

IMPACT ASSESSMENT OF  
CSR PROJECT OF  
SOLAR STREET LIGHT PROJECT IN  
KAIRANA(UTTAR PRADESH)



Submitted By



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Leadership through Learning

## **Acknowledgement**

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**The Study Team**

### The Study Team

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## **Abbreviations**

|       |                                                        |
|-------|--------------------------------------------------------|
| ASCI  | Administrative Staff College of India                  |
| AMC   | Annual Maintenance Contract                            |
| CSR   | Corporate Social Responsibility                        |
| CHRD  | Centre for Human Resources Development                 |
| CPPGP | Centre For Public Policy, Governance and Performance   |
| DAC   | Development Assistance Committee                       |
| FGD   | Focus Group Discussion                                 |
| LED   | Light- Emitting Diode                                  |
| MoU   | Memorandum of Understanding                            |
| OECD  | Organization for Economic Co-operation and Development |
| PFC   | Power Finance Corporation Ltd.                         |
| REIL  | Rajasthan Electronics & Instruments Limited            |
| SDG   | Sustainable Development Goal                           |
| SLS   | Street Lighting Systems                                |

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## **1 Executive Summary**

This impact assessment evaluates the outcomes of a solar-powered street lighting project in rural villages of Kairana, Uttar Pradesh. Funded by Power Finance Corporation (PFC). The project involved providing Financial Assistance of Rs 1.12 Crores to “Project for Supply, Installation and Commissioning 500 nos. of Solar Photovoltaic LED Street Lighting Systems (SLSSs) in various villages of Kairana Parliamentary Constituency of Uttar Pradesh through Rajasthan Electronics & Instruments Limited (REIL), a ‘Mini Ratna’ Central Public Sector Enterprise. The project aimed to enhance community safety, encourage local economic activity by extending evening business hours, and support social and environmental sustainability.

Using the OECD framework, the evaluation examines whether the project achieved its goals in terms of relevance, coherence, efficiency, effectiveness, impact, and sustainability. Field visits were conducted to 60 sites by the Administrative Staff College of India (ASCI) team to inspect the functionality of the lights and collect feedback from diverse stakeholders, including local residents, shopkeepers, places of worship, and vulnerable groups. Project beneficiaries and local stakeholders are happy with the initiative of providing this infrastructure. As per local community it has improved safety and security at night time. There has been increase in economic and other activities in night time. Findings indicate that the project has been well-received by the community, resulting in significant improvements in security, business potential, and socio-economic development.

## **2 Introduction**

The purpose of this project was to address night-time visibility issues in remote villages, fostering a safer and more inclusive environment and supporting local economic activity. The implementation was led by REIL, ensuring that each installation aligned with energy efficiency and durability standards.

## **3 Background**

Kairana, a constituency with a mix of agricultural and small-scale business communities, faces issues of limited lighting infrastructure. The absence of sufficient street lighting

contributed to reduced safety and hindered evening economic activities. To address these challenges, PFC initiated the project to install solar LED street lights across selected villages, utilizing renewable energy for sustainable lighting solutions.

The project aims to deliver tangible benefits at the ground level by providing access to electricity, enhancing the welfare and security of the population in the Kairana Parliamentary constituency of Uttar Pradesh. The key benefits of the project include offering sustainable lighting solutions for villagers in remote areas, making their living environment safer, and enabling them to continue economic activities after dusk. Additionally, the project encourages increased outdoor social engagement.

The installation of solar street lights also contributes to improved safety, particularly for women, girls and children at night, especially in remote regions.

#### **4 Objective of the Evaluation**

The main objectives of this evaluation are

1. To assess the following intended objectives of the projects are fulfilled:
  - a) Better Illumination in the streets in the remote villages.
  - b) Safety and Security in the area
  - c) Extended business duration due to extended nightlife and thereby leading to prosperity in the populace and socio-economic development of the area
2. To assess the benefits of the interventions to various stakeholders of the activities.

#### **5 Methodology**

To comprehensively assess the project's outcomes, a mixed-method approach was applied, incorporating both quantitative and qualitative data.

## 5.1 OECD DAC Framework for measuring sustainability

The Organization for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) established a set of evaluation criteria in 1991 to serve as a core reference for assessing international development and humanitarian projects, programs, and policies. These criteria provide a structured framework to ensure interventions are relevant, efficient, effective, and sustainable, while considering their broader impacts and coherence with other initiatives.

The criteria—**Relevance, Coherence, Effectiveness, Efficiency, Impact, and Sustainability**—are applied to measure the quality and success of interventions, with a focus on delivering long-term, positive changes aligned with global development goals, such as the United Nations' Sustainable Development Goals (SDGs).

**Relevance:** The extent to which the objectives and design of an intervention address the needs, policies, and priorities of beneficiaries and stakeholders, and adapt to changing circumstances.

**Coherence:** The extent to which an intervention is supported or undermined by other policies and initiatives, and how well it complements or conflicts with them. Coherence is assessed both:

- **Internally:** Alignment within the same organization or sector.
- **Externally:** Synergies or conflicts with broader policies, interventions, or international efforts.

**Effectiveness:** The extent to which the intervention achieved, or is expected to achieve, its objectives, and its results, including any differential results across groups.

**Efficiency:** The extent to which the intervention delivers results in a cost-effective and timely manner, optimizing the use of resources without compromising quality.

