). In the mid-2010s, numerous Energy Services Companies (ESCOs) entered the market, but were unable to significantly grow their business. Barriers included lack of awareness of EE potential or benefits of ESCO services; the reluctance by financiers and asset owners to invest in energy savings; lack of familiarity with the typical ESCO contractual approaches, and weak balance sheets of some ESCOs. To overcome market failures in the EE sector, the Government took a series of policy, regulatory and institutional steps. Major Government actions included the Integrated Energy Policy (IEP), Energy Conservation Act of 2001, Electricity Act of 2003, and the National Mission on Enhanced Energy Efficiency (NMEEE), which was one of the eight missions under the National Action Plan for Climate Change (NAPCC) of 2008. These were followed by regulatory mandates including the Perform, Achieve and Trade (PAT) scheme setting mandatory energy saving targets in large energy-intensive industries, support to financing for ESCOs, and introducing appliances EE standards, building EE codes and financing instruments. The Bureau of Energy Efficiency was created in 2002 under the Ministry of Power to formulate policies and regulations, raise awareness, build capacity, develop EE and conservation programs, and support central and state governments. In 2009, the Government established Energy Efficiency Services Limited (EESL), a super Energy Services Company (ESCO) owned by public enterprises, to be a key implementing agency of the Government's EE vision. EESL's central role started with its implementation of the Unnat Jyoti by Affordable LEDs for All (UJALA) program since 2015, which provided energy efficient Light Emitting Diode (LED) lightbulbs. EESL was also implementing the Street Lighting National Program (SLNP) to replace conventional streetlights with LEDs.

Alignment with Country and Sector Strategy: The PDO related to achieving energy savings was highly relevant to India's priorities identified in the Country Partnership Framework (CPF) for FY2018-FY2022. The Program supported the CPF's Focus Area 1 (Promoting Resource-Efficient Growth), and its sub-objectives 1.2 and 1.4, aiming to 'improve livability and sustainability of cities' and 'increase access to sustainable energy' by 'supporting the development of stronger incentive structures, markets and solutions for energy efficiency.' The PDO was also highly relevant to the Government's NMEEE and updated NDC, which aimed to adopt a climate-friendly and cleaner path than that followed by others at the corresponding level of economic development, and to reduce the emissions intensity of its GDP by 45 percent by 2030, from the 2005 level.

World Bank Previous Sector and Country Experience: The design of this operation incorporated lessons derived from a multi-year programmatic Advisory Services and Analytics (ASA), that was, India: Strategic Options for Energy Efficiency Scale-up and Technical Assistance to Sector Stakeholders (P162935) (ICR, para 60). Prior to this operation, EESL implemented Enterprise Resource Planning under SAP supply chain management e-procurement platform with partial funding from the World Bank under the technical assistance component of the Partial Risk Sharing Facility for Energy Efficiency Project (PAD, footnote 67, page 64).

Country Capacity and Adequacy of Financing Instruments: This was an innovative operation that combined the Program-for-Results (PforR) instrument with an IBRD Investment Project Financing (IPF) guarantee for the first time ever, and that represented the first IBRD guarantee in India. The PforR supported a subset of Energy Efficiency Services Limited (EESL)'s investment program for fiscal year (FY) 2017 to FY2022, which was estimated at 427 billion Indian Rupees (INR) (equivalent to US$6 billion), covering EESL's activities under Unnat Jyoti by Affordable LEDs for All (UJALA), Street Lighting National Program (SLNP), Municipal Demand Side Management, Agricultural Demand Side Management (AgDSM), electric vehicles, solar mini-grids, Buildings Energy Efficiency Program (BEEP), and other new EESL's

programs. The Program boundary was a time slice within EESL's investment program over the period from FY2018 to FY2022. The IPF financed the IBRD guarantee to support EESL in accessing new commercial financing sources, diversifying its investor base, and establishing a track record for regular future access to such commercial markets (PAD, para 16.b).

While the choice of the PforR financing instrument was adequate, the objective of enhancing access to commercial financing through the use of the IBRD IPF guarantee did not fully align with the market conditions at the time of project closing. The IBRD Guarantee was included to support EESL in meeting its financing needs for energy-efficient bulbs, tube lights, fans, and streetlights. However, EESL's interventions had already contributed to bringing down the market barriers for LED lightbulbs and increasing the share of private sector supply, reducing the need for EESL's role as an intermediary in this market. Moreover, the IBRD guarantee was not competitive compared to other financing sources, including the Asian Development Bank and the domestic bond market (ICR, para 36).

While the PDO was aligned well with the country strategy, the use of IBRD IPF guarantee was not fully relevant to adequately address the development challenges that the EE sector was facing at the time of project closing. Overall, the relevance of objectives is rated as substantial.

Rating
Substantial

b. Relevance of DLIs

DLI 1

DLI
Number of LED bulbs and tube lights sold by Energy Efficiency Services Limited (EESL) under the Unnat Jyoti by Affordable LEDs for All (UJALA) program (Baseline: 216,000,000, End target: 437,000,000) [IR indicator 1.1]

Rationale
DLI 1 aimed to contribute to Results Area 1: Energy savings and EE market transformation in the residential sector.

This DLI directly supported EESL's UJALA program and the PforR's Objective 1. Selling more light-emitting diode (LED) bulbs and tube lights and replacing residential lighting with this energy efficient (EE) appliances would increase the share of EE appliances used in the residential sector. The Technical Assessment had estimated that over 295 million LED bulbs and 6.3 million LED tube lights avoided peak demand of 7.8 GW and offset GHG emission of over 31 million tCO2e as of April 2018 (PAD, page 47). Although the DLI measured an intermediate result, this indicator was appropriate for measuring a key action needed to achieve the PDO outcome of increasing lifetime energy savings and reducing CO2 emissions from the residential sector. This DLI was verifiable and scalable, which enabled a flow of funds to move implementation forward. At appraisal, DLI 1 was adequately financed with the allocated amount of US$66 million (30 percent of the total US$220 million).

On the other hand, the long duration of Program preparation and rapid market transformation in residential LED lighting affected the relevance of DLI 1 (ICR, para 49). The UJALA and SLNP programs were launched in 2015, and discussions between the World Bank and EESL began in 2016. By the time of Program appraisal in May 2018 and implementation in November 2018, LED bulbs had undergone a significant price reduction and had overtaken incandescent lamps in sales (ICR, para 49).

Overall, the relevance of DLI 1 is rated substantial but with moderate shortcomings.

Rating
Substantial

DLI 1 REVISION 1
Revised DLI
The statement of DLI 1 remained the same. The end target decreased from 437,000,000 to 351,186,649 (Restructuring Paper dated July 27, 2022).

Revised Rationale
At the first restructuring, the allocated amount was reduced to US$40,554,428 (18 percent of the total loan US$220 million) (Restructuring Paper dated July 27, 2022). At closing, the PforR disbursed all the allocated amount (22 percent of the total disbursement US$187.6 million). The reduction in the allocation was aligned with its role to induce incentives to substantially achieve the lowered target.

