

Impact Assessment Report
GREEN ENERGY PROJECT

FY 2024 - 25

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Acknowledgements

SGS would like to place on record its sincere appreciation to Group Legrand India for the opportunity to undertake this impact assessment of the Green Energy Project. We are grateful for the trust placed in us and for the guidance and support extended during the course of the study.

We extend our heartfelt thanks to the recipient institutions, including government schools, healthcare units, special institutions, NGO-run educational institutions and community establishments, for their cooperation and support throughout the assessment process. Their inputs on project planning, site selection, implementation progress, and overall coordination helped the assessment team develop a clear understanding of the intervention and its intended outcomes across the selected sites.

Finally, we would like to acknowledge all stakeholders who participated in the assessment and shared their perspectives with openness and sincerity. Their contributions were important in helping us assess the project's relevance, effectiveness, and sustainability.

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Introduction

INDIA'S ENERGY SECURITY CONTEXT

India is among the world's fastest-growing energy consumers, driven by rapid urbanization, industrialization, and expanding access to public services. This growth has significantly increased the demand for reliable and affordable electricity, particularly in public institutions such as government schools, healthcare facilities, and special institutions where uninterrupted power supply is critical to service delivery.

Despite considerable progress in energy generation capacity, India continues to face persistent challenges related to energy security, rising electricity demand, and dependence on conventional fossil fuel-based sources. These challenges are further compounded by issues such as grid instability, power outages in rural and semi-urban areas, and the high operational costs associated with traditional electricity consumption in public institutions.

In such settings, electricity is not merely a utility requirement, it is central to enabling essential services. For instance, healthcare facilities rely on continuous power for diagnostics, refrigeration of medicines, operation of critical equipment, and patient care, while educational institutions depend on electricity for digital learning, lighting, and conducive learning environments. However, many of these institutions continue to depend largely on conventional grid electricity, highlighting a gap between India's clean energy ambitions and on-ground energy practices.

Recognizing these challenges, India has made strong commitments toward transitioning to cleaner energy sources, including a target to achieve a significant share of installed electricity capacity from non-fossil fuel-based resources in the coming years. Within this transition, solar energy has emerged as a key pillar due to its scalability, cost-effectiveness, and suitability for decentralized deployment across diverse geographies.

From a broader perspective, the shift towards renewable energy is no longer optional but imperative. India faces increasing environmental concerns, including rising greenhouse gas emissions, air pollution, and climate vulnerability, all of which necessitate a transition to cleaner energy systems. Renewable energy solutions, particularly solar power, contribute directly to reducing carbon footprints, promoting sustainable infrastructure, and aligning with national and global climate commitments.

INDIA'S CLEAN ENERGY TRANSITION: STRONG MOMENTUM, EMERGING OPPORTUNITIES

India's renewable energy transition is both rapid and globally significant. Solar energy today contributes nearly 9% of the country's electricity generation, broadly in line with global levels, while accounting for over 20% of installed power capacity. At the same time, fossil fuels continue to dominate more than 70% of electricity generation, highlighting a critical gap between installed capacity and actual energy consumption patterns.

India has committed to achieve about 50% cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030. While solar capacity has expanded rapidly, renewable energy adoption in public institutions still has significant room to grow, even as reliable electricity remains essential.

Globally, solar energy constitutes approximately 5–7% of electricity generation but contributes to nearly 80% of new renewable capacity additions, underscoring its central role in the energy transition. With a target of 500 GW of non-fossil capacity by 2030 and its position as the third-largest renewable energy market globally, India is emerging as a key contributor to the global clean energy transition. In this context, decentralised solar installations in public institutions represent a critical pathway to bridge the gap between clean energy ambition and on-ground energy usage.

In this context, Corporate Social Responsibility (CSR)-funded green energy initiatives play a catalytic role. They bridge critical gaps in public infrastructure financing while enabling institutions to adopt sustainable energy solutions. By supporting the installation of solar power plants across public utilities, CSR interventions not only strengthen institutional efficiency but also contribute to long-term environmental sustainability and inclusive development.

About the Organization

Legrand

Legrand is a global specialist in electrical and digital building infrastructures, offering products and solutions that enhance electrical safety, energy efficiency, and connectivity across residential, commercial, and institutional spaces. With a strong presence in India and globally, the company focuses on enabling sustainable and future-ready infrastructure through innovation in electrical systems and smart solutions. Legrand's operations are complemented by a commitment to responsible business practices, integrating sustainability and community development into its broader organizational vision.

Group Legrand India's social initiatives are guided by a commitment to creating meaningful and lasting impact in the communities where it operates. The company's CSR programme is structured around five core pillars: Education, which supports access to quality learning for children and youth from underserved communities; Skill Development, which empowers individuals with vocational and technical skills to enhance employability; Healthcare, which improves access to quality medical services for rural and underserved populations through community-based interventions; Environment, which promotes sustainable energy adoption and reduces carbon footprint through green energy and conservation initiatives; and Disaster Relief, which provides timely support and rehabilitation to communities affected by natural disasters and humanitarian crises.

About the Project

Phase wise implementation



Phase 1

Site evaluations were conducted with institutions to review roof conditions, structural capacity, and energy requirements for solar installation.

Phase 2

Technical drawings were prepared, BOQs were finalised, and vendor selection was completed, followed by submission of net-metering applications to respective DISCOM authorities.

Phase 3

Solar modules, inverters, and mounting structures were delivered to each site, and installation work was carried out under technical supervision.

Phase 4

Systems were tested and commissioned, grid synchronisation was completed, and institution formal handover documentation.