**Impact:** The extent to which the intervention has generated or is expected to generate significant positive or negative, intended, or unintended, higher-level effects.

**Sustainability:** The likelihood that the net benefits of the intervention will continue beyond its duration, ensuring lasting positive outcomes.

| Parameters            | Components                                                                                                                     |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Relevance</b>      | Need Assessment Report<br>Availability of Information on need assessment<br>Alignment to CSR Policy of PFC<br>Alignment to SDG |
| <b>Coherence</b>      | Internal and External Coherence (CSR Policies and policies of Government of India)                                             |
| <b>Effectiveness</b>  | Adherence to timeline<br>Adherence to Budget                                                                                   |
| <b>Efficiency</b>     | Target achievement (Planned vs. Actual)                                                                                        |
| <b>Impact</b>         | Baseline Assessment Report Impact and Availability of impact indicators                                                        |
| <b>Sustainability</b> | Sustainability mechanism, Convergence                                                                                          |

## 5.2 Data Collection Method

Primary data collection included field observations, structured interviews, and surveys with various stakeholders, providing a balanced perspective on the project's impact. To conduct a comprehensive assessment, the study team used the following data collection methods:

## 5.3 Secondary Data Review

The study team gathered initial information from PFC regarding the sanctioned funds for the CSR initiative and the MoU document, which outlined the terms and conditions between PFC and REIL. This provided the study team with a foundational understanding of the project background, allowing them to proceed with the impact evaluation study. Additionally, PFC shared the details of the nodal contact at REIL. This facilitated smooth coordination for the field visits and ensured timely visits to all places under evaluation.

Documents related to the project's implementation, budget utilization, and maintenance strategy were reviewed.

A review of available secondary literature related to location factors and regional population in each of the location was conducted to assess the broader impacts of the facility installed.

#### 5.4 Field Visits

The study team took a walk across the selected village streets. The team was accompanied by a Senior Executive from the implementing agency along with the technical maintenance team. During the walk, each solar street light was observed for its functionality. At each of the location like kirana shops, gurudwara, mandir, masjid, ration shop etc the study team conducted FGD with group comprising of men, women, old aged people and children. Each group comprised of minimum 5 members and the primary objective was to gauge the perception of the users on various aspect associated with solar street lights. Apart from this 75 respondents were interviewed randomly to capture their individual perception The ASCI team conducted on-site inspections of 100 solar street lights during both day and night times to evaluate functionality, coverage, and effectiveness.

#### 5.5 Stakeholder Interviews and Questionnaires

This impact assessment employed a qualitative research methodology, focusing on gathering data through semi-structured interviews, surveys, and focus group discussions tailored for different groups, including residents, shopkeepers, places of worship representatives, and vulnerable groups (women, elderly, and youth).

#### 5.6 Stakeholders Consulted

Key stakeholders consulted in the assessment process included:

- **M/s Power Finance Corporation (PFC):** The primary funder and initiator of the project under its CSR initiatives.
- **M/s REIL,** the Implementing Agency involved in installation and ongoing maintenance.
- **Local Villagers** A range of stakeholders were consulted, including:

- Local villagers and shopkeepers who benefit directly from the street lighting.
- Women, Children and elderly residents to gauge safety and convenience aspects.

Detailed questionnaires (attached in the annexures) were used to gather data on the project's impact, challenges, and successes.

## 5.7 Stakeholder Sample Size and Questionnaire Design

The assessment study covered multiple locations across the Kairana Parliamentary Constituency, which includes the following blocks:

- Kairana, Kandhla, Shamli, Unn, Thanabhavan, Nanauta, Nakur and Gangoh

Of these, the study team visited and conducted evaluations in the blocks of Kairana, Kandhla, Shamli, Unn, and Thanabhavan, covering over 20% of the block panchayaths in the constituency. A total of 100 solar streetlights, out of the 500 installed, were physically verified and inspected by the ASCI team—representing 20% of the total installations.

In each of the five visited blocks, the study team conducted structured interactions with 50 beneficiaries, resulting in 250 stakeholder interactions overall. These interactions included local residents, shopkeepers, women, youth, elderly citizens, and community representatives. The intent was to assess the community's perception of the solar lighting initiative in terms of safety, economic activity, and social mobility.

A mix of structured questionnaires, focus group discussions (FGDs), and semi-structured interviews were used to collect qualitative and quantitative data on the impact of the solar street lights. The questionnaires were designed to assess the beneficiaries' satisfaction levels, perception of safety, night-time mobility, enhancement in business activities, and awareness of the maintenance process for the lights. Wherever street lights were installed investigators identified beneficiaries in the nearby areas and conducted the impact assessment study.

The summary of beneficiary interactions conducted in each visited block is presented below:

| Block Visited | No. of Beneficiary Interactions Conducted |
|---------------|-------------------------------------------|
| Kairana       | 50                                        |
| Kandhla       | 50                                        |
| Shamli        | 50                                        |
| Unn           | 50                                        |
| Thanabhavan   | 50                                        |
| <b>Total</b>  | <b>250</b>                                |

### 5.8 Tools for Analysis

The data was analysed and visualized using charts generated in MS Excel.