Overall, the relevance of DLI 1 Revision 1 is rated substantial.

Revised Rating
Substantial

DLI 2
DLI
Number of energy efficient ceiling fans sold by Energy Efficiency Services Limited (EESL) under the Unnat Jyoti by Affordable LEDs for All (UJALA) program (Baseline: 587,795, End target: 6,408,000) [IR Indicator 1.3]

Rationale
DLI 2 aimed to contribute to Results Area 1: Energy savings and EE market transformation in the residential sector.

This DLI directly supported EESL's UJALA program and the PforR's Objective 1. Selling more energy efficient ceiling fans and replacing residential fans with EE appliances would increase the share of EE appliances used in the residential sector. The lower-income households were the primary users of ceiling fans (PAD, para 20). The BEE 5 star rated 50W ceiling fans were estimated to replace 75-80 W fans (PAD, footnote 21, page 22). Although the DLI measured an intermediate result, this indicator was appropriate for measuring a key action needed to achieve the PDO outcome of increasing lifetime energy savings and reducing CO2 emissions from the residential sector. This DLI was verifiable and scalable, which enabled a flow of funds to

move implementation forward. At appraisal, DLI 2 was adequately financed with the allocated amount of US$22 million (10 percent of the total US$220 million).

Overall, the relevance of DLI 2 is rated substantial.

Rating
Substantial

DLI 2 REVISION 1

Revised DLI
The statement of DLI 2 remained the same. The end target decreased from 6,408,000 to 2,300,316 (Restructuring Paper dated July 27, 2022).

Revised Rationale
The allocated amount was reduced to US$6,474,549 (3 percent of the total US$220 million) (Restructuring Paper dated July 27, 2022). At closing, the PforR disbursed all the allocated amount (3 percent of the total disbursement US$187.6 million). There were notable reductions in the allocation and target (the revised allocation and target were 29 percent and 36 percent of the original ones, respectively). The reduction reflected the reality of the market (i.e., sales had already dropped to 0 with the full budget), and EESL decided to reallocate the funds to public streetlighting that needed additional funding (TTL's comments received on June 19, 2024, hereafter, TTL's comments).

Overall, the relevance of DLI 2 Revision 1 is rated substantial.

Revised Rating
Substantial

DLI 3

DLI
Number of LED street lights installed by Energy Efficiency Services Limited (EESL) under the Street Lighting National Program (SLNP) (Baseline: 1,967,000, End target: 9,167,000) [IR Indicator 2.1]

Rationale
DLI 3 aimed to contribute to Results Area 2: Energy Savings and EE Market Transformation in Public Street Lighting. This DLI directly supported the EESL's SLNP and the PforR's Objective 1. Installing more LED streetlights would increase the share of EE lighting in the public spaces. Although the DLI measured an intermediate result, this indicator was appropriate for measuring a key action needed to achieve the PDO outcome of increasing lifetime energy savings and reducing CO2 emissions from the public sector. This DLI was verifiable and scalable, which enabled a flow of funds to move implementation forward. At appraisal, DLI 3 was adequately financed with the allocated amount of US$77 million (35 percent of the total US$220 million).

Overall, the relevance of DLI 3 is rated high.

Rating
High

DLI 3 REVISION 1

Revised DLI
The statement of DLI 3 remained the same. The end target increased from 9,167,000 to 12,900,000 (Restructuring Paper dated July 27, 2022).

Revised Rationale
The allocated amount was increased to US$117,971,023 (54 percent of the total US$220 million) (Restructuring Paper dated July 27, 2022). There was steady progress towards achieving this DLI in the first three years of the Program, and thus, the Program was restructured to allocate more funds to this DLI and to extend the closing date to allow its full implementation (ICR, para 31).

On the other hand, the significant increase of approximately US$40 million in the allocated amount for DLI 3 raised questions about the relevance of the DLI in two respects. First, the EESL's Street Lighting National Program (SLNP) had already made significant progress since its launch in 2015 by the time of the restructuring in July 2022 and had received substantial support from other development partners including Kreditanstalt für Wiederaufbau (KfW: German government-owned Development Bank), Agence Française de Développement (AFD: French Development Agency), and Asian Development Bank (ADB) (ICR, paras 9 and 26). Second, disbursements for this DLI completely stalled after September 30, 2022, due to the lack of countersignatures from EESL and the Department of External Affairs on the second amendment to the Loan Agreement (ICR, para 31). One of the conditions of the Program duration extension in the second restructuring in September 2022 was that "No new works will be bid out or awarded during extended time," which made further disbursements in street lighting unfeasible (ICR, para 48). At closing, the PforR disbursed US$93,579,650 for DLI 3, which was 79 percent of the reallocated amount. Hence, the extent of the added value by way of incentivizing PDO achievement through additional allocation to the DLI is unclear.

Overall, the relevance of DLI 3 Revision 1 is rated substantial.

Revised Rating
Substantial

DLI 4

DLI
Energy Efficiency Services Limited (EESL) implementation of Energy Efficiency (EE) Air Conditioner (AC) sustainability actions (Baseline: No, End target: Yes)

Rationale
DLI 4 aimed to contribute to Results Area 3: Development of sustainable business models in new EE market segments. The DLI supported EESL's Super-Efficient Air Conditioner Program (ESEAP) to promote

penetration of super-efficient room Air Conditioners (ACs) rated at 5.2 Indian Seasonal Energy Efficiency Ratio (ISEER) in market segment to gradually replace the existing ACs which had the maximum efficiency of ISEER 4.8 (PAD, para 15 and ICR, page 48). The incorporation of low Global Warming Potential (GWP) refrigerants could accelerate India's transition away from high-GWP refrigerants, enabling a much larger scale of avoidance of direct and indirect emissions of Hydrofluorocarbon (HFC) from ACs.

The allocation of US$14 million (6 percent of the total US$220 million) to DLI 4 was sufficient. At closing, the PforR disbursed all the allocated amount (7 percent of the total disbursement US$187.6 million).

On the other hand, the DLI measured an intermediate result that did not directly contribute to the achievement of Objective 3 to enhance EESL's access to commercial financing despite of the original intention at appraisal (PAD, table 3, page 8 and ICR, para 15). DLI 4 contributed to Objective 2 to strengthen EESL's institutional capacity, by ensuring that EESL's operations related to EE AC were conducted in a safe and environmentally sustainable manner to showcase a good practice in the wider EE AC ecosystem in India (Team's Response). Indirectly, in the longer term, EESL's strengthened capacity in EE AC was envisaged to help EESL access commercial financing for this purpose (Team's Response).

Overall, while noting the above shortcoming, the relevance of DLI 4 is rated substantial.