As part of Group Legrand India's CSR initiative to strengthen sustainable infrastructure and reduce dependence on conventional energy sources, rooftop solar systems were installed across 34 institutions including government schools, primary health centres, institutions for differently abled individuals, non-profit managed educational institutions and community infrastructure, across 9 states, with a total installed capacity of 1,000 kW across 34 locations.

The solar installations were customized to meet site-specific energy demands, with capacities ranging from 3 kW to 100 kW. Notably, high-consumption facilities such as an eye care hospital were equipped with a 100 kW system, enabling substantial reduction in electricity costs while ensuring uninterrupted power supply for critical services.

In addition to institutional installations, the intervention also extended to community spaces, where 50 solar street lights were installed to enhance safety and accessibility in low-light areas

The project responded to critical and practical energy needs across a range of public and community-serving institutions, including government hospitals, schools, non-profit–managed educational institutions, and other community infrastructure, where reliable electricity is essential for lighting, ventilation, digital learning, equipment operation, and delivery of essential services. Across these settings, the rationale for solar installation was closely linked to reducing recurring electricity costs while strengthening dependable power availability for routine operations.

In healthcare facilities, this supported diagnostics and critical care functions, while in educational and community contexts, it enabled more consistent service delivery, improved functional efficiency, and enhanced utilisation of infrastructure.

Overall, the intervention contributes to:

- Lower carbon footprint through adoption of clean energy
- Improved energy reliability for essential public services
- Reduced operational costs for beneficiary institutions
- Enhanced community well-being through improved infrastructure

About the Project

Table 1: Location and Institution Wise Solar Power Installation Details

S. No.	Entity	Name of the entity	City	State	Project details	KW
1	Govt school	Shiv Chhatrapati Shivaji Vidyalaya	Sinnar	Maharashtra	Rooftop Solar installation	3
2	Govt school	Aundhwadi ZP School	Sinnar	Maharashtra	Rooftop Solar installation	3
3	Govt school	Govt. Higher Secondary School	Chennai	Tamil Nadu	Rooftop Solar installation	7
4	Community	Aneki Hetampur Village	Haridwar	Uttrakhand	Solar Streetlight	3
5	Special institution	Sathya Special School - Vocational Center	Pondichery	Pondichery	Rooftop Solar installation	8
6	Govt school	Zilha Parishad Ucha Prathamik School	Jalgaon	Maharashtra	Rooftop Solar installation	3
7	Special institution	Andhra Mahila Sabha	Chennai	Tamil Nadu	Rooftop Solar installation	15
8	Healthcare unit	Dodi PHC	Sinnar	Maharashtra	Rooftop Solar installation	5
9	Community	Laxmi Nagar Water Tank	Amalner	Maharashtra	Rooftop Solar installation	35
10	Educational Institution by NGO	Akal Academy	Bhunsla	Harayana	Rooftop Solar installation	10
11	Educational Institution by NGO	Akal Academy	Dashmesh Nagar	Harayana	Rooftop Solar installation	10
12	Educational Institution by NGO	Akal Academy	Baragura	Harayana	Rooftop Solar installation	8
13	Healthcare unit	Walawalkar Hospital	Chiplun	Maharashtra	Rooftop Solar installation	100
14	Special institution	Iqraa-Thanal Super Speciality EIC	Kozhikode	Kerala	Rooftop Solar installation	50.5
15	Special institution	Pandit Deenayal Hopsital	Delhi	Delhi	Rooftop Solar installation	100
16	Special institution	Iqraa-Thanal Brain & Spine Medcity	Cochin	Kerala	Rooftop Solar installation	90
17	Healthcare unit	Akhand Jyothi Eye Hospital	Patna	Bihar	Rooftop Solar installation	100
18	Educational Institution by NGO	Prashanti Balamandir Trust	Bangalore	Karnataka	Rooftop Solar installation	50

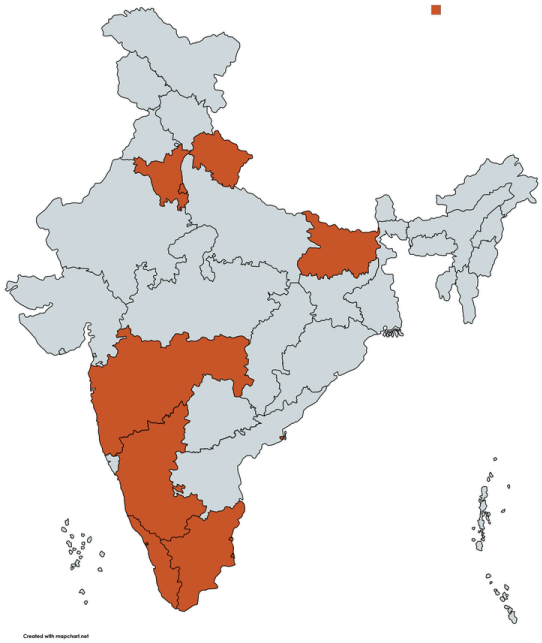
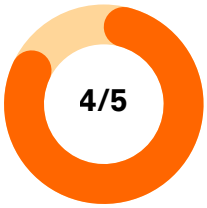
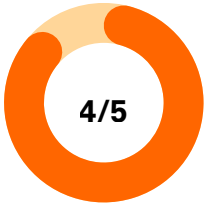
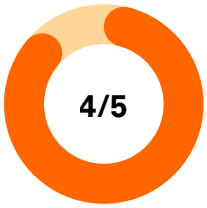
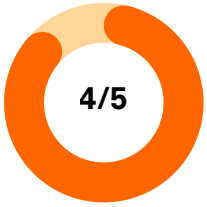
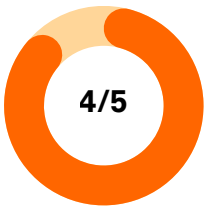


