

# Evaluation Summary

## *Ex-Post Decentralized Evaluation – CIN 1070 Energy Efficiency Services Limited (EESL)*

Country: **India**

Sector: **Energy Efficiency**

Evaluator: **RTI International**

Date of the evaluation: **4th March 2024**

### Key data on AFD's support

**Project numbers:** CIN 1070 - EESL

**Amount:** Euro 50 Million

**Disbursement rate:** 78% (Euro 38.8 Million)

**Signature of financing agreement:** 9<sup>th</sup> April 2015

**Completion date:** 30<sup>th</sup> December 2020

**Total duration:** 5 years 8 months 21 days



### Context

Project CIN 1070, led by Energy Efficiency Services Limited (EESL) with the support of Agence Française de Développement (AFD), aimed to boost India's energy efficiency by retrofitting street and domestic lighting with LED technology. Despite facing certain challenges, the project achieved significant milestones, substantially contributing to energy savings and CO2 emissions reduction for the Indian economy. The appliances installed will result in an estimated energy saving of 12,907 GWh and GHG emission reduction of 9.14 million tCO2 over their life span.

The project supported EESL's innovative financing through the Energy Service Company (ESCO) model which saw widespread adoption in the Indian context for both energy efficient street and domestic lighting. The AFD funded project resulted into creation of world's largest rural energy efficiency street lighting project which set a precedent for future energy efficiency initiatives, demonstrating significant environmental, climate and socio-economic benefits.

### Actors and operating method

The project was implemented by the Energy Efficiency Services Limited (EESL), along with local partners like Municipal Corporation / State Government's Energy Department, Panchayati Raj Departments and Local Distribution Companies.

### Objectives

The objectives for Project CIN 1070 focused on enhancing India's energy efficiency landscape through:

- Bolstering the development of EESL as a pioneering public Energy Service Company (ESCO), strengthening its role in leading energy-efficient initiatives across the country.
- Encourage investments by public entities in energy-saving projects, thereby contributing to substantial reductions in energy consumption.
- Validate the effectiveness of the ESCO model within the Indian context, demonstrating its potential in achieving energy efficiency at scale and cultivating a conducive market environment for its proliferation.
- Public perception on socio economic and environmental developmental benefits post LED installations

### Expected outputs

- Developed the world's largest rural street lighting program and successfully installed 3.5 million LED lights in households and 1.81 million in streetlights under the Unnat Jyoti by Affordable LED for All (UJALA) and Street Lighting National Program (SLNP) schemes.
- Demonstrated the effectiveness of the Energy Service Company (ESCO) model in India, enabling energy savings to finance the initial investment costs.
- The initiatives have collectively benefited approximately 41.2 million people across ~11,000 Gram Panchayats in Jharkhand and Andhra Pradesh.

## Performance assessment

### Relevance

The Project CIN 1070, supported by AFD and executed by EESL, was closely aligned with the Indian government's policies on energy efficiency, focusing on the transition to energy-efficient LED lighting. While the project significantly addressed the national energy conservation goals, the responsiveness of the AFD funded project towards specific state needs and detailed project feasibility assessments are areas identified for further improvement during the evaluation.

### Effectiveness

This initiative was instrumental in advancing EESL's capabilities as a Super ESCO and facilitating the broader adoption of LED technologies. It successfully met and exceeded installation targets contributing immensely towards Government of India's goals of Energy Efficiency in India through substantial reductions in energy consumption and CO2 emissions. Nonetheless, the project faced challenges in fully incorporating gender considerations and adapting to evolving project scopes. While there was enhanced road safety for women beneficiaries, there was less clarity on the direct involvement of women in the project's implementation stages, such as decision-making roles.