Rating
Substantial

DLI 5
DLI
Business model for collaboration with private sector Energy Services Companies (ESCOs) in the implementation of Energy Efficiency Services Limited (EESL)'s Building Energy Efficiency Program (BEEP) (Baseline: No, End target: Yes)

Rationale
DLI 5 aimed to contribute to Results Area 3: Development of sustainable business models in new EE market segments. This DLI supported EESL's BEEP and the PforR's Objective 3.

On the other hand, the DLI was not sufficiently outcome oriented. The conditions to achieve DLI 5 included: (i) the EESL Board of Directors approving a business model, (ii) publishing a report on it, and (iii) conducting consultations on the report with at least 10 private sector ESCOs. This DLI missed an opportunity to incorporate a target regarding the number of projects to be implemented in collaboration with ESCOs, which could further incentivize EESL to enhance its access to commercial financing (ICR, para 73). Additionally, the DLI's target was set as non-scalable (i.e., a binary measure of yes or no), which limited its potential to measure the PforR's progress towards achieving the PDO outcome in a comprehensive manner. Moreover, the considerably small allocation (i.e., US$8 million, which was 4 percent of the total US$220 million) and the disbursement (i.e., US$8 million, which was 4 percent of the total disbursement US$187.6 million) for DLI 5 were not adequate to incentivize stakeholders. The above shortcomings in the design of the DLI negatively affected the achievement of Objective 3.

Overall, the relevance of DLI 5 is rated modest.

Rating
Modest

DLI 6
DLI
(i) Establishment of Sustainable Development Unit, and (ii) report on updated EHSS Manual covering all EESL programs under implementation (Baseline: No, End target: Yes)

Rationale
DLI 6 aimed to contribute to Results Area 4: Institutional strengthening for sustainable EE scale-up. This DLI directly supported the PforR's Objective 2.

DLI 6 was adequately allocated with US$32.45 million (15 percent of the total US$220 million), consisting of US$16.50 million allocated for (i) and US$15.95 million allocated for (ii). At closing, the PforR disbursed all the allocated amount (17 percent of the total disbursement US$187.6 million).

On the other hand, the DLI only covered the EHSS aspects and did not measure EESL's progress towards strengthening its fiduciary management capacity. This was critical given that the ICR (para 47) noted that issues with fiduciary compliance might have affected the adequacy of determination of Program Expenditure and the accuracy of the annual financial statements.

Overall, the relevance of DLI 6 is rated substantial but with moderate shortcomings.

Rating
Substantial

OVERALL RELEVANCE RATING
Rationale
The relevance of objectives was substantial.

The relevance of DLIs was substantial. One DLI was highly relevant and four DLIs were substantially relevant to the PDO, while the relevance of one DLI was modest.

The overall relevance of the DLIs is rated substantial.

Rating
Substantial

OVERALL RELEVANCE RATING REVISION 1

Revised Rationale
The relevance of objectives was substantial.

The relevance of revised DLIs was substantial. Five DLIs were substantially relevant to the PDO, while the relevance of one DLI was modest.

The overall relevance is rated substantial.

Revised Rating
Substantial

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1
Objective
To scale up energy savings in residential and public sectors.

Rationale
Theory of Change (ToC): The PAD (figure 1.1, page 28) described three results chains for (i) the cross-cutting gender results aimed by the Program, (ii) Results Area 1 (Energy savings and EE market transformation in the residential sector), and (iii) Results Area 2 (Energy savings and EE market transformation in street lighting), that were associated with achievement of Objective 1. The ICR (figure 1, page 62) provided the ToC of the Program. Based on the PAD and the ICR, this ICRR reconstructs the ToC of Objective 1 as follows.

The **first** results chain envisaged that the action to set a baseline and a system to monitor the number of female EESL employees at each level (managerial, technical, administrative) (Program Action 10) would result in outputs such as positions advertised with preference for women candidates increased and numbers of female EESL employees at each level monitored. The outputs were envisaged to contribute to outcomes such as the number of female employees increased and the gender awareness of the EESL's management increased. The **second** results chain envisaged that the actions and activities to procure Energy Efficiency (EE) appliances for residential use, conduct awareness raising campaigns for residential EE programs, strengthen outreach to female stakeholders, and develop and adopt EESL strategy for EE market transformation of residential LED market (Program Action 6) would result in outputs such as numbers of light-emitting diode (LED) bulbs and EE ceiling fans sold by EESL increased (DLIs 1 and 2) and the direct employment created by EESL with a focus on women increased. These outputs were envisaged to contribute to outcomes such as the energy savings and avoided Greenhouse Gas (GHG) emissions associated with the sold EE appliances increased. The **third** results chain envisaged that activities to procure and install EE appliances for street lightening would result in outputs such as LED streetlights installed (DLI 3). The output was envisaged to contribute to outcomes such as the energy savings and avoided GHG emissions associated with the LED streetlights increased and the accessibility of public spaces increased.

The results chains were solid in general. The DLIs were designed to incentivize key outputs to make progress towards achievements of the outcomes. On the other hand, no critical assumptions were described in the PAD or the ICR in association with Objective 1. Potential critical assumptions could have been: (i) beneficiaries are willing to purchase, use, and maintain residential EE appliances; and (ii) beneficiaries prefer to participate in EESL programs over services and products provided by private sector Energy Services Companies (ESCOs).

Outputs:

- **DLI 1.** 351,186,757 LED bulbs and tube lights were sold via EESL program, increasing from the baseline of 216,000,000 but not meeting the original target of 437,000,000. Sales of LED bulbs and tube lights progressed rapidly during the first two years of the Program, but the sales declined sharply in the third year and fell to zero in the fourth year (ICR, para 29). As of June 2020, the disbursal against DLI 1 was only at 50 percent because EESL's interventions had already brought down market barriers for LED lightbulbs, achieving targets in terms of prices, market penetration of LEDs, and the dominant share of private sector supply (ICR, para 19). This risk was identified by the Technical Assessment, which anticipated that the markets for traditional energy efficient lighting products might mature, and the investment appetite might plateau in early years of implementation (ICR, para 23 and page 53).
- The estimated beneficiaries were 539,000,000 people, increasing from the baseline of 336,000,000 but not meeting the original target of 656,000,000.
    - The ratio of women in the estimated beneficiaries was 48.4 percent, increasing from the baseline of 40.5 percent and almost meeting the original target of 48.5 percent.
- **DLI 2.** 2,300,242 energy efficient ceiling fans were sold via EESL program, increasing from the baseline of 587,795 but not meeting the original target of 6,408,000. In the case of energy efficient ceiling fans, the IR Indicator and DLI for the first year was achieved, but sales declined in the second year and fell to zero in the third year (ICR, para 30). In addition to the saturation of the UJALA program that slowed down the achievement of DLI 1, the achievement of DLI 2 was negatively affected by the higher complexity of installation of fans, higher price per ceiling fan, lower cost reductions achieved through bulk procurement, and inventory risks for EESL resulting from mismatches between actual and forecasted demand (ICR, para 23). These risks were identified by the Technical Assessment at appraisal.
- EESL strategy for sustainable LED market transformation in residential lighting, including set of indicators for EESL to monitor and track, was approved, meeting the original target.
- 676 jobs were created as direct employment by EESL, increasing from the baseline of 366 and exceeding the original target of 500.
    - The ratio of women employed for the jobs created as direct employment by EESL was 14.34 percent, decreasing from the baseline of 16 percent and not meeting the original target of 25 percent. According to the ICR (footnote 60, page 47), the ratio of women employed by EESL was higher than the average among CPSEs (around 9.12 percent according to public enterprise survey report 2021-22). Nevertheless, the decrease in the ratio of female employees during the implementation of the Program was a result that was the opposite of the recommendation from the Environmental and Social Systems Assessment to create more employment opportunities and greater outreach for women (PAD, para 74).
- **DLI 3.** 10,720,957 LED streetlights were installed under SLNP, increasing from the baseline of 1,967,000 and exceeding the original target of 9,167,000.