Fig : Geographical Outreach

Program Ratings

PARAMETER	KEY OBSERVATIONS	SCORES
Effectiveness	Solar systems were installed across all 6 institutions with 83% completing installation on time. All 6 assessed institutions reported improved power reliability and zero breakdowns in the last 6 months. Staff training was completed at 100% of assessed sites, reflecting strong delivery against intended outputs.	
Efficiency	Institutions reported electricity bill reductions ranging from 10% to over 50%. At Amalner, savings of approximately Rs. 7.5 lakh were recorded over 15 months. An AMC of 3 to 5 years has been established across sites, ensuring cost-efficient long-term system upkeep with minimal additional expenditure.	
Relevance	The project directly addressed recurring electricity costs ranging from Rs. 8,000 to Rs. 14 lakh per month across institutions serving marginalized communities. All supported institutions deliver services free of cost or at subsidized rates, confirming strong alignment with both institutional need and CSR intent.	
Coherence	The intervention aligns with India's NDCs, MNRE's Rooftop Solar Programme and NAPCC missions. It contributes to SDGs 7, 3, 4, 6 and 13. Alignment with Group Legrand India's global sustainability roadmap on climate action and clean energy is evident, though inter-agency coordination mechanisms were not formally documented.	
Impact	The intervention enabled an estimated 447 tonnes of annual CO2 offset across 1000 kW of installed capacity. Beyond environmental gains, savings are being reinvested into service delivery at institutions like IQRAA, while community infrastructure at Amalner now provides 24/7 drinking water access.	
Sustainability	83% of institutions report full internal capacity to manage and maintain systems. Preventive maintenance is being conducted quarterly across most sites. AMC coverage and staff training provide a strong sustainability foundation, though savings tracking and formal reinvestment mechanisms remain to be institutionalized.	
Overall	The intervention has successfully delivered clean energy infrastructure across 19 institutions in 9 states, generating measurable cost savings, improved service delivery and an estimated 447 tonnes of annual CO2 offset, with strong institutional ownership and a sustainable maintenance framework in place.	

**Ratings are based on the OECD-DAC five-point performance rating scale, where 5 = Very High and 1 = Very Low. For detailed rating methodology, refer to the OECD-DAC Framework section on Page 15.*

SDGs Alignment

SDG	Target	Contribution Pathway
	7.2 Increase the share of renewable energy in the global energy mix 7.3 Double the global rate of improvement in energy efficiency	The project supports clean energy adoption in institutions through installation of on-grid solar systems. It also helps reduce dependence on conventional electricity and lowers institutional energy costs.
	13.2 Integrate climate change measures into policies, strategies and planning	By introducing solar energy, the project promotes environmentally sustainable infrastructure and supports climate-conscious institutional practices.
	3.8 Achieve access to quality essential healthcare services	The project indirectly supports healthcare delivery by reducing electricity burden and improving power availability for smooth functioning of hospital services.
	4.1 Ensure inclusive and equitable quality education	Reliable solar-powered electricity ensures uninterrupted educational and residential services for students from underserved communities.
	6.1 Achieve universal and equitable access to safe drinking water	Solar installations have enabled more regular and timely water supply by reducing electricity costs for water pumping operations, improving access to clean drinking water.
	11.1 Ensure access to adequate and sustainable services for all	By powering community infrastructure through renewable energy, the project strengthens sustainable service delivery and reduces dependence on conventional electricity for essential services.
	10.2 Promote social, economic and political inclusion	By powering community infrastructure through renewable energy, the project strengthens sustainable service delivery and reduces dependence on conventional electricity for essential services.



APPROACH & METHODOLOGY

Approach & Methodology

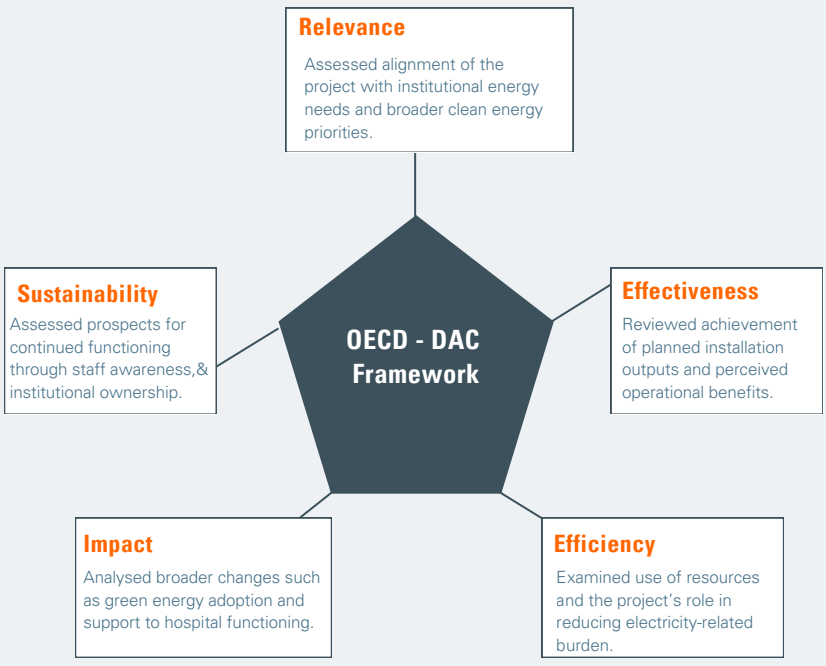
The impact assessment was undertaken using a mixed-method approach, combining qualitative review and field-based validation to build a rounded understanding of the project's relevance, implementation, and emerging outcomes. Given that the intervention spans a diverse range of institutions including government schools, healthcare units, special institutions, NGO-run educational institutions and community establishments, the assessment examined not only project execution but also how the systems were perceived and utilised across each institutional context. Information was triangulated across multiple sources to ensure findings remained balanced, practical, and evidence-based.

