Energizing Vulnerable Community Institutions

SELCO FOUNDATION

INTRODUCTION

Access to reliable, affordable and sustainable energy or Sustainable Development Goal 7 (SDG 7) plays a key role in enabling the achievement of many of the other SDGs. SDG7-driven solutions become particularly important in areas that are remote, rural and resource-constrained. In these areas, provision of basic services to populations including primary healthcare, particularly maternal and child care, education and skilling are dependent on reliable energy access.

Across rural areas in India, there are a number of community institutions that seek to provide such critical social welfare services to particularly marginalized and otherwise disadvantaged populations. They cater to a range of individuals including differently-abled people and those with disabilities, youth from tribal communities or poor-socio economic backgrounds, young mothers and pregnant women, abandoned senior citizens, orphans, women rescued from vulnerable circumstances and so on.

These institutions include Bridge schools, Residential schools for differently-abled students, Orphanages, Old age homes, Skilling and rehabilitation centers, special health care centers, auxiliary maternal care facilities and so on. There are a number of such institutions run by Government agencies, NGOs and charity-based organizations to support these individuals with basic boarding and lodging, education, healthcare and skilling depending on the residents requirements, and help enhance their life and wellbeing.

In order to run their regular operations and better deliver services to the residents or end-users, the access, reliability and affordability of energy become critical for these institutions. A number of these institutions are located in areas with poor or unreliable access to grid-based electricity and they are forced to spend their limited resources on back up fuels such as diesel to power basic lighting, fans or mobile charging.

This program on 'Energizing Vulnerable Community Institutions' seeks to address some of these challenges and demonstrate the value of Decentralized Renewable Energy solutions- in improving basic wellbeing with lighting, cooling and mobile charging facilities; enabling education through greater use of audio-visual aids; facilitating vocational training to create additional livelihood opportunities; and improving healthcare services for this diverse set of beneficiaries.

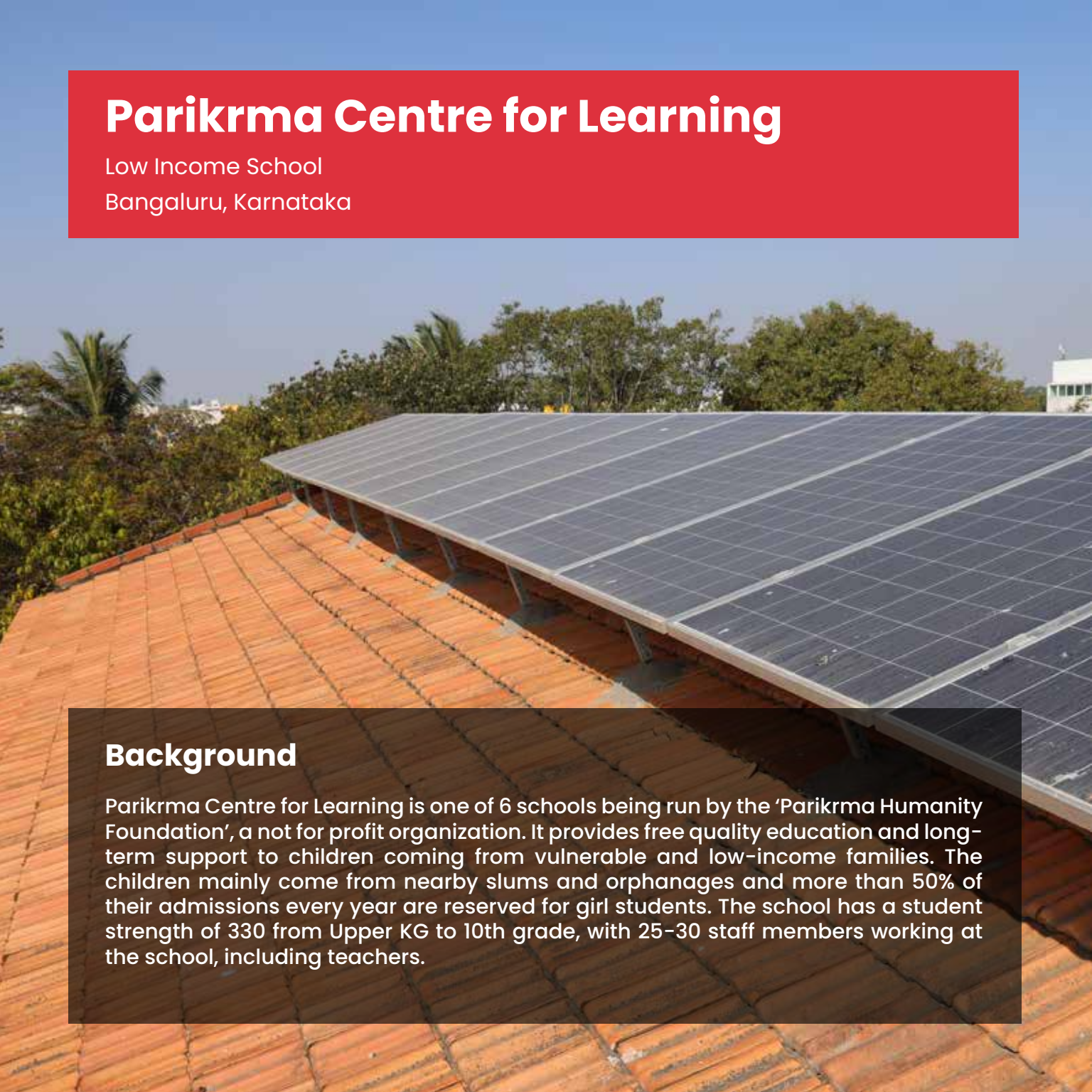
In addition to improving service provision, this program is facilitating the reduction and avoidance of CO2 emissions by moving away from a largely fossil-fuel based grid and back-up sources such as diesel to solar energy solutions- thereby enabling Sustainable Development Goal 13 on Climate Mitigation and Action.