- 1,600 municipalities/towns/villages/gram panchayats installed LED streetlights through SLNP, increasing from the baseline of 500 and exceeding the original target of 1,250.

Outcomes:

- Projected lifetime energy savings from LED bulbs, tube lights, EE ceiling fans, and LED Street Lights sold via EESL programs reached 329,346 Gigawatt-hour (GWh), increasing from the baseline of 197,900 but not meeting the original target of 403,400 (64 percent of the target).
- Avoided CO2 emissions associated with projected lifetime savings from LED bulbs, LED tube lights, energy efficient ceiling fans, and LED streetlights sold via EESL programs reached 267,171,022 metric tons, increasing from the baseline of 160,700,000 but not meeting the original target of 326,800,000 (64 percent of the target).

The PDO outcomes regarding the lifetime energy savings and avoided CO2 emissions were partially achieved based on the original targets. The rapid market transformation in residential lighting resulted in a mismatch between the projected and actual demand, which was beyond the control of EESL. On the other hand, there was robust demand for LED streetlights under the Program for Urban Local Bodies (ULBs). However, the LED streetlights have much lower savings per unit allocated, thus affecting the achievement of the original targets related to energy savings. Moreover, an independent study on UJALA in three cities (i.e., Chunekar, A.; Mulay, S.; Kelkar, M. (2017). “Understanding the impacts of India’s LED bulb programme, UJALA”. Prayas.) found that some of the UJALA’s assumptions regarding LED usage, lifetime, and share of bulbs sold that were used, led to unrealistically high estimates of energy savings from UJALA (ICR, para 29 and footnote 28, page 12). Although some of these assumptions (including the baseline mix of lighting technologies and hours of usage) were subsequently updated, the independent study’s recommendation to conduct independent consumer surveys for ex-post estimation of energy savings and validation of assumptions was not conducted (ICR, para 29). Overall, the achievement of Objective 1 is rated modest.

Rating
Modest

OBJECTIVE 1 REVISION 1
Revised Objective
To scale up energy savings in residential and public sectors.
The Objective was not revised while the targets of relevant PDO indicators and DLIs were revised during the first restructuring (July 2022).

Revised Rationale
Theory of Change (ToC): The ToC of Objective 1 Revision 1 was the same as the one for Objective 1 because the descriptions of relevant PDO indicators and DLIs remained the same.

Outputs:

- **DLI 1.** 351,186,757 LED bulbs and tube lights were sold via EESL program, increasing from the baseline of 216,000,000 and meeting the revised target of 351,186,649.

- The estimated beneficiaries were 539,000,000 people, increasing from the baseline of 336,000,000 but not meeting the revised target of 550,190,000.
    - The ratio of women in the estimated beneficiaries was 48.4 percent, increasing from the baseline of 40.5 percent and almost meeting the original target of 48.5 percent.
- **DLI 2.** 2,300,242 energy efficient ceiling fans were sold via EESL program, increasing from the baseline of 587,795 and almost meeting the revised target of 2,300,316.
- EESL strategy for sustainable LED market transformation in residential lighting, including set of indicators for EESL to monitor and track, was approved, meeting the original target.
- 676 jobs were created as direct employment by EESL, increasing from the baseline of 366 and exceeding the original target of 500.
    - The ratio of women employed for the jobs created was 14.34 percent, decreasing from the baseline of 16 percent and not meeting the original target of 25 percent. The issue of the decreasing ratio of female employees under the Program was not addressed through restructurings.
- **DLI 3.** 10,720,957 LED streetlights were installed under SLNP, increasing from the baseline of 1,967,000 but not meeting the revised target of 12,900,000. The underachievement was caused by the slowdown of disbursements during the COVID-19 pandemic and the suspension of disbursements after September 2022 due to the lack of countersignatures from EESL and the Department of External Affairs on the second amendment to the Loan Agreement (ICR, para 31).
- 1,600 municipalities/towns/villages/gram panchayats installed LED streetlights through SLNP, increasing from the baseline of 500 and exceeding the revised target of 1,500.

Outcomes:

- Projected lifetime energy savings from LED bulbs, tube lights, EE ceiling fans, and LED Street Lights sold via EESL programs reached 329,346 Gigawatt-hour (GWh), increasing from the baseline of 197,900 and almost meeting the revised target of 331,900 (98 percent of the target).
- Avoided CO2 emissions associated with projected lifetime savings from LED bulbs, LED tube lights, energy efficient ceiling fans, and LED streetlights sold via EESL programs reached 267,171,022 metric tons, increasing from the baseline of 160,700,000 and almost meeting the revised target of 269,200,000 (98 percent of the target).

The targets of PDO outcomes regarding the lifetime energy savings and avoided CO2 emissions were almost fully achieved. Nevertheless, the estimation of lifetime energy savings had methodological weaknesses, as pointed out by the independent study on UJALA (see details described under Objective 1). Overall, the achievement of Objective 1 Revision 1 is rated substantial.

Revised Rating
Substantial

OBJECTIVE 2
Objective
To strengthen the Borrower's institutional capacity.
The Borrower was Energy Efficiency Services Limited (EESL).

Rationale

Theory of Change (ToC): The PAD (figure 1.3, page 30) described a results chain for Results Area 4 (Institutional Strengthening for Sustainable EE Scale-Up) that was associated with achievement of Objective 2, while the ICR (figure 1, page 62) provided the ToC of the Program. Based on the PAD and the ICR, this ICRR reconstructs the ToC of Objective 2 as follows.