A detailed secondary data and document review formed an integral part of the assessment. Key project documents including work orders, approval documents, request letters, and assessment tools were reviewed to understand the project's rationale, scope, site coverage, implementation arrangements, and intended outcomes. This was complemented by stakeholder interactions and site observations to validate installation quality, operational arrangements, and post-installation experience across the selected institutions. The review also helped situate the project within the broader context of clean energy adoption across public and community-serving institutions in India.



SGS Team member at project location

OECD DAC Dimensions



OECD–DAC Framework

The impact assessment was guided by the OECD-DAC evaluation framework to ensure a structured and widely accepted approach to assessing project performance and outcomes. This framework provided a clear lens to examine the relevance, effectiveness, efficiency, impact, and sustainability of the solar power installation initiative. By using these dimensions, the assessment was able to systematically review both the design and implementation of the intervention, as well as its contribution towards promoting green energy adoption and supporting institutions across diverse sectors through reduced electricity burden and improved operational efficiency.

Theory of Change

Inputs

- CSR funding support from Group Legrand India
- On-grid solar systems and related infrastructure
- Technical and vendor support for installation and commissioning

Activities

- identification/selection of institutions.
- Comprehensive need assessment of institutions to identify energy requirements and priority needs
- Technical assessment of rooftop space and energy needs.
- Installation and commissioning of on-grid solar systems
- Coordination with institutions for handover and initial support

Outputs

- Solar systems installed across selected institutions including government schools, healthcare units, special institutions and community establishments
- 1000 kW total solar capacity supported across 34 sites
- Clean energy infrastructure integrated into premises
- Basic systems in place for operation and maintenance support

Outcomes

- Increased use of renewable energy across public and community-serving institutions
- Reduced electricity burden on supported institutions
- Improved operational efficiency and service delivery continuity
- Improved institutional efficiency through lower recurring power costs

Impact

- Contribution to clean energy adoption in the public and community sector
- Support to more sustainable infrastructure across diverse institution types
- Reduced operational pressure on supported institutions enabling reinvestment into core services
- Enhanced community well-being through reliable and cost-efficient service delivery

The Theory of Change for this intervention articulates how CSR investments in on-grid solar infrastructure—supported by robust technical installation and effective institutional coordination, enable public institutions such as Primary Health Centres (PHCs), hospitals, and schools to transition towards cleaner energy solutions. By reducing reliance on conventional power sources and lowering recurring electricity costs, the initiative fosters more sustainable infrastructure and enhances operational efficiency, particularly within public healthcare and allied institutional settings.



Assessment - Deep Dive

TABLE 2 Stakeholder Coverage and Methods Used

STAKEHOLDER FROM	PURPOSE OF ENGAGEMENT	METHOD USED	SAMPLE / COVERAGE
Akhand Jyoti Eye Hospital, Bihar	Gather operational insights on system usage, maintenance, coordination, and institutional relevance	Key Informant Interviews	6
Akal Academy, Haryana			
IQRAA - Thanal Brain and Spine Medcity, Cochin			
Prashanti BalmandirTrust, Karnataka			
Pandit Dindayal Hospital, Delhi			
Amalner Municipal Corporation			
Group Legrand India CSR team	Understand project rationale, implementation approach, and oversight perspective	Key Informant Interviews	1

SGS adopted a focused, field-based assessment approach to understand how the project functioned on the ground, combining stakeholder consultations, institutional feedback, and site verification across community institutions, including hospitals and schools. Fieldwork included interactions with institutional staff and administrators, along with discussions with the Group Legrand India CSR team. In-person inspections and consultations were conducted at Pandit Deendayal Hospital, Delhi and Amalner, while stakeholders from four other locations were engaged virtually.

This approach enabled validation of installation and maintenance processes, along with assessment of implementation quality and institutional ownership.

Stakeholders for the assessment were identified from locations where solar systems had been installed under the programme. Insights were collected through consultations with institution administrators and staff across government schools, healthcare units, special institutions, NGO-run educational institutions and community establishments, as well as through discussions with the Legrand CSR team



States where SGS consulted stakeholders



Assessment Findings & Analysis

Relevance

This section presents the key findings of the impact assessment, drawing on key informant interviews, field observations, and a review of project-related documents. It consolidates evidence on how the solar installations are functioning across institutions, stakeholder perceptions, and the early changes observed in terms of operational utility, maintenance experience, and overall institutional value.

The findings in the following pages are presented across the OECD-DAC dimensions of relevance, effectiveness, efficiency, impact, and sustainability, so as to assess the project not only in terms of installation completion, but also in terms of institutional usefulness, operational experience, and prospects for long-term continuity.

Out of the 34 institutions supported by Group Legrand India, 6 were selected for data collection to ensure representation across categories, including government, educational, special, and healthcare institutions. With the exception of the government institution in Amalner, all selected institutions are registered Trusts or Societies.

These institutions primarily serve marginalized and underserved communities. For instance, Akhand Jyoti provides cataract surgeries, outpatient eye care, and vision screening camps, while IQRAA supports individuals with disabilities, women facing maternal and child health challenges, and children from resource-constrained backgrounds. Akal Academies focus on providing affordable, value-based education to disadvantaged students in rural India, while Prashanthi Balamandira Trust offers free education to children from underserved backgrounds.