## 6 Field Observations

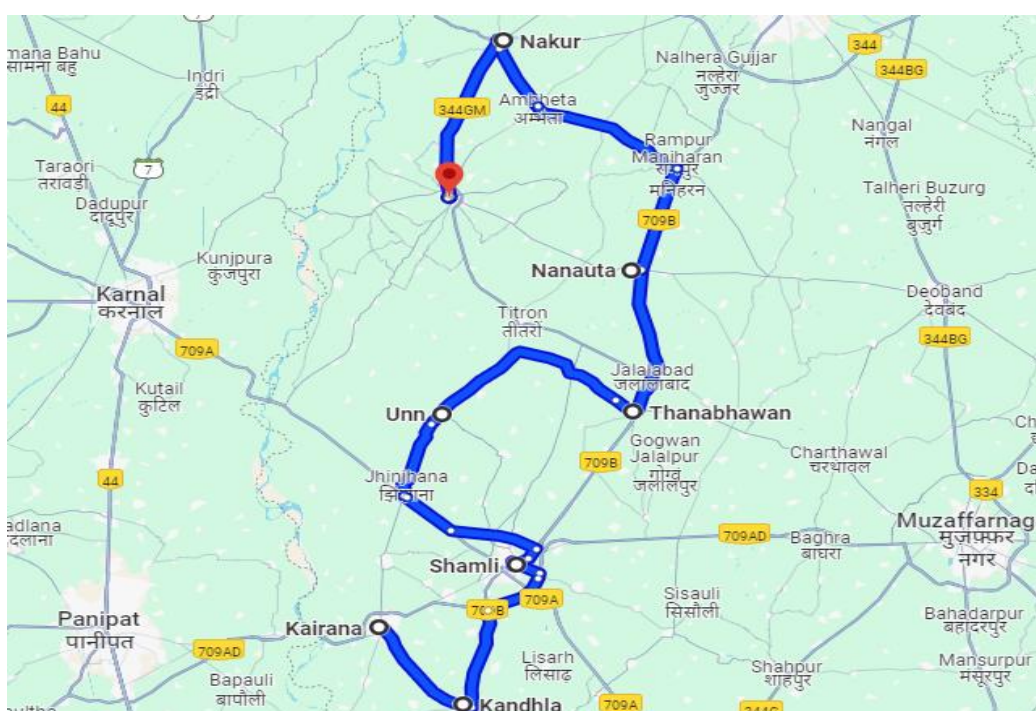
### 6.1 Visit to Kairana

Kairana constituency, located in the Shamli district of Uttar Pradesh, has an agrarian economy with farming as the primary occupation. The region is known for its fertile soil, supporting the cultivation of crops like rice and sugarcane. Sugarcane farming is particularly significant, with the production of jaggery being a key industry in the area. The agricultural activities in Kairana play a vital role in the livelihood of its rural population, reflecting the essence of traditional Indian village life, where community and family-oriented values are central to its culture and economy.



Field observations confirmed that the installed lights were functional, providing adequate illumination in their coverage areas.

| Sites                                                                                                                                                                                                                                  | Cost of Project | Project completion date | No of Street Lights Installed and Commissioned | Project Implementing Agency and Maintenance |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------|------------------------------------------------|---------------------------------------------|
| <b>Kairana Parliamentary Constituency</b> <ul style="list-style-type: none"> <li>• Kairana</li> <li>• Kandhla</li> <li>• Shamli</li> <li>• Unn</li> <li>• Thanabhavan</li> <li>• Nanauta</li> <li>• Nakur</li> <li>• Gangoh</li> </ul> | Rs. 1.12 Crore  | Feb 2021                | 500                                            | REIL, Jaipur, Rajasthan                     |



## 6.2 Factors Considered for Solar Light Installation Locations:

1. Areas Difficult to Access at Night
2. Near Primary Schools and Health Centres
3. Near Places of Worship
4. Near Community Water Sources
5. Around Local Kirana Shops
6. Near Ration Shops
7. Public Gathering Areas
8. Road Intersections and Pathways
9. Near Agricultural Fields or Storage Areas



### 6.3 Overview

Most stakeholders expressed positive feedback, with many emphasizing the increased sense of safety and the convenience provided by reliable street lighting.

### 6.4 Site Visit and Geotagging Documentation

During the site visits, geotagged photos were taken to document the condition of the facility.

## 7 Analysis and Findings



Fig-Study Team Interacting with the various stakeholders

### 7.1 Physical Verification and Observation Checklist of Solar Street Lights:

A walk through to the project areas/village/ streets were made by the surveyors for the physical verification, functionality of the project. The street lights are installed along the roadside for the purpose of night lighting and that has resulted in the safety, security and beautification of the village. Most of the respondents appreciated the initiative of PFC.

### 7.2 Operational Efficiency and Maintenance

The street lights functioned for an average 10 hours. The functional duration of the solar street light during rainy days reduced due to reduced sunlight. However, it worked for 5 hours during rainy days which was enough to cover the dusk to late night. The street lights demonstrated operational efficiency with minimal maintenance requirements, although minor repairs were recommended in a few cases.

### 7.3 Financial Sustainability

As a renewable energy-based initiative, the project has low ongoing costs, indicating a sustainable financial model.