The ToC of Objective 2 envisaged to strengthen institutional capacities of EESL in four aspects: environmental and social risk management, fiduciary management, independent program evaluation, and mobilization of energy efficiency (EE) investments by the private sector. Regarding **environmental and social risk management**, the results chain envisaged that actions and activities such as establishing a Sustainable Development Unit in EESL (DLI 6 (i)) and updating the Environmental, Occupational Health & Safety and Social (EHSS) manual (Program Action 11) would result in outputs such as the updated EHSS manual implemented covering all EESL programs (DLI 6 (ii)). These outputs were envisaged to contribute to the outcomes including the EESL capacity strengthened to handle environmental and social impacts and risks associated with its activities, the environmental and social considerations mainstreamed into EESL's various operations, and the Grievance Redressal System improved. Regarding **fiduciary management**, the results chain envisaged that actions and activities such as developing standardized procurement documents, developing quality assurance (QA) manuals and protocols and providing training on these to EESL staff and vendors (Program Action 2), reconstituting EESL's Audit Committee of the Board with two new independent directors (Program Action 3), preparing EESL's Finance Manuals covering all financial management functions (Program Action 4), and strengthening internal audit function (Program Action 5) would result in outputs such as the standardized procurement documents adopted by EESL management and disseminated (Program Action 1), the QA manuals and protocols disseminated through training of staff and vendors, the Finance Manuals approved by the EESL Board, and the strengthened internal audit function implemented. These outputs were envisaged to contribute to the outcomes including good international practice and QA measures integrated into the EESL procurement activities, and the EESL's corporate governance and financial management strengthened. Regarding **independent program evaluation**, the results chain envisaged that actions such as conducting the independent evaluation of EESL programs periodically (Program Action 8) would contribute to the outcome that the design and implementation of EESL EE programs improved. Regarding **mobilization of EE private sector**, the results chain envisaged that actions and activities such as developing training program including constructing a training center for energy efficiency capacity building for private sector ESCOs, other EE service providers, and EESL staff (Program Action 9) would result in outputs such as training program for them and reports on delivery of first training session approved by EESL management. This output was envisaged to contribute to the outcome that the participation of EE private sector in EE market segments facilitated which could strengthen the enabling environment for achieving Objective 3.

Critical assumptions provided in the ICR (figure 1, page 62) associated with Objective 2 included: (i) Sustainable Development Unit is adequately staffed with skilled personnel and has the capacity and mandate to ensure environmental and social sustainability of EESL's activities; and (ii) EESL has the capacity to integrate and implement the Finance Manual and EHSS manual in all its operations. In addition to these critical assumptions, another potential critical assumption could have been: (iii) EE private sector is provided with adequate incentives to participate in EE market segments.

The ToC of Objective 2 was clear and sound in general. The results chains to strengthen EESL's institutional capacity were comprehensively covered with relevant DLIs and Program Actions. On the other hand, the ToC

had a weak focus on strengthening capacities of EE private sector to participate in EE market segments. The PAD and the ICR did not explicitly explain what was to be included in activities for “strengthening institutional

capacities of EE private sector.” The ambiguity of the purpose of the activities at preparation stage negatively affected the results chain in the ToC.

Outputs:

- Periodic independent evaluations of EESL programs were conducted, meeting the original target.
- Standardized procurement documents: "Guidelines", SBDs, and MOU formats were adopted by EESL management, meeting the original target.
- Capacity building and training program for EE private sector to facilitate support and participation in EE market segments was not approved, not meeting the original target. Few consultations done with private ESCOs. Capacity building trainings have been provided to staff and vendors. However, the training program for EE private sector was not able to be formulated due to the changes in EESL’s management and priorities (Team’s Response).

In addition to the outputs reported in the Results Framework, the ICR (para 35) reported on the following results of the completed actions of the Program Action Plan (PAP).

- Despite the completion of all actions in the PAP, there were some concerns related to fiduciary aspects. Statutory auditors had provided qualified opinions on EESL’s annual financial statements, with implications over proper maintenance of records and reconciliation of fixed assets and capital work in progress and on the overall adequacy and effectiveness over financial reporting.
- In terms of governance, although EESL had completed the Program Action 3 related to include two independent directors as part of the Audit Committee of the Board, due to certain changes in the Companies act and rules, the appointment of independent directors was no longer mandatory for EESL, and hence their appointment was not pursued by EESL with the Government.

Outcomes:

- **DLI 6.** Sustainable Development Unit (SDU) was established, reporting on implementation of updated EHSS Manual covering all EESL programs under implementation. The Program updated the EHSS Manual that was developed with the support from KfW and ADB for the UJALA and SLNP programs (Program Action 11), which indicated the Program’s collaboration with other development partners (ICR, para 72). On the other hand, while the SDU was staffed throughout the duration of the Program with an environmental specialist, the position of a dedicated social development specialist remained unfilled for long periods, resulting in intermittent capacity within the SDU (ICR, para 33).

The institutional capacity of EESL was strengthened, in terms of the improvements in procedures and protocols in EHSS and independent evaluation. On the other hand, there were some concerns about EESL’s institutional capacity related to fiduciary and governance aspects. Moreover, no evidence was provided regarding development results of the institutional capacity strengthening of EE private sector to participate in EE market segments. The underachievement of the results for EE private sector was a missed opportunity as such results could have strengthened the enabling environment for enhancing business collaboration with EE private sector and EESL’s access to commercial financing (Objective 3).

Overall, the achievement of Objective 2 is rated substantial but with moderate shortcomings.

Rating
Substantial

OBJECTIVE 2 REVISION 1
Revised Objective
Same as Objective 2.

Revised Rationale
Same as Objective 2.

Revised Rating
Substantial

OBJECTIVE 3
Objective
To enhance the Borrower's access to commercial financing.
The Borrower was Energy Efficiency Services Limited (EESL).

Rationale
Theory of Change (ToC): The PAD (figure 1.2, page 29) described a results chain for Results Area 3 (Development of sustainable business models in new EE market segments) that was associated with achievement of Objective 3, while the ICR (figure 1, page 62) provided the ToC of the Program. This ICR Review uses the following ToC of Objective 3 which combines the results chains at appraisal and the ToC at closing.

The results chain envisaged supporting up-stream program development and incorporation of technical, environmental, and social sustainability elements into the design of the following three new initiatives: (i) air conditioners (ACs), (ii) energy efficient (EE) buildings, and (iii) agriculture demand side management (AgDSM). Regarding the initiative on **ACs**, the results chain envisaged that actions and activities such as conducting stakeholder consultations on safe refrigerant disposal, developing consumer guide on safe refrigerant replacement, disposal, and buy-back option, and including the guide in AC package, and using reporting template for manufacturers on AC refrigerant disposal, and updating EESL's bidding documents for EE ACs to request manufacturers to report on their AC refrigerant disposal and recycling would result in outputs such as EE AC sustainability actions implemented (DLI 4). The outputs were envisaged to contribute to the outcome that sustainability actions supporting environmentally sound and safe disposal of refrigerants were integrated in EESL efficient AC program. Regarding the initiative on **EE buildings**, the results chain envisaged that actions and activities such as developing a business model for collaboration with private sector ESCOs (DLI 5) and consulting with ten private ESCOs and stakeholders on sustainable model for EE in buildings would result in outputs such as the business model for collaboration with private sector ESCOs implemented in EESL's Building EE program (BEEP). The outputs were envisaged to contribute to the

outcome that collaboration with private sector ESCOs was integrated in EESL plans and strategy for its EE buildings program. Regarding the initiative on **AgDSM**, the results chain envisaged that actions and activities such as reporting on independent evaluation of AgDSM models and of EESL sustainability actions and indicators (Program Action 7) would result in outputs such as EESL's awareness of energy-water nexus issues and economic and sustainability implications of different AgDSM models increased. The outputs were envisaged to contribute to the outcome that sustainability considerations associated with energy-water nexus, including ground water conservation, were integrated in EESL AgDSM plans and strategy.