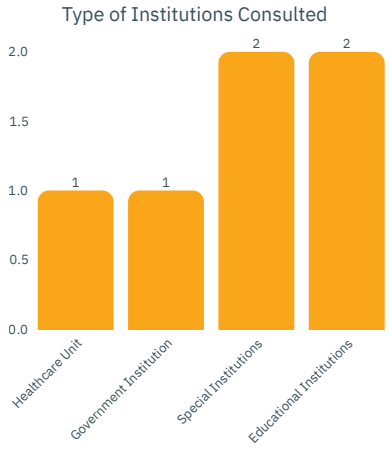


Fig. 1

The findings indicate that the solar installation project was relevant to the needs of the assessed hospitals, particularly in relation to recurring electricity expenditure and the broader need to adopt cleaner energy solutions in public healthcare institutions. Evidence from surveys, stakeholder interactions, and project documents suggests that the intervention addressed an existing institutional concern and was aligned with the objective of reducing electricity burden while promoting green energy in government hospitals.

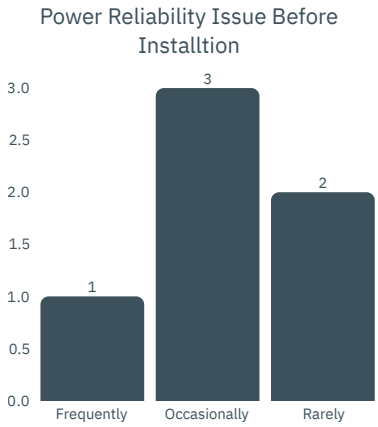


Fig. 2

Survey responses indicate that power reliability issues were largely infrequent, with only 2 out of 6 institutions reporting rare occurrences, while just one institution experienced such issues frequently. Baseline findings indicate that the assessed institutions incurred significant monthly electricity expenses prior to the installation of solar systems. These costs ranged from approximately INR 8,000 per month at Akal Academy (with a 10 kW installation) to nearly INR 14 lakh per month at Akhand Jyoti Eye Hospital (with a 100 kW installation).

This suggests that the project's relevance was not driven only by power shortage, but more strongly by the need to support sustainable energy use within premises, reduce electricity costs, and improve institutional efficiency. The intervention is well aligned with the needs of the beneficiary population, as all supported institutions deliver services either free of cost or at highly subsidized rates. By reducing operational costs such as electricity expenditure, the project strengthens the financial sustainability of these institutions, enabling them to continue serving marginalized and underserved communities effectively.

> TThe solar installation has significantly improved the continuity of clinical services, particularly surgeries and diagnostic procedures. It has also enhanced patient safety, improved operational efficiency in the operation theatre, and contributed to the longevity of critical medical equipment.
>
> Hospital stakeholder perspective

Efficiency

The solar intervention has delivered measurable reductions in electricity expenditure across the assessed institutions, with savings varying in scale based on installed capacity and institutional energy demand. At Akal Academy, monthly electricity costs declined from approximately Rs. 8,000 to Rs. 1,000 following installation, representing a saving of Rs. 7,000 per month. At Prashanti Balamandir Trust, the monthly bill reduced from Rs. 1 lakh to Rs. 50,000, reflecting a 50% reduction in recurring electricity expenditure. At Amalner, cumulative savings of approximately Rs. 7.5 lakh were recorded over a 15-month period, directly enabling more stable and continuous water pumping operations for the community.

As shown in (Fig. 3), across the 6 assessed institutions, reported reductions in electricity expenditure were distributed as follows: 3 institutions reported savings of more than 50%, 1 reported a reduction in the range of 26 to 50%, and 2 reported reductions in the range of 10 to 25%. This indicates that the majority of assessed institutions have achieved substantial cost efficiencies through the intervention.

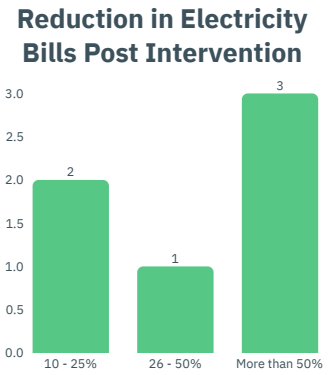


Fig. 3

Beyond direct cost savings, the impact of these efficiency gains extends into the core service delivery capacity of the supported institutions. At Akhand Jyoti Eye Hospital, savings generated through the solar installation have enabled the institution to support approximately 300 additional free eye surgeries annually for economically disadvantaged patients. At Iqraa, reduced electricity costs have enabled the institution to provide free dialysis services to patients in need. In Amalner, savings from reduced electricity expenses for the community water tank have been redirected towards enhancing community welfare initiatives and expanding benefits to local residents.

The intervention has also reduced dependence on backup power arrangements, lowering indirect operational costs for several institutions. As reflected in (Fig. 5), all institutions reported zero breakdowns in the last 6 months, reflecting strong system performance and effective maintenance. Installation timelines were largely adhered to, with only one site experiencing minor delays, reflecting efficient project execution. An Annual Maintenance Contract (AMC) covering a period of 3 to 5 years has been established across sites, ensuring continued system upkeep without significant additional expenditure by the institutions. The intervention is particularly efficient in the context of institutions serving underserved populations at free or subsidized rates, where every rupee saved in operational costs directly strengthens the institution's capacity to sustain and expand service delivery.

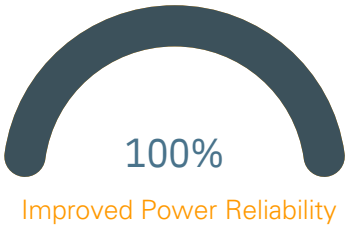


Fig. 4

Effectiveness

The assessment findings indicate that the solar installation project has been largely effective in delivering against its intended objectives. Data collected through stakeholder interactions, site observations and project documentation suggests that solar systems have been successfully installed and commissioned across all 34 institutions, with services operational at the time of assessment.

Out of the 6 assessed institutions, 5 reported having full internal capacity to operate and maintain the solar systems, while 1 indicated reliance on partial external support, as reflected in (Fig. 5). This indicates that the intervention has been largely effective in enabling institutional ownership and operational capability, with most institutions able to independently manage the systems, thereby supporting sustained and efficient utilization.