This case study booklet captures the context and solutions implemented in a subset of 6 institutions by SELCO Foundation in partnership with Wells Fargo and showcases the outcomes of this effort on the lives of the residents and staff at these facilities.

Parikrma Centre for Learning

Low Income School

Bangaluru, Karnataka



Background

Parikrma Centre for Learning is one of 6 schools being run by the 'Parikrma Humanity Foundation', a not for profit organization. It provides free quality education and long-term support to children coming from vulnerable and low-income families. The children mainly come from nearby slums and orphanages and more than 50% of their admissions every year are reserved for girl students. The school has a student strength of 330 from Upper KG to 10th grade, with 25-30 staff members working at the school, including teachers.

Challenges

In order to enhance the quality of education, the school has been running smart classes along with conventional classroom teaching. Earlier they were running it with a portable projector which had to be installed in each classroom, before conducting the class. It was highly time consuming and dependent on the grid for power supply, owing to which they were able to conduct smart classes for 3 periods in a day. The school faces 2-3 hours of power cuts every day. The inverter backup system in the school was only sufficient for fans & lights. In case of power cuts, the smart classes would be interrupted. Additional power back-up systems would have meant a financial burden on the resources available to them, given they were already paying an electricity bill of approximately INR 20,000 every month.

Solution and Impact

A 5 kW solar powered inverter system is installed in the center to power fans, lights, projector and speakers. They have structured their smart classes program by allocating one room for it with a projector, speaker and screen. Teachers pre-book the room one day in advance to conduct smart classes. Post intervention, the number of smart classes that they conduct in a day has risen and they are able to allocate time for all grades to use the space. Science teachers also give a brief about solar energy to students during the smart classes, thereby imbibing aspects of sustainability and the relevance of clean energy amongst young people early on.

Over the last 8 months, despite the construction work underway on their premises which consumes a significant amount of energy, the institution's electricity bill has reduced by 30-35 percent.

Testimonial

“The intervention has helped us in formalizing the smart classes. Children are showing more interest in learning, due to the audio-visual tools being used as a means of teaching.”