Critical assumptions provided in the ICR (figure 1, page 62) included the one associated with Objective 3 that (i) EESL is incentivized to fully integrate the developed business models and sustainability aspects of AgDSM in its operations. In addition, another potential critical assumption could have been: (ii) the private sector ESCOs are willing to provide funding to support BEEP.

The ToC of Objective 3 was relatively weak. The ToC did not clarify causal relationships regarding how the expected outputs and outcomes from supporting the three new initiatives would contribute towards achievement of the PDO outcome of commercial financing leveraged.

Outputs:

- **DLI 4.** EESL implemented EE AC sustainability actions, meeting the original target.
- **DLI 5.** Business model for collaboration with private sector ESCOs in the implementation of EESL's BEEP was not developed, not meeting the original target. Few consultations were held with private ESCOs; However, business models were not formulated due to changes in EESL's management and changes in priorities for business segment (ICR, page 49).

Outcomes:

- No commercial financing was leveraged by the IBRD guarantee, not meeting the original target of US$ 200 million.

No progress was made towards achieving the outcome to leverage commercial financing since EESL was successful in creating a market for LED bulbs in India and was no longer needed to intermediate the market with the proceeds of the IBRD guarantee. Although DLI 4 was achieved, it was unclear to what extent the achievements of these outputs would plausibly contribute towards leveraging commercial financing in future. EESL clarified that they and the Task Team explored various options to utilize this Guarantee, such as the securitization of receivables and financing activities in new segments such as electric vehicles, smart meters and decentralized solar. However, since investment in new market segments would have needed additional technical, legal and fiduciary assessments, as well as approval from the Board, it was not considered feasible given the implementation timeline. Thus, overall, the achievement of Objective 3 is rated negligible.

Rating
Negligible

OBJECTIVE 3 REVISION 1
Revised Objective

Same as Objective 3.

Revised Rationale
Same as Objective 3.

Revised Rating
Negligible

OVERALL EFFICACY

Rationale
The achievement of Objective 1 related to energy savings was modest compared to the original targets. The long duration of the Program preparation and the rapid market transformation in residential lighting led to lower than anticipated demand for LED bulbs. The cost of LED bulbs had plateaued, their market share in the overall lighting market had increased significantly, and private sector retailers had assumed a larger role in the market - factors that were beyond the control of EESL. The COVID-19 pandemic also negatively affected the first two years of the Program. Installation of streetlights stalled due to nationwide lockdowns, and disrupted supply chains led to slower than expected progress. The project substantially achieved the institutional strengthening objective with some moderate shortcomings. However, the third objective related to increased access to commercial financing was not achieved as the IBRD guarantee was not utilized. Thus, the overall efficacy of the original objectives is rated modest.

Rating
Modest

Primary Reason
Low achievement

OVERALL EFFICACY REVISION 1

Revised Rationale
Given the mismatch between the projected and actual demand in residential LED lighting, the energy savings targets were revised downwards after the first restructuring. The loan amount was reallocated to LED streetlights, which have much lower energy savings per unit allocated loan amount, and consequently, the energy savings target was also reduced. The project substantially achieved the revised target under the first objective related to energy savings. The institutional capacity strengthening objective was also substantially achieved. However, the third objective related to increased access to commercial financing was not achieved since the IBRD guarantee was not utilized. Thus, the overall efficacy of the revised objectives is rated substantial.

Revised Rating
Substantial

5. Outcome

The overall outcome against the original targets is rated Moderately Unsatisfactory. While the project substantially achieved the institutional capacity objective, there were shortcomings in achieving the energy savings objective based on the original targets that the program had set out to achieve, and no progress was made on the third objective related to commercial financing.

However, the project reasonably adapted its targets, and the outcome against the revised targets is rated Moderately Satisfactory. EESL decided to reduce the targets for the residential LED bulb segment in response to the changing market conditions, and the Program was restructured accordingly. At the time of closing, the program substantially achieved its objective of scaling up energy savings in residential and public sectors, as well as strengthening EESL's institutional capacity. The Program could not leverage the IBRD guarantee for enhanced access to commercial financing. Although the Program considered utilizing this guarantee for niche areas, it would have required a fresh technical, legal and fiduciary assessment, as well as Board approval which was not considered feasible given the implementation timeline.

Considering that the Program had almost fully achieved two out of the three objectives in the PDO based on the revised targets, while no progress was made on the third objective, the outcome rating post restructuring is rated as Moderately Satisfactory.

The overall outcome is derived based on the split evaluation methodology. Given the late restructuring, more weightage is given to the original targets and hence the overall outcome rating is Moderately Unsatisfactory.

Table 1. Overall Outcome Ratings.

Rating Dimension	Original Objectives	Objectives after restructuring
Overall Relevance	Substantial	Substantial
Efficacy		
Objective 1	Modest	Substantial
Objective 2	Substantial	Substantial
Objective 3	Negligible	Negligible
Overall Efficacy	Modest	Substantial
Overall Outcome Rating	Moderately Unsatisfactory	Moderately Satisfactory
Outcome Rating Value	3	4
Amount Disbursed (US$ million)	154.53	33.08
Disbursement Percentage	82%	18%
Weight Value	2.47	0.71
Total Weights	3 (2.47 + 0.71 = 3.18, rounding down to 3)	
Overall Outcome Rating	Moderately Unsatisfactory	

Outcome Rating
Moderately Unsatisfactory

6. Risk to Development Outcome

Other stakeholder ownership risk. There was a potential risk of a withdrawal of the UJALA program due to demands from private entities who were concerned about the program's potential to crowd out private retailers (ICR, para 64). In response to the potential risk, an independent study in 2017 found that around 88 to 99 percent of surveyed retailers reported an increase in LED bulb sales compared to that in the previous year, and 12 to 66 percent reported a decline in sales of compact fluorescent lights (CFLs), indicating that the demand for LED bulbs (higher EE products) replaced the demand for CFLs (comparatively less EE products) (ICR, para 64 and footnote 55, page 20). In addition, around 42 to 91 percent of retailers felt that UJALA should be continued (ICR, para 64).

Financial risk. There was a potential risk that EESL might not be able to access commercial financing for future EE programs (ICR, para 65). The risk was mitigated by EESL's focus on setting up processes for better cash management (ICR, para 65).