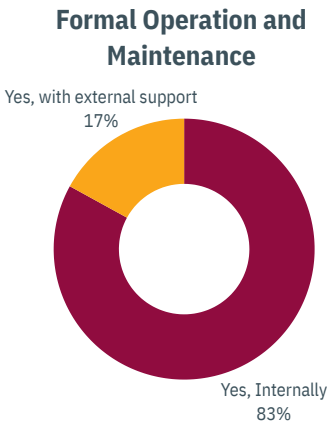


Fig. 5

All respondents reported a positive experience with vendor coordination during the installation phase, with 67% rating it as excellent and 33% as good, as shown in (Fig. 6). This suggests strong implementation effectiveness, reflected in efficient coordination, timely execution and overall stakeholder satisfaction during the installation process.

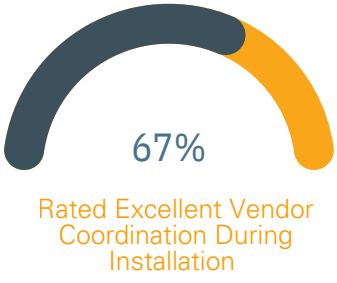


Fig. 6

All respondents reported that relevant staff had been trained in basic system maintenance, as reflected in (Fig. 7). This reflects effective capacity building under the intervention, enabling institutions to independently manage routine operations and supporting sustained functionality of the solar systems.

Stakeholder feedback from all 6 assessed institutions indicates improved power reliability following the intervention, leading to more consistent energy availability and smoother day-to-day operations. As reflected in (Fig. 8, all institutions reported zero breakdowns in the last 6 months, reflecting strong system performance and effective maintenance contributing to reduced dependence on grid electricity operations and enhanced operational efficiency.



Fig. 7



Fig. 8

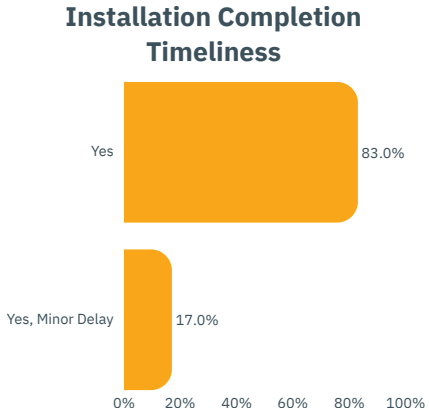
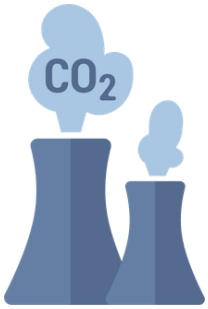


Fig. 9

Impact

The impact of the solar intervention extends well beyond energy generation, translating into tangible improvements in service delivery, operational resilience and community well-being across the assessed institutions.

Based on estimated energy generation from the cumulative installed capacity of 420 kW across the assessed sites, the project is expected to offset approximately 447 tonnes of CO2 emissions annually, calculated using India's grid emission factor of 0.71 kg CO2 per kWh. This represents a meaningful contribution to decarbonization at the institutional level, supporting Group Legrand India's broader commitment to climate action and its goal of achieving carbon neutrality by 2050. At the programme level, secondary data indicates that the full Green Energy initiative covering all 19 institutions has contributed to a cumulative CO2 offset of approximately 1,500 tonnes since inception, reflecting the broader environmental impact of the intervention across all supported sites.



447 Tonnes of CO2 emission estimated to offset

Across all 6 assessed institutions, improved power reliability was unanimously reported as the most immediate and consistent outcome of the intervention. Reduced dependence on grid electricity electricity has strengthened day-to-day operations, enabled institutions to deliver services more consistently and at a higher quality. The financial savings generated through reduced electricity expenditure are being actively channelled into improving institutional functioning and enhancing services for direct beneficiaries. While the specific reinvestment mechanisms vary across institutions, the common thread is that reduced operational costs are freeing up resources that are being directed towards the core service mandate of each institution.

The broader service delivery impact of the intervention is particularly notable across several assessed institutions. At Akhand Jyoti Eye Hospital, savings generated through the solar installation have enabled the institution to support approximately 300 additional free eye surgeries annually for economically disadvantaged patients, directly expanding the reach of critical healthcare services. At Iqraa, reduced electricity costs have enabled the provision of free dialysis services to patients in need, strengthening the institution's capacity to serve vulnerable populations without compromising on service quality.

> Beyond financial savings, the intervention has also contributed to improved service delivery. The reduced dependency on grid electricity has helped stabilize water pumping, indirectly supporting more reliable access for the community during critical periods.
>
> Amalner Representative

At the community level, a notable impact was observed at Laxmi Nagar, Amalner, where the solar installation has directly improved the reliability of drinking water supply for the community. Prior to the intervention, water supply was irregular and infrequent, creating significant hardship for residents. Following the solar installation, reduced electricity costs for water pumping have enabled more regular and timely water supply, which community members identified as a meaningful improvement in their daily lives. Cumulative savings of approximately Rs. 7.5 lakh over 15 months have contributed to stabilizing pumping operations and reducing dependence on external water sources.

Across the assessed institutions, three clear utilisation patterns emerge:

- Operational absorption: Savings improve efficiency and service quality without being formally reallocated
- Programmatic reinvestment: Savings are redirected towards expanding beneficiary reach
- Service reliability gains: Energy security enhances continuity of essential services

Overall, the evidence suggests that while formal tracking and earmarking of savings remains limited, the intervention has delivered system-level impact by strengthening institutional resilience, improving service continuity, and enabling more efficient use of financial resources. The value of savings, therefore, extends beyond cost reduction to enhanced capacity for sustained and scalable service delivery.