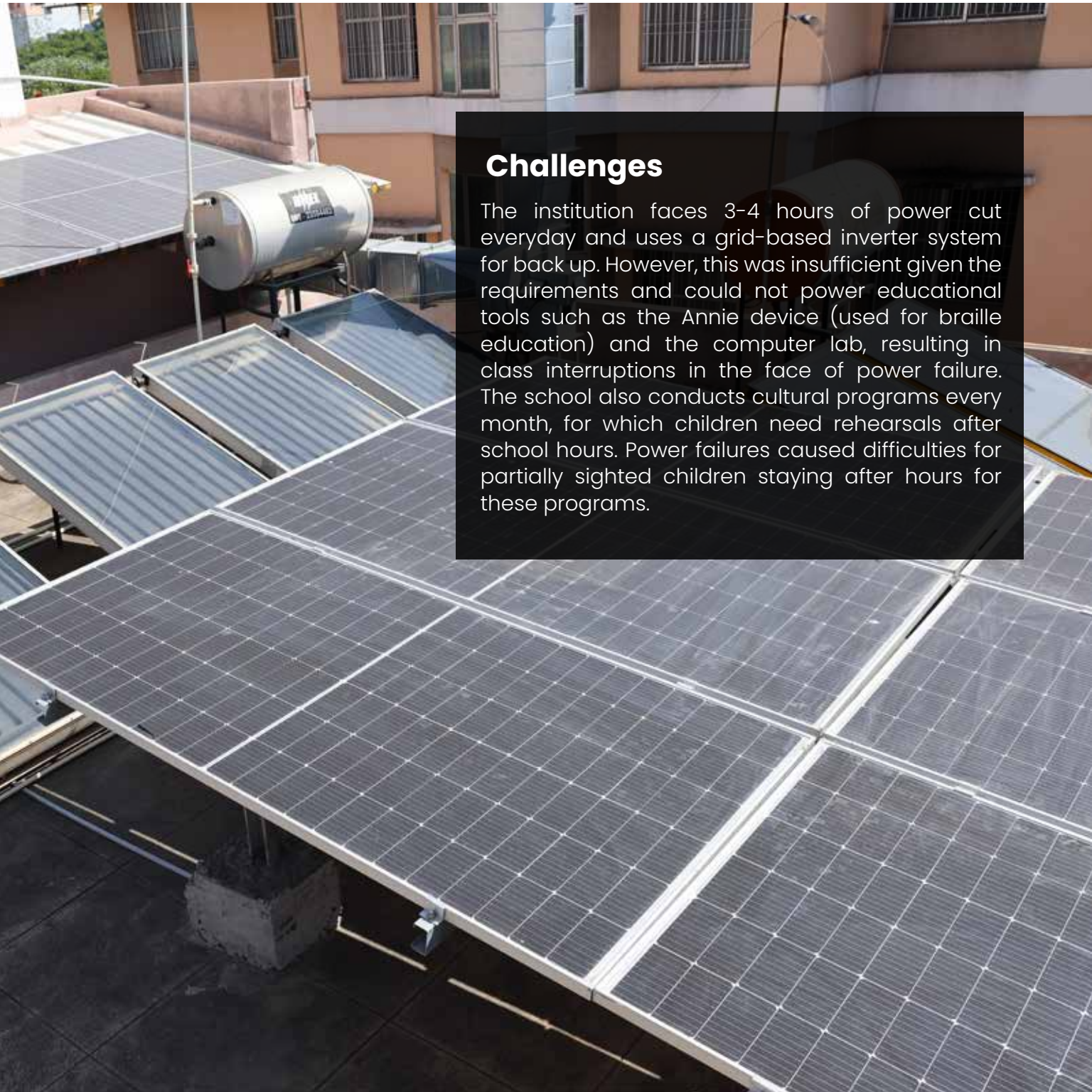
Ms. Latha Selvan
Centre Head
Parikrma Centre of Learning

Jyothi Seva Society

Special School, Bengaluru, Karnataka

Background

Jyothi Seva School for Blind Children runs under the umbrella of the Jyothi Seva Society. They work with visually impaired children from underprivileged communities providing them with food, accommodation, special education through braille, computer training and so on. The institution has a residential facility and cater to individuals facing partial and full blindness.



Challenges

The institution faces 3-4 hours of power cut everyday and uses a grid-based inverter system for back up. However, this was insufficient given the requirements and could not power educational tools such as the Annie device (used for braille education) and the computer lab, resulting in class interruptions in the face of power failure. The school also conducts cultural programs every month, for which children need rehearsals after school hours. Power failures caused difficulties for partially sighted children staying after hours for these programs.

Solution

A 6 kW solar powered inverter system has been installed to power fans, lights, the Annie device and the computer lab. 24 incandescent lights and 15 fans have been replaced with energy efficient fans and LED lights.

All the educational and recreational activities are now running without interruptions. The visually impaired adults residing in the center are now able to attend weekend computer classes in the center that are run more reliably. The relevance of this solution is not only critical for children and adults accessing the services at the facility but also for the staff who would otherwise find it difficult to support visually impaired individuals trying to access the restroom or move around in the dark in the event of power failures. It has contributed to better safety of residents and helped avoid accidents.

Testimonial

“The intervention has helped in increasing the overall convenience of staff and students. Basic computer education is one of the most important activities conducted by our institution. Because of the uninterrupted energy supply, classes are continuing and children are not getting distracted.”