Governance risk. There was a potential risk that changes in EESL's leadership team and governance structure might affect continuation of support to sustain the development outcome. The series of changes in EESL's leadership team and governance structure since 2020 coincided with the slowdown in the operation's disbursements which led to the first restructuring (ICR, para 45). The envisaged collaboration with private sector ESCOs in the implementation of EESL's BEEP did not materialize due to the changes in EESL's management and priorities for business segment (ICR, page 49).

7. Assessment of Bank Performance

a. Quality-at-Entry

The strategic relevance, approach, and the choice of the PforR financing instrument were adequate, although the use of the IBRD IPF guarantee did not fully align with the market situation due to its lack of competitiveness, as described in section 3.a. The Program design incorporated lessons derived from a multi-year programmatic Advisory Services and Analytics (ASA). The Task Team complemented the analytical work with discussions with EESL leadership and a mapping of support from other World Bank teams, IFC, and other development partners to inform the scope of the technical assistance and capacity-building measures. It integrated environment and social aspects within the PforR design as DLIs. Risks in Program implementation were largely identified and assessed, and risk mitigation measures were incorporated into the Program design. Nevertheless, the risk regarding the saturation of the UJALA program in early years of implementation was underestimated. Moreover, the M&E arrangements had some shortcomings. DLIs 4 and 5 were not adequately outcome-oriented, as described in section 3.b.

Thus, overall, the quality at entry is rated moderately satisfactory.

Quality-at-Entry Rating

Moderately Satisfactory

b. Quality of supervision

Supervision inputs and processes were generally adequate. The Task Team conducted implementation support missions once every year, except in 2020 due to COVID restrictions, to assess implementation progress and understand implementation issues (ICR, para 54). The Task Team undertook regular in-person and virtual technical meetings with the EESL team on specific implementation related topics, whose outcomes were consolidated with findings from formal missions. Findings from the implementation support missions and the overall progress of the Program were documented in three Aide Memoires and seven implementation status and results reports, respectively. During the period which the social development specialist position was vacant, the environmental specialist at SDU oversaw the social matters to avoid impeding progress on social matters (TTL's comments). On the other hand, the mid-term review mission, which was conducted from September to November 2022, was delayed because of COVID-19 restrictions, and there was no mission at the time of Program closing (ICR, para 62). Although data collected by EESL indicated the need for reallocating funds from DLI1 and DLI2 to DLI3 as early as September 2020, the restructuring was delayed due to prolonged processes for receiving an official restructuring request from the Department of External Affairs (DEA), evaluating different options for restructuring together with EESL, and completing a change in the Task Team Leadership (ICR, para 54). The DEA's official restructuring request was finally approved in July 2022, but the restructuring had shortcomings such as not cancelling the guarantee that had become irrelevant (ICR, para 54) and not addressing the weaknesses in the M&E design regarding the verification methodology of PDO indicators, as described in section 8.b. The shortcomings in the restructuring negatively affected the efficacy rating prior to the first restructuring during which more than 80 percent of the IBRD loan was disbursed.

Thus, the quality of supervision is rated moderately unsatisfactory due to significant shortcomings in the proactive identification of opportunities and resolution of impediments to satisfactory project performance.

The quality at entry is rated moderately satisfactory. The quality of supervision is rated moderately unsatisfactory. Overall, the quality of the World Bank's performance is rated moderately unsatisfactory based on the harmonized guideline between OPCS and IEG.

Quality of Supervision Rating

Moderately Unsatisfactory

Overall Bank Performance Rating

Moderately Unsatisfactory

8. M&E Design, Implementation, & Utilization

a. M&E Design

The Theory of Change was clear and reflected in the Results Framework in general, except for the weak focus on strengthening capacities of EE private sector to participate in EE market segments and the unclear causal chain leading towards the outcome of commercial financing leveraged, as described in section 4. The objectives were clearly specified. The indicators encompassed all outcomes of the PDO statement. Baselines and targets were well-specified. While the majority of DLIs (i.e., five out of six DLIs)

were designed as the intermediate results indicators, the DLIs were mostly adequate to capture the contribution of the Program's activities and outputs toward achieving PDO-level outcomes; however, some shortcomings in DLIs 1, 5, and 6, negatively affected their implementation and utilization, as described in section 3.b. Additionally, the methodology to verify the PDO indicators for lifetime energy savings and CO2 emissions were not based on credible assumptions, as described in section 4. The Independent Verification Agency (IVA) used simple methodology for monitoring and verification of DLIs such as the number of units sold or installed (ICR, para 52). M&E design could have incorporated independent verification of assumptions related to lifetime, usage, and baseline technology used to calculate energy savings and avoided greenhouse gas emissions, particularly in the residential segment (ICR, para 52).

b. M&E Implementation

Energy Efficiency Services Limited (EESL) was responsible for collecting and processing data based on the Results Framework and ensured attention to effective M&E implementation. Data related to distribution of energy efficient appliances was collected regularly from EESL's distribution centers and installation sites, and data related to streetlights was collected using EESL's Centralized Control and Management System as well as from Urban Local Bodies. All indicators in the Results Framework and all the DLIs were measured and reported. The DLI verification protocol was effective. EESL's Corporate Planning Department established a management information system (MIS), which reviewed and monitored progress both at the state and the central corporate level. Online dashboards displayed data related to sales of LED bulbs, tube lights, fans, and streetlights in real-time with geographical data, as well as key data related to deemed energy savings, cost savings, avoided peak demand, and avoided CO2 emissions (ICR, para 53). These dashboards were recognized as best practices for enhancing transparency of government programs (ICR, para 53). Thus, the M&E functions and processes are likely to be sustained after Program closing under an assumption that sufficient resources are continued to be allocated.

On the other hand, the weaknesses in the M&E design regarding the verification methodology of PDO indicators were not addressed during implementation, negatively affecting the quality of evidence at outcome-level, as described under Objective 1 in section 4.

c. M&E Utilization

The M&E system was used to report on project progress. The M&E findings were communicated to the various stakeholders. The M&E data was used to provide evidence of achievement of outcomes, though the methodology had some weaknesses described under Objective 1 in section 4. EESL's data collection helped identify emerging issues which enabled recommendation of remedial actions and Program restructurings to be undertaken.

On the other hand, the decision of the first restructuring came in late without an adequate depth. Although data collected by EESL indicated the need for reallocating funds from DLI1 and DLI2 to DLI3 as early as September 2020, there were some delays caused by receiving an official restructuring request from Department of External Affairs, evaluating different options for restructuring together with EESL, and completing a change in the Task Team Leadership, meaning that the restructuring was approved in July 2022 (ICR, para 54). In addition, the cancellation of the guarantee was not reflected in

a restructuring of the Program. As a result, the shortcomings for conducting the restructuring negatively affected the efficacy of the Program.