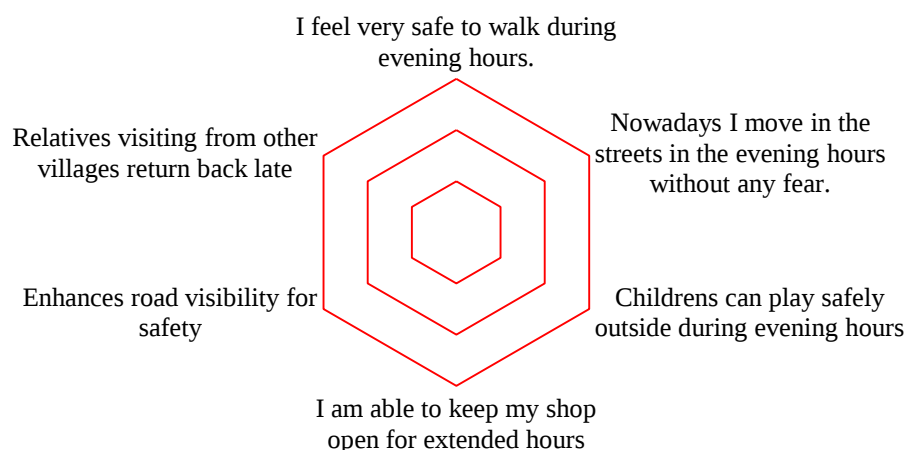
### 7.4 Social Impact and Community Acceptance

About 95% of the respondents mentioned that they find it easy to walk after dusk in the village street due to better illumination. About 85% of the respondents mentioned that their movements during evening hours in rainy season has become easier due to illumination. The community expressed strong acceptance, with improved night-time safety reported by residents, especially women and the elderly. Local shops reported increased activity and safety due to extended evening hours.

### 7.5 Environmental Impact

The shift to solar lighting has contributed positively to the local environment by reducing carbon emissions.

## Community Acceptance

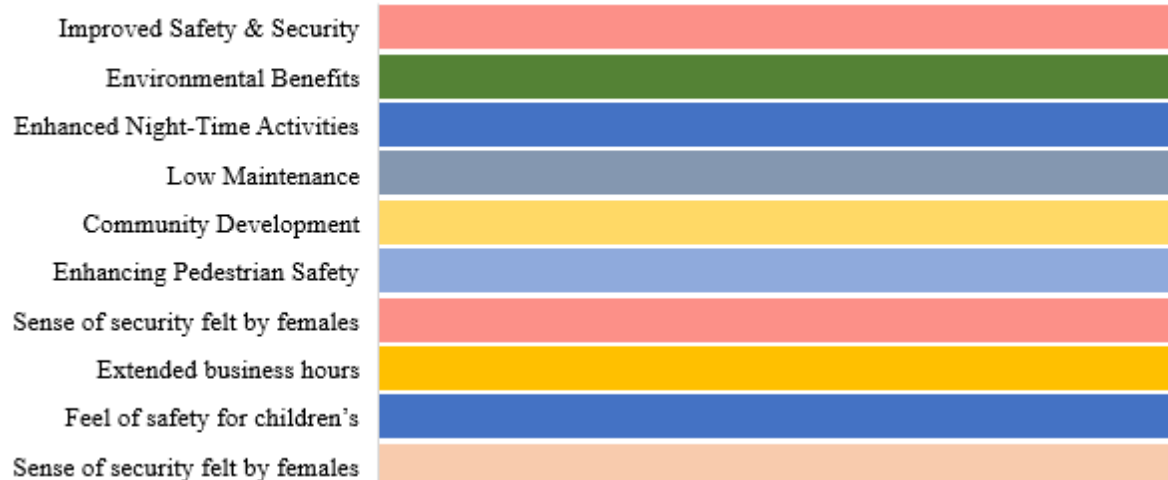


A gender strengthening dimension as an impact of the solar street light. 90% of the respondents said that women feel safe to walk during evening and night after the installation of solar street light. Women and children are able to go to grocery shop alone after dusk.

## Enhance Nightlife

About 75% of the respondents mentioned that the frequency of informal gatherings outside house hold premises, near grocery shop, temple, panchayat pipe etc has increased after installation of solar street lights.

## Benefits of Solar Street Light in Village



## Enhancing Pedestrian Safety with Solar Street Lights

Solar street lights have significantly enhanced pedestrian safety by illuminating road features such as potholes, drainage holes, and scattered construction materials, ensuring safer and more secure walking conditions.

### Feel of Safety for Children's

After installation of Solar Street light, they feel more safe with their kids playing outside during evening hours as there is reduced fear of free- ranging dogs, snakes and other crawling animals.

## 7.6 Scope vs. Actual Findings Table

The Scope vs. Actual Findings table aims to provide a comparative analysis between the initial scope outlined for the solar street lighting project and the actual outcomes observed during the evaluation. The scope of the project, as defined in the planning phase, includes a set of goals designed to improve street lighting, ensure safety, foster economic growth, and support community development in the remote villages of the Kairana Parliamentary constituency. The table highlights the extent to which these objectives were realized on the ground, drawing attention to both successes and any discrepancies between the planned activities and the actual implementation.

| Scope of the Project                                                                  | Actual Findings                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1. Installation of 500 Solar Photovoltaic LED Street Lights in Remote Villages</b> | 500 solar street lights were successfully installed across various villages in the Kairana constituency, meeting the planned target. (as per installation list shared by PFC and Implementing Agency REIL). The study team visited and physically verified 60 street lights as part of the impact evaluation. |
| <b>2. Ensuring Better Illumination in Streets of Remote Villages</b>                  | Street lighting was significantly improved, with lights providing adequate illumination, especially in remote areas where electricity access was limited.                                                                                                                                                     |
| <b>3. Enhancing Safety and Security in</b>                                            | Villagers reported feeling safer, especially women                                                                                                                                                                                                                                                            |

|                                                                                                                                |                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>the Area</b>                                                                                                                | and children, due to better lighting during night time.                                                                                                |
| <b>4. Enabling Economic Activity After Dusk</b>                                                                                | Local businesses reported an increase in evening activities, with shops staying open longer due to improved lighting, contributing to economic growth. |
| <b>5. Encouraging Outdoor Social Activities</b>                                                                                | Increased outdoor social gatherings and community activities were observed, fostering stronger community ties and social engagement.                   |
| <b>6. Improving Women's and Girls' Safety at Night</b>                                                                         | Women and girls felt more secure moving around at night, with positive feedback from local residents on the impact on gender safety.                   |
| <b>7. The project includes a 5-year AMC for solar street lights, ensuring periodic maintenance and functional reliability.</b> | The 5-year AMC is followed, and an inventory of spare parts is maintained. Faulty components are sent to REIL for replacement.                         |

### 7.7 Objective vs. Actual Achievement Table

The **Objective vs. Actual Achievement** table presents a detailed comparison between the specific goals of the project and the real-world results achieved. Each objective, as outlined during the planning and execution phases of the solar street lighting project, aimed to address the immediate and long-term needs of the Kairana community, such as enhanced safety, improved access to lighting, and socio-economic development. This table critically evaluates how each objective was met through the project's implementation, providing insights into the effectiveness and impact of the project in delivering its intended benefits to the local population.

| <b>Objective</b>                                                                   | <b>Actual Achievement</b>                                                                                                                        |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1. Provide high-quality, sustainable lighting solutions for remote villages</b> | <b>Achieved:</b> 500 solar street lights installed, offering a reliable, eco-friendly, and sustainable lighting solution for the villages.       |
| <b>2. Ensure better street illumination for the local population</b>               | <b>Achieved:</b> Streets were well-lit, improving visibility and contributing to a safer environment for locals, particularly in isolated areas. |

|                                                                                  |                                                                                                                                                                              |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>3. Improve safety and security, especially for women and girls</b>            | <b>Achieved:</b> Enhanced street lighting led to improved security, particularly for women and children.                                                                     |
| <b>4. Enable economic activities after dusk and foster local business growth</b> | <b>Achieved:</b> Local businesses reported extended hours of operation, leading to improved economic activity and opportunities for villagers to engage in evening commerce. |
| <b>5. Promote outdoor social engagement and community development</b>            | <b>Achieved:</b> Villagers engaged in more social activities, fostering a sense of community and promoting a safer and more connected environment.                           |
| <b>6. Enhance safety for women and girls, specifically in remote areas</b>       | <b>Achieved:</b> Increased feelings of safety among women and girls, with enhanced mobility and freedom after dark, particularly in isolated areas.                          |

## 8 Detailed Stakeholder Feedback (Qualitative Analysis of Stakeholder Perspectives)

### 8.1 Power Finance Corporation (PFC)

Power Finance Corporation (PFC) views this project as a significant initiative aimed at delivering tangible benefits to the population of Kairana Parliamentary constituency in Uttar Pradesh. The project is designed to provide access to reliable electricity, enhancing both the welfare and security of local residents. PFC recognizes three key benefits from the project:

- 1. Provision of High-Quality, Sustainable Lighting Solutions:** The installation of solar-powered street lighting systems in remote villages offers a long-term, eco-friendly solution to lighting needs, contributing to better living conditions and greater community well-being.
- 2. Improvement in Safety and Economic Activity:** By ensuring safer streets after dark, the project creates opportunities for continued economic activities in the evenings, fostering local business growth and enabling outdoor social interactions, which contribute to a more vibrant and connected community.

3. **Enhanced Safety for Women and Girls:** The lighting improves security, particularly for women and girls, by reducing the risks associated with travelling or moving around at night, especially in remote areas.

PFC sees the project as a success in meeting its CSR objectives and contributing to national environmental goals. PFC acknowledged the successful execution and alignment with its goal of rural development through sustainable energy projects.

## 8.2 Rajasthan Electronics & Instruments Limited (REIL)

The project ‘Supply and Installation – Commissioning of 500 nos. SPV based LED Street Lighting Systems with 5 years AMC’ was sanctioned by PFC on 13.02.2020 and site list were received from Local Authority. Further, systems were supplied, installed & commissioned in consultation with local Gram Panchayats and installed systems were handed over to local gram Panchayats. Local Gram Panchayats helped REIL team a lot in terms of providing feasible sites and timely execution of project.

The pace of work was slow during rainy and winter season. The SLSs foundation work couldn’t be done during rainy season and installation was difficult during foggy season in winters. The pace of work was sped up by REIL in summers.

The complete solar streetlight unit comprises the following components:

1. **Solar Panel**
2. **Solar Pole**
3. **LED and Battery Fixture**

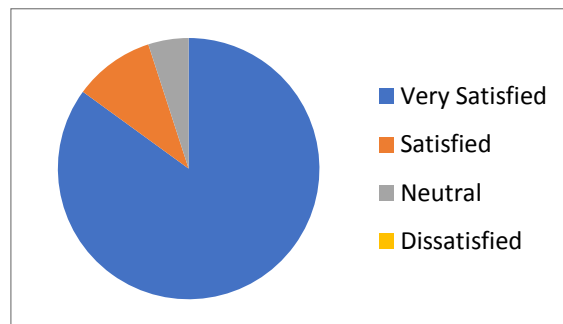
REIL has shared valuable insights into operational challenges and lessons learned from project implementation and maintenance. AMC cost is included in PFC sanctioned budget. They have committed to supporting the project for 5 years from the date of installation, conducting periodic inspections to ensure its efficiency.

An inventory of essential spare parts, including LED lights, has been maintained for periodic maintenance, ensuring minimal downtime and uninterrupted performance.

### 8.3 Local Community Feedback

Community members appreciated the lights for improving their quality of life, with women noting increased safety and shopkeepers observing extended business hours. Overall, 85% of the villagers expressed high satisfaction with the solar street lights, while 5% remained neutral. Notably, no one reported dissatisfaction, as they consider the initiative a significant benefit to their village.

Satisfaction Level of Villagers



#### Stakeholder voice

*Project will provide “economic and social benefits to the people.”-*  
Shri Pradeep Chaudhary, Hon’ble Member of Parliament from  
Kairana Parliamentary Constituency.

*"Sometimes, my relatives from nearby villages visit us and stay late into the evening. When they return home at night, the solar lights make their commute much safer and more convenient."*

Niklosh Saini, Villager



*“Solar lighting is a new concept for us, and this is the first time solar street lights have been installed in our area. They enhance the beauty of our surroundings, but their durability can sometimes be an issue. Regular servicing is essential to ensure they remain functional.”*

Subas Chandra Pardhan, Villager

*“I feel this initiative is a great step forward, provided there is a system in place for its long-term maintenance. Overall, I feel this is a positive start that will drive development and significantly improve the lives of people in our community.”*

Aashish Kumar, Villager

#### 8.4 Adherence to OECD framework-An Analysis

| Parameters    | Components                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relevance     | Qualitative insights collated from across respondents, brings out that the solar lights were required to be installed, as the area faced challenges compromising mobility and security. The proposed sight did not have adequate number of street light.                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Coherence     | The implementation of solar street lighting in remote villages by Power Finance Corporation (PFC) aligns seamlessly with the global vision of the 7th Sustainable Development Goal (SDG) to ensure universal access to affordable, reliable, and modern energy services. Complementing India’s efforts on the global stage, PFC's initiative demonstrates coherence with national programs like the Atal Jyoti Yojana, which aims to improve safety and quality of life through solar lighting in public spaces. This initiative effectively integrates global, national, and local goals, addressing energy accessibility while enhancing safety and mobility in underserved communities. |
| Effectiveness | REIL successfully completed the project within the prescribed 7-month timeline, from the date of signing the MOA between PFC and REIL,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | demonstrating effective implementation. Additionally, the project was completed within the allocated budget, further highlighting REIL's efficiency in managing both time and financial resources.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Efficiency     | Role of implementing partners in repair and maintenance to ensure that the assets are efficiently utilized by the community members.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Impact         | The installation of solar lights has significantly improved security and mobility in the village, allowing community members to move around with greater confidence, especially during evening hours. Notably, 100% of respondents, including a higher percentage of women, reported feeling safe walking after dark. Women and adolescent girls highlighted an increased sense of security, with 84% of women feeling able to move freely without fear. Additionally, children can now play more securely outdoors, protected from street dogs, snakes and crawling animals further enhancing the overall safety and well-being of the community.       |
| Sustainability | The convergence of global, national, and local efforts through initiatives like PFC's solar street lighting project underscores a sustainable approach to enhancing energy access and community well-being. To ensure the long-term impact of such initiatives, regular maintenance is essential. Encouraging community ownership and establishing financial mechanisms to support timely upkeep can play a pivotal role in sustaining these benefits. Empowering local stakeholders to take responsibility for maintenance fosters a sense of shared accountability, ensuring the continued functionality and positive outcomes of these interventions. |

## 8.5 Case Study-Stakeholder Experiences

### **Enhancing Evening Sales and Community Activity with Solar Street Lights**

A shopkeeper in the community shared a transformative experience following the installation of solar street lights. Previously, the shop relied on candles and lamps for lighting after dusk, which limited operations, deterred customers, and created safety concerns. Due to the dim lighting and fewer people venturing out after dark, the shop would typically close by 7:30 PM.

The introduction of solar street lights has brought significant improvements to the area. With better lighting, the shopkeeper has observed an increase in evening sales, as more women, children, and elderly residents now feel safe stepping out after dusk. People gather near the shop to spend their evenings, creating a lively and social atmosphere.

This improved environment has allowed the shop to remain open until 9:30 or even 10:00 PM on some days, contributing to both increased income for the shopkeeper and a stronger sense of community. The solar street lights have not only enhanced safety but also revitalized the night-time economy and local social life.

## **9 Conclusion**

The solar street lights are designed to operate automatically, switching on at dusk and off at dawn as sunlight interacts with the solar panels. On average, these lights illuminate the area for 10-12 hours each evening and night, enhancing safety and convenience. Coordinating with service providers for technical support and maintenance.