### Efficiency

The AFD-financed Project CIN 1070, executed by EESL, encountered delays and underutilization of €11.6 million from the allocated €50 million loan, highlighting the importance of strategic project management and adaptive planning. Procedural delays, due to the important need for alignment with India's 'Make in India' policy, led to a two-year gap in execution, during which the LED market also matured significantly. This adaptation challenge underscores the critical learning curve in the evolving energy efficiency sector, emphasizing the need for precise data-driven planning and execution strategies to maximize the impact of such initiatives.

### Impact

The project had a significant positive impact, achieving and surpassing its energy efficiency objectives and contributing to national goals. The ground survey highlighted that the projects brought about transformative changes, notably in public safety and economic opportunities, with notable improvements in women's safety and empowerment. The initiative also played a key role in enhancing the government's public image and stimulating industry growth. Notably, the cost of LED bulbs distributed through the UJALA program dropped dramatically, from INR 310 in 2015 to just INR 38 in 2018, demonstrating the project's substantial market impact.

### Sustainability

The project's sustainable impact and alignment with long-term energy and cost-saving goals highlight its success. EESL's transformation into a pivotal organization for energy efficiency, bolstered by AFD's strategic early investment, has delivered enduring advantages. The scalability and sustainability of the ESCO model are evidenced by the nationwide implementation of the Street Lighting National Programme (SLNP), where 13.3 million LEDs have been successfully installed across India as well as the UJALA program. This wide-reaching success underscores the positive outcome of the strategic AFD investment into EESL towards its ESCO model's viability and effectiveness.

### Added value of AFD's contribution

AFD's contribution of €50 million was instrumental in driving EESL's successful ESCO model and the eventual expansive rollout of the SLNP scheme across India, leading to the installation of over 13.3 million LEDs. This funding not only supported the infrastructure but also facilitated capacity building and global knowledge exchange, enhancing the scalability and sustainability of energy-efficient projects. AFD's strategic investment catalyzed the market for energy-efficient lighting, significantly lowering costs and boosting the national adoption of green technologies.

## Conclusions and lessons learnt

Project CIN 1070 successfully demonstrated the viability of scaling up energy-efficient technologies across India, particularly through the widespread installation of LED lighting. Despite facing various operational, financial, and technical challenges, the project managed to achieve notable outcomes in terms of energy savings, environmental benefits, and socio-economic impacts. It highlighted the critical role of strategic partnerships and financing in overcoming barriers to energy efficiency. Key lessons learnt are as follows:

- The project underscored the importance of robust planning and the need for flexibility to adapt to changing circumstances and challenges. Future initiatives should incorporate dynamic planning processes that can accommodate shifts in market conditions, technology advancements, and stakeholder needs.
- Effective collaboration among multiple stakeholders, including government bodies, municipal corporations, and distribution companies, was crucial for the project's success. Future projects should focus on enhancing stakeholder coordination and communication to ensure smooth implementation and maximize impact.
- The ESCO model, facilitated by AFD's financial support, proved effective in promoting energy efficiency without requiring upfront capital from end-users. This approach can be replicated and scaled in other sectors and regions, emphasizing the need for innovative financing solutions that address the initial cost barriers to energy efficiency investments.
- The technical cooperation and capacity-building initiatives, such as the study trip to France, were instrumental in enhancing the expertise of EESL and other Indian stakeholders. Continuous learning and knowledge exchange with international partners can drive the adoption of best practices and technologies in energy efficiency.
- Strategically ensuring timely annuity payments is key to the ESCO model's success, necessitating the establishment of reliable financial frameworks to maintain and enhance project funding continuity.
- Ensuring the sustainability of energy efficiency projects beyond the project lifecycle is critical. This involves not only financial sustainability through models like the ESCO but also the integration of projects into broader environmental, social, and economic frameworks. Future projects should aim for a holistic approach that considers the long-term impact on communities, the economy, and the environment.
- The project faced challenges related to procurement norms, fund utilization, and project execution delays. Addressing such challenges proactively through transparent processes, clear documentation, and flexible strategies is essential for the smooth execution of future projects.