Sr. Claire
Principal
Jyothi Seva School for Blind Children

Asha Kiran Residential School

Special School, Kolar, Karnataka

Background

The school is being run under the umbrella of Service Agency for Rural Women & Children (SARWC). SARWC is a non-profit, non-political social service organization, and has been running the Asha Kiran Residential School for Mentally Handicapped Children, over the last 21 years in Kolar district. They cater to children and adults with intellectual challenges. The services provided to the beneficiaries include Special education, vocational and livelihood training (Spice grinding, Chickpea flour grinding and Multigrain flour grinding). 30 intellectually challenged adults are working in the livelihood center being run on the premises of the center.

Challenges

The institution faces 4 hours of power failure on a daily basis and this remains the situation throughout the year. Kolar is a region that is prone to high temperatures and hot and dry climates which are only being exacerbated by climate change. In the absence of electricity, the staff and residents are faced with discomfort and health risks. Power failure also affected the functioning of all livelihood equipment such as pulverizers, weighing machine and packaging machine.

Solution and Impact

An 8 kW solar powered inverter was installed at the facility to power basic energy access including fans, lighting, office computer, refrigeration as well as the pulverizer, weighing machine and packaging machine being used in their training and livelihood efforts.

Apart from the convenience of uninterrupted power supply, the intervention ensures that the equipment used for vocational training and livelihood continue to function even in the case of a power cut. They are able to process customers' orders on time, without worrying about power supply.

The institution is able to save INR 2,600 every month on the electricity bill. Prior to the intervention, the power failures meant that the grinding capacity of the pulverizer was limited to 500 kg per month. Since the integration of the sustainable energy system, the institution is able to grind 1500 kgs per month. They are using the profit to deposit INR 500 per month, in the postal savings account of the intellectually challenged adults employed in the training center

Testimonial

“The solar powered inverter solution has increased the productivity of our livelihood center. We are now able to allocate some amount of money for the safeguarding future of the people involved in the livelihood center.”

Mr. P. Megharaju

Secretary

Service Agency for Rural Women & Children

Trust for Handicapped Humanitarian Assistance of India (THHAI)

Institution for Differently-Abled People (People with Crawling disability)

Sivagangai, Tamil Nadu

Background

Trust for Handicapped Humanitarian Assistance of India (THHAI) works for people with locomotor disability. Currently 30 such beneficiaries stay on their premises. These individuals are dependent on crawling to move from one place to another, and hence their mobility is severely restricted. The trust supports its beneficiaries with food, accommodation, healthcare, counseling, therapy and livelihood.

At this facility, there is no exclusive staff member to maintain the shelter. Instead the beneficiaries take care of the day-to-day operations and management of the shelter. They also have a retail kiosk attached to the shelter from where they sell milk in packets to the local community.

Challenges

For their financial needs, the institution is dependent on local donors and the income generated by the retail kiosk. Their monthly electricity bill was approximately INR 5,000 and became a burden on the limited financial resources available to them. The shelter is located in a rural area making it prone to intermittent power cuts. Given that the climate of this region in Tamil Nadu is hot and humid, there is a high chance of heat stress and risk of fatalities in the absence of appropriate cooling. Fans are often required through most of the day and across most months in the year. In the absence of reliable power, the lack of fans and cooling makes it inconvenient and potentially fatal for the residents.

In case of prolonged power cuts, the milk packets stored in the refrigerator would get spoiled, leading to monetary losses for the institution. They also have a wet grinder in their kitchen for internal usage, and were keen to add another for grinding idli/dosa batter to then sell through their retail kiosk. However, due to unreliability of power supply and high electricity bill, they chose not to explore this opportunity.

Solution and Impact

An 8kW solar-based inverter system installed at the center is now powering efficient lights, fans, a refrigerator, wet grinder, water purifier and mobile chargers. 17 fans were also replaced with energy efficient fans to optimize the system design.

The intervention has ensured greater convenience for beneficiaries and has improved their general wellbeing and safety while moving within the facility with well-lit spaces. They are also able to reliably run fans reducing the risks of heat stress particularly in the summer months. Previously, in order to switch on the fans, residents had to crawl and reach out to access the switch board, which was highly inconvenient. The fans installed are now remote controlled and have solved this challenge.

The center will also be adding another wet grinder in their kitchen to sell the idli/dosa batter in their retail kiosk, and generate additional income for them. Earlier they would store and sell 60 - 70 liters of milk per day and were reluctant to increase the scale of business in the absence of a power backup. Uninterrupted power supply for the refrigerator is helping curb the losses incurred due to milk spoilage. Since the intervention, they are able to store and sell 100 - 120 liters of milk per day. The monthly electricity bill of the institution has also reduced by 50 percent.

Testimonial

“The intervention has helped us in increasing the scale of our business. We are also planning to diversify our business by adding idli/dosa batter packets for sale.”