In sum, the M&E system as designed and implemented was generally sufficient to assess the achievement of the objectives and test the links in the results chain. On the other hand, the weaknesses in the M&E design regarding the verification methodology of PDO indicators were not adequately addressed during implementation. The M&E utilization was limited, resulting in the insufficient scope of the first restructuring that decreased the Program's efficacy. Thus, while there were moderate shortcomings, the overall rating for M&E Quality is substantial.

M&E Quality Rating

Substantial

9. Other Issues

a. Safeguards

Environmental and Social: The Program was evaluated to have moderate environmental and social (E&S) risks at preparation, considering the probable occupational health and safety risks of street lighting activities and the pollution impacts of waste. The guarantee (IPF) component was categorized as safeguards category B and triggered OP/BP 4.01 Environmental Assessment, OP/BP 4.10 Indigenous Peoples, and OP/BP 4.11 Physical Cultural Resources (ICR, para 56 and Team's Response). The borrower prepared an Environmental Management Framework (EMF) and Indigenous People's Policy Framework (IPPF) to ensure screening, categorization assessment and management of risks and impacts of the IPF Component. Aspects relevant to OP/BP 4.11 were included in the Environmental Sensitivity and Screening Checklist for UJALA and SLNP in the EMF (Team's Response). The E&S Systems Assessment (ESSA) conducted by the Bank during preparation of the PforR identified low capacities to manage E&S aspects (ICR, para 56). This led to the establishment of an SDU in EESL to institutionalize E&S risk management, including social safeguards and social development management, and strengthening its EHSS Manual to guide Program activities by making this part of the Program Action Plan and DLIs. EESL's SDU was continuously staffed with an environmental expert, who interacted with field offices to ensure implementation of safeguard measures. Trainings as identified in the EHSS Manual were undertaken by EESL Knowledge center & HR Department. However, the social development specialist position was vacant for long durations (ICR, para 57). In this regard, the TTL clarified that the lack of consistent social specialists did not impede progress on social matters, as this was overseen by the environmental specialist at SDU (TTL's comments). Nevertheless, some of the proposed activities, such as documentation of the impacts of SLNP on communities, particularly women, finalization of the gender strategy, and the development of a standard training manual on gender were yet to be completed at project closing (ICR, para 57). At the time of the ICR, the final report on gender was still pending, which meant the final numbers for direct employment of women could not be confirmed (TTL's comments).

b. Fiduciary Compliance

Financial Management: EESL faced challenges on financial management throughout implementation. At appraisal, although EESL was a profitable entity, the major financial risk was credit risk arising from exposure to financially stressed power distribution companies and Urban Local Bodies. As of March 2017, more than 25 percent of EESL's trade receivables qualified as trade defaults, sharply increasing from 4 percent in March 2016 (ICR, para 46). The Task Team also identified areas of ambiguity in a sample of tripartite SLNP contracts between EESL, a municipality, and a Discom, which could give rise to disputes or misinterpretation between the parties. At the time of Program effectiveness in 2018, EESL's latest financial statements had been qualified by the auditors over the treatment of their receivables (some of them were over 12 months old) with government bodies (ICR, para 46). In September 2022, EESL's outstanding receivables had surpassed INR 3.5 billion and were adversely impacting the cash flows for operations, and EESL was actively focused on setting up processes for better cash management. Given that the Program's financial management arrangements were predicated on EESL's systems Issues with fiduciary compliance might have affected the adequacy of determination of Program Expenditure and the accuracy of the annual financial statements (ICR, para 47). At closing, EESL had not implemented a policy for physical verification and reconciliation of fixed assets and inventory, although it had put together and was implementing an action plan to mitigate these issues (ICR, para 47).

c. Unintended impacts (Positive or Negative)

No unintended impact was reported in the ICR.

d. Other

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10. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Satisfactory	Moderately Unsatisfactory	Overall outcome is rated as Moderately Unsatisfactory before restructuring and Moderately Satisfactory after restructuring.
Bank Performance	Moderately Satisfactory	Moderately Unsatisfactory	The quality of supervision is rated moderately unsatisfactory due to shortcomings in the proactive identification of opportunities and resolution of hindrances to satisfactory project performance in a timely manner.
Quality of M&E	Substantial	Substantial	
Quality of ICR	---	Substantial	

11. Lessons

The ICR (paras 66-73) presented 8 lessons/recommendations. Four of them are presented below with rephrasing as they may inform the future PforR operations related to energy efficiency.

The changes in the leadership and governance of the implementing agency, along with external challenges like COVID-19 and market shifts, may lead to significant implementation delays. The Program initially showed rapid progress due to strong government support and the implementing agency's capacity. However, a series of changes in Energy Efficiency Services Limited (EESL)'s leadership team and governance structure in 2021 and 2022 resulted in a lack of continuity and implementation delays, which were exacerbated by other factors affecting implementation such as COVID-19 disruptions, faster-than-expected market transformation, and lack of agreement among government counterparts regarding the conditions for program extension (ICR, para 67).

Financial management and planning weaknesses may hinder the effectiveness of guarantees aimed at improving the access of public entities to commercial finance. In the case of EESL, optimistic projections for capital expenditure and financing needs led to the inclusion of a guarantee in the project design, but this was not utilized due to lower market demand and financial management issues (ICR, para 68). The ICR (para 68) recommended that future operations should focus on strengthening financial management and planning, and consider broadening objectives to include financial sustainability, with relevant financial performance indicators as outcomes.

The Program's bulk procurement strategy for energy-efficient technologies is replicable but requires careful risk management and dynamic target reassessment to mitigate inventory risks. The ICR (para 69) recommended that effective M&E systems would be essential, along with the flexibility to adapt to market changes and a clear exit strategy for transitioning to private sector-led markets. This approach would be particularly suited to standardized technologies with low inventory costs and is most effective in contexts with high demand, with smaller countries benefiting from regional coordination to achieve scale (ICR, para 69).

Collaborative efforts with development partners can enhance the effectiveness of government programs by ensuring that support efforts are complementary and mutually informative. In the case of EESL, areas for institutional strengthening identified by partners were incorporated into Disbursement-Linked Indicators (DLIs) and Prior Actions (PAPs). Specifically, EESL's Environmental, Health, and Safety Standards (EHSS) Manual, developed with support from KfW and ADB, was updated to apply across all operations as part of the DLIs (ICR, para 72).

12. Assessment Recommended?

No

13. Comments on Quality of ICR

The ICR provides a detailed overview of the project. The narrative supports the ratings and available evidence. It is candid and aligned to the project development objective in general. The report follows most of the guidelines, tries to triangulate data to reach conclusions, and is focused on results. The quality of evidence and analysis is aligned to the messages outlined in the ICR. The ICR's lessons are clear, useful, and based on evidence. The TTL/ICR team has provided a set of supplemental information to respond to IEG's inquiries. On the other hand, the ICR presents the project's theory of change with aggregated project activities and outputs, resulting in unclear results chains leading towards outcomes and articulating how the ratings have been reached. Overall, the quality of the ICR is rated substantial.

a. Quality of ICR Rating
Substantial