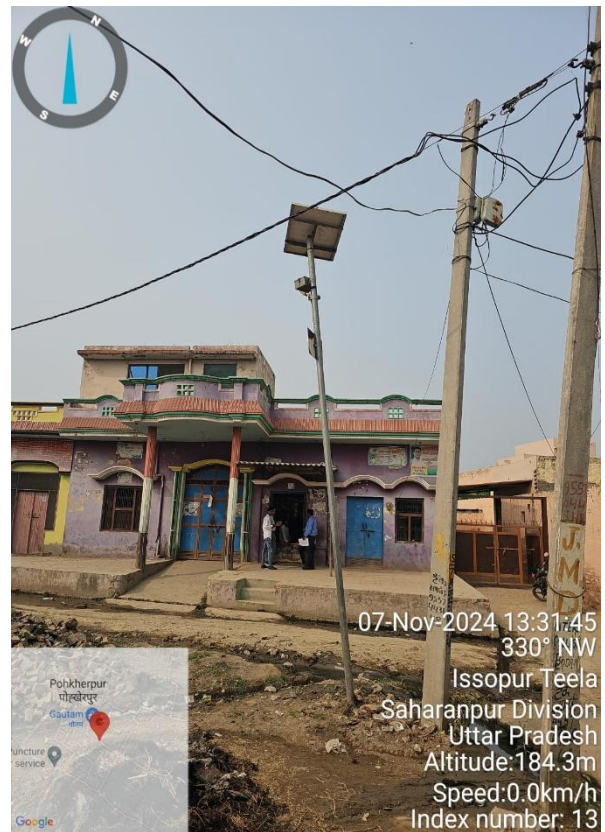
The solar street lighting project has successfully met its objectives, improving community safety, supporting local businesses, and promoting environmental sustainability. The positive feedback from the community highlights the initiative's relevance and impact, demonstrating its potential for replication in other rural areas. Implementing sustainability measures like community involvement and pooled funds will ensure the long-term reliability and continued benefits of such projects.

## 10 Annexures

A complete set of geotagged images taken during the field visits for reference.

### 10.1 Geotagged Photos of the Facility

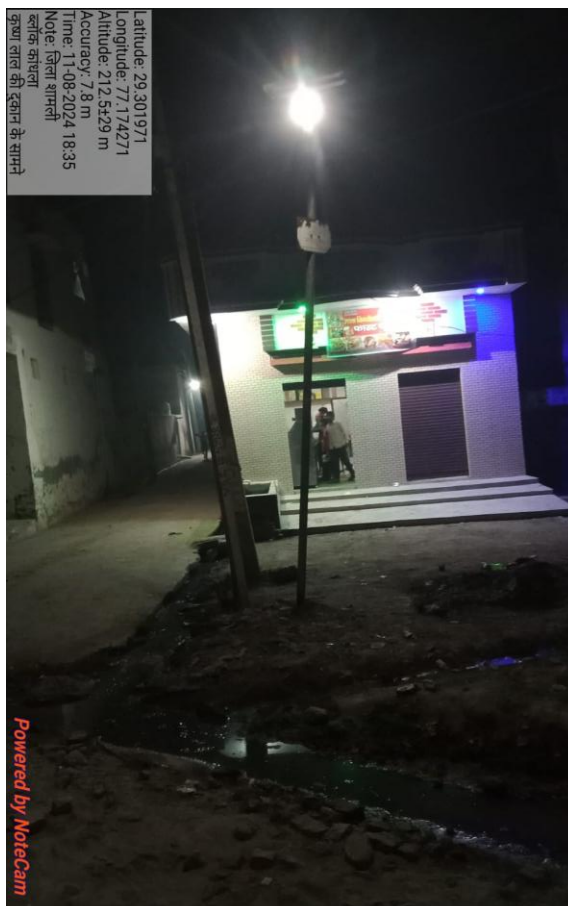


















## 10.2 Questionnaires Administered to Stakeholders

### 10.2.1 Power Finance Corporation Questionnaire

#### **Impact Assessment of ‘CSR Project of Solar Street Light project in Kairana (Uttar Pradesh)**

#### **Power Finance Corporation**

#### **(Questionnaire for the primary funder and initiator of the project under its CSR initiatives.)**

Respondent Name:

Designation:

Email Id and phone No:

| <b>Name of Project</b> | <b>Location</b> | <b>Year of Establishment and Approved duration for completion of the project</b> | <b>Financials</b> |
|------------------------|-----------------|----------------------------------------------------------------------------------|-------------------|
|                        |                 |                                                                                  |                   |

## 10.2.2 Questionnaire for Local Villagers

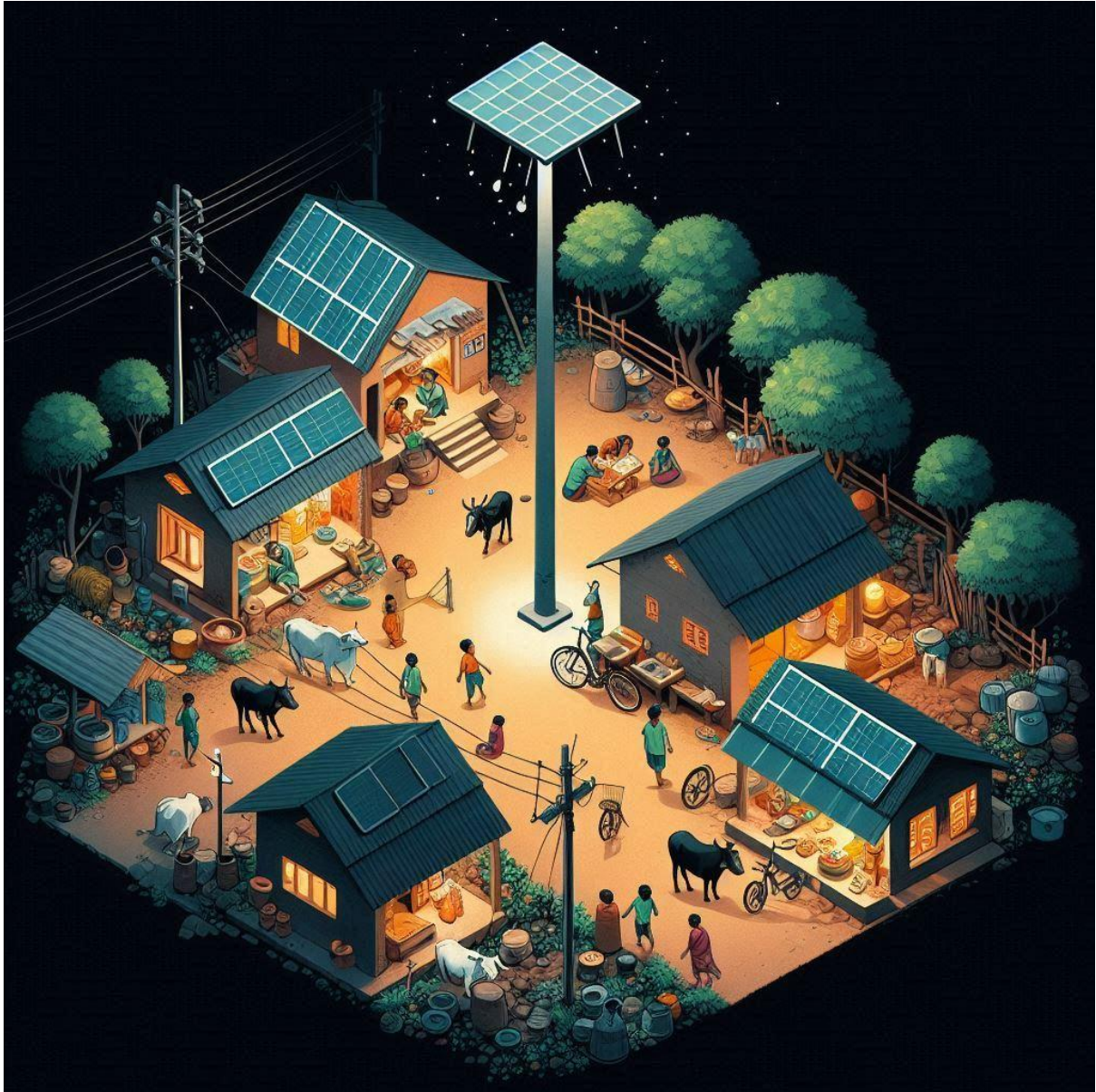
### **Impact Assessment of ‘CSR Project of Solar Street light project in Kairana (Uttar Pradesh)**

#### **(Questionnaire for the Local Villagers.)**

#### **Community Impact Questionnaire**

1. Did the installation of solar street lights improve street illumination in your area?
2. Do you feel safer walking or traveling at night due to the new solar street lights?
3. How has the installation of solar street lights specifically affected the safety of women, children, and the elderly in your community?
4. Can you share any specific examples or situations where the lighting has made a noticeable difference, particularly in the evening or night-time?
5. Do you feel that installation of solar street lights led to increased local business activity during the evening?
  - a) Yes
  - b) No
6. Have local shops experienced increased foot traffic in the evening, or have villagers been able to engage in any new economic activities due to the lighting? Please explain.
7. How has the lighting affected social activities in your community at night?
  - a) Increased social interactions and gatherings
  - b) No change
8. Do you believe the solar street lights have contributed to improving the socio-economic conditions in your village?
  - a) Yes, significantly
  - b) Yes, to some extent
  - c) No, not at all
9. How satisfied are you with the quality of the solar street lights?
  - a) Very satisfied
  - b) Satisfied
  - c) Neutral
  - d) Dissatisfied
10. Can you share any stories or experiences that demonstrate the benefits brought by the solar street lights in your community?

11. Are there any issues with the maintenance or functionality of the street lights?
- a) Yes, frequently
  - b) Yes, occasionally
  - c) No issues
12. If a light mal function, are you aware whom to inform/contact for maintenance and support for repairing the solar lights in your locality
- a) Yes, through local maintenance person
  - b) No, I am not aware
  - c) Other.....
13. How do you feel about the sustainability and reliability of the solar street lights? Have you encountered any issues with the lights, such as malfunctions or insufficient illumination?
14. Do you have any suggestion related to the maintenance and sustainability of solar street lights?
15. Do you think the project has improved the overall quality of life in your village?
- a) Yes, it has improved life significantly
  - b) Yes, it has slightly improved life
  - c) No, it hasn't made a difference
16. Do you think the solar street lights are a sustainable solution for your community?
- a) Yes, they are sustainable
  - b) No, not sustainable
  - c) Not sure
17. Would you like to see more solar street lights installed in other areas of the village or nearby villages?
- a) Yes
  - b) No
  - c) Not sure





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