Sustainability

The sustainability of the solar installation is contingent on the extent to which institutions are able to maintain the systems, clearly understand support mechanisms, and undertake ongoing monitoring and upkeep. While the project has successfully created a valuable long-term asset, sustainability outcomes remain uneven across sites, primarily driven by varying levels of awareness, technical understanding and institutional ownership, which influence the consistency of system management over time.

Survey responses indicate a generally strong foundation for sustainability, with 83% of institutions reporting adequate internal capacity to manage and maintain the solar systems over the long term. A smaller proportion (17%) indicated partial reliance on external technical support for ongoing operations.

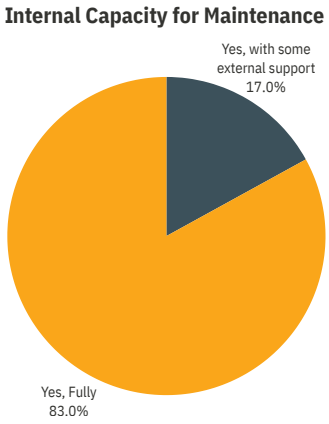


Fig. 10

Institutional Ownership and Maintenance

Survey responses indicate a generally strong foundation for sustainability, with 83% of institutions reporting adequate internal capacity to manage and maintain the solar systems over the long term, as reflected in (Fig. 10). A smaller proportion, 17%, indicated partial reliance on external technical support for ongoing operations. All institutions reported undertaking preventive maintenance measures for the installed solar systems, with 5 conducting maintenance on a quarterly basis and 1 following a monthly schedule, reflecting a proactive approach towards system upkeep and strong institutional commitment to ensuring sustained system performance.

An Annual Maintenance Contract(AMC) covering a period of 3 to 5 years has been established across sites, ensuring continued system upkeep and technical support without significant additional expenditure by the institutions. Vendor contact details are displayed at each site and issues reported by institutions have been resolved to their satisfaction, indicating a responsive and reliable after-sales support mechanism.

Monitoring and Performance Tracking

A structured vendor selection and monitoring process has been established by Group Legrand India to ensure consistent oversight of system performance across all 34 sites. Single points of contact within the CSR team maintain regular communication with vendors, institution representatives and local teams through calls, messaging platforms and email updates. Where required, in-person site visits are conducted during installation and post-commissioning stages to verify quality and performance.
It is noted however that a formal and regular engagement mechanism with beneficiary institutions to systematically monitor long-term outcomes such as electricity savings, system uptime and beneficiary reach has not yet been fully established. Strengthening this monitoring framework would enhance accountability and provide more robust evidence of sustained impact over time.

Coherence

The assessment findings indicate that the solar installation intervention demonstrates strong coherence with national and international priorities. At the national level, the project aligns with the Ministry of New and Renewable Energy's Rooftop Solar Programme, PM Surya Ghar Muft Bijli Yojana and the National Action Plan on Climate Change. It is further coherent with India's Nationally Determined Contributions under the Paris Agreement, which target an increased share of non-fossil fuel-based power capacity and long-term transition towards net-zero emissions by 2070.



The targeting of public and community-serving institutions including government schools, healthcare units, special institutions and community establishments is coherent with India's broader development priorities around equitable access to essential services. By reducing operational costs for institutions serving underserved populations at free or subsidized rates, the intervention strengthens the financial sustainability of organisations that form a critical part of India's social infrastructure.

At the global level, the intervention contributes to multiple Sustainable Development Goals directly evidenced from field data and stakeholder interactions:



- SDG 7: Affordable and Clean Energy: Supports clean energy adoption across 19 institutions, reducing dependence on conventional electricity
- SDG 13: Climate Action: Estimated 447 tonnes of annual CO2 offset across assessed sites and approximately 1,500 tonnes cumulatively across the full programme since inception
- SDG 3: Good Health and Well-being: Improved power availability supporting uninterrupted delivery of critical medical services
- SDG 4: Quality Education: Better academic operations at supported educational institutions benefiting students from underserved backgrounds
- SDG 6: Clean Water and Sanitation: More regular and timely drinking water supply at Laxmi Nagar, Amalner through reduced pumping costs
- SDG 11: Sustainable Cities and Communities: Strengthened sustainable service delivery and reduced dependence on conventional electricity at community level
- SDG 10: Reduced Inequalities: Benefits of clean energy directed towards institutions serving marginalized and underserved populations



Key learnings & Recommendations

1. Formalise Tracking and Utilisation of Savings

Institutions should be encouraged to systematically track electricity savings and establish simple mechanisms to allocate these savings towards service enhancement (e.g., healthcare equipment, student services, infrastructure upgrades). This will help translate financial gains into measurable social outcomes.

2. Explore Scale-Up and Replication Opportunities

Given the demonstrated impact, the model can be scaled to additional institutions, particularly those with high electricity expenditure and critical service delivery roles. Future expansions can incorporate learnings on capacity building, monitoring, and savings utilisation from the current phase.

3. Strengthen Long-Term Capacity and Ownership

While most institutions demonstrate operational capacity, targeted support should be provided to those with partial dependence on external assistance. This may include:

- Refresher training for staff
- Simple operational manuals
- Periodic technical check-ins

Strengthening ownership will ensure consistent system performance and long-term sustainability.



Case Study

Improving Water Access through Solar Intervention – Laxmi Nagar

Laxmi Nagar faced severe and prolonged drinking water shortages, with no supply for up to 7 days at a time. This significantly disrupted daily life, affecting essential activities such as cooking, cleaning, and hygiene. During these periods, the community relied on water tankers, which were often irregular and unreliable. Many households were also compelled to purchase bottled water, adding to the financial burden particularly for low-income families.

To address structural constraints, an underground storage tank was constructed, with water pumped to the community. While this improved access, it came at the cost of high electricity consumption, with monthly pumping expenses reaching approximately ₹50,000. As a result, water supply remained limited, often continuing at a frequency of once every 7–9 days during peak summer months.

The installation of a rooftop solar system has led to a transformational shift. Over 15 months, the system generated savings of approximately ₹7.5 lakh, significantly reducing operational costs and stabilizing pumping operations. This has translated into a reliable and continuous water supply, with the community now benefiting from 24/7 access to drinking water. Beyond financial savings, the intervention has improved overall living conditions by reducing uncertainty, stress, and dependence on external water sources. An additional ancillary benefit is the use of the solar panel structure as a shaded public space, offering relief to community members during extreme heat.

Overall, the intervention demonstrates how integrating renewable energy into essential service infrastructure can enhance reliability, reduce cost burdens, and deliver sustained improvements in quality of life for underserved communities.



Executive Summary

India is one of the world's fastest-growing energy consumers, making the transition to cleaner and more sustainable power increasingly important. Under its updated Nationally Determined Contribution, India has committed to achieving about 50% cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030. Solar energy has emerged as a major part of this transition, and official data from the Ministry of New and Renewable Energy show that India's cumulative solar power capacity had reached 143.60 GW as of 28 February 2025.

Group Lerand India supported the installation of on-grid solar power systems across 34 institutions including government schools, hospitals, special institutions and institutions for differently abled individuals spanning nine states in India. The intervention aimed to accelerate the adoption of green energy, reduce reliance on conventional power sources, and lower electricity expenditure for public-serving institutions. In total, the project enabled the creation of 1,000 kW of solar generation capacity across all 34 institutions, contributing to more sustainable and cost-efficient operations.

A mixed-method approach was adopted for the assessment, combining a review of project documentation with field-based insights including stakeholder surveys, key informant interviews, site observations and field visits. The assessment was conducted in accordance with the OECD-DAC evaluation framework, providing a structured lens to analyse relevance, effectiveness, efficiency, impact and sustainability of the intervention. Primary data collection was carried out across six institutions, of which four assessments were conducted virtually and two through in-person visits in Delhi and Maharashtra, ensuring a balanced mix of on-ground verification and remote engagement.

Key insights:

The intervention was found to be highly relevant to the needs of beneficiary institutions. The primary driver was not only energy access but the significant burden of recurring electricity expenditure, which ranged widely across institutions from approximately Rs. 8,000 per month to as high as Rs. 14 lakh per month. By targeting this cost pressure, the project addressed a critical operational challenge while supporting the transition to cleaner energy. The initiative is particularly well-aligned with institutions that provide free or subsidized services, as reduced electricity costs directly strengthen their financial sustainability and ability to serve underserved populations.

In addition to cost savings, institutions reported improved power reliability, leading to smoother day-to-day operations and reduced dependence on backup power sources such as diesel generators.

The intervention has been largely effective in enabling institutional ownership and operational capacity. A majority of the assessed institutions reported having internal capacity to operate and maintain the systems, supported by staff training in basic maintenance. This indicates that the project has successfully embedded operational capability at the institutional level, supporting sustained utilisation of the solar systems with minimal dependence on external support.

The impact of the intervention extends beyond financial savings to tangible improvements in service delivery and institutional performance. In healthcare settings, reliable solar-powered electricity has reduced disruptions in critical functions such as surgeries and diagnostics, leading to enhanced patient safety, operational efficiency, and cost savings through reduced diesel usage.
In other contexts, the benefits manifest differently:

- At IQRAA, savings have been reinvested to expand beneficiary outreach, demonstrating direct programmatic scaling.
- In community infrastructure such as Amalner, the intervention has improved service reliability, particularly in water supply systems.
- In educational institutions such as Akal Academy and Prashanthi Balamandir Trust, improved energy reliability has enabled uninterrupted academic and residential operations, while reducing financial strain.

India's Updated First Nationally Determined Contribution submitted to UNFCCC, 2022; Ministry of New and Renewable Energy, Physical Progress; National Centre for Disease Control, Guidelines for Solar Powering Healthcare Facilities; National Centre for Disease Control, Guidelines for Green and Climate Resilient Healthcare Facilities; project documents and assessment findings

Across institutions, savings are not always formally tracked or earmarked; however, they contribute to enhanced institutional resilience, improved service continuity, and increased capacity to deliver services at scale.

Based on the assessment of the six studied sites with a combined installed capacity of 420 kW, the project is estimated to offset approximately 447 tonnes of CO2 emissions annually, calculated using India's grid emission factor of 0.71 kg CO2 per kWh. At the programme level, the full Green Energy initiative covering all 19 institutions with a total installed capacity of 1,000 kW has contributed to a cumulative CO2 offset of approximately 1,500 tonnes since inception, reflecting the broader environmental impact of the intervention across all supported sites.

Overall, the intervention demonstrates that CSR-led investments in decentralised solar infrastructure can deliver multi-dimensional impact, combining cost savings, improved operational efficiency, enhanced service delivery and meaningful environmental benefits for institutions serving underserved communities across India.



Institutions supported under this intervention

34

special, healthcare, education, government and other institutions were supported across 9 states under the Green Energy initiative



On-grid Solar Capacity Installed

1000 kW

of on-grid solar capacity was installed across the selected sites.



Reduced electricity expenditure

Up to 50% and above

3 out of 6 assessed institutions reported electricity cost savings of more than 50%, with remaining institutions reporting reductions in the range of 10 to 50%



Reduced Carbon Footprint

1500 Tonnes

CO_2 emissions were offset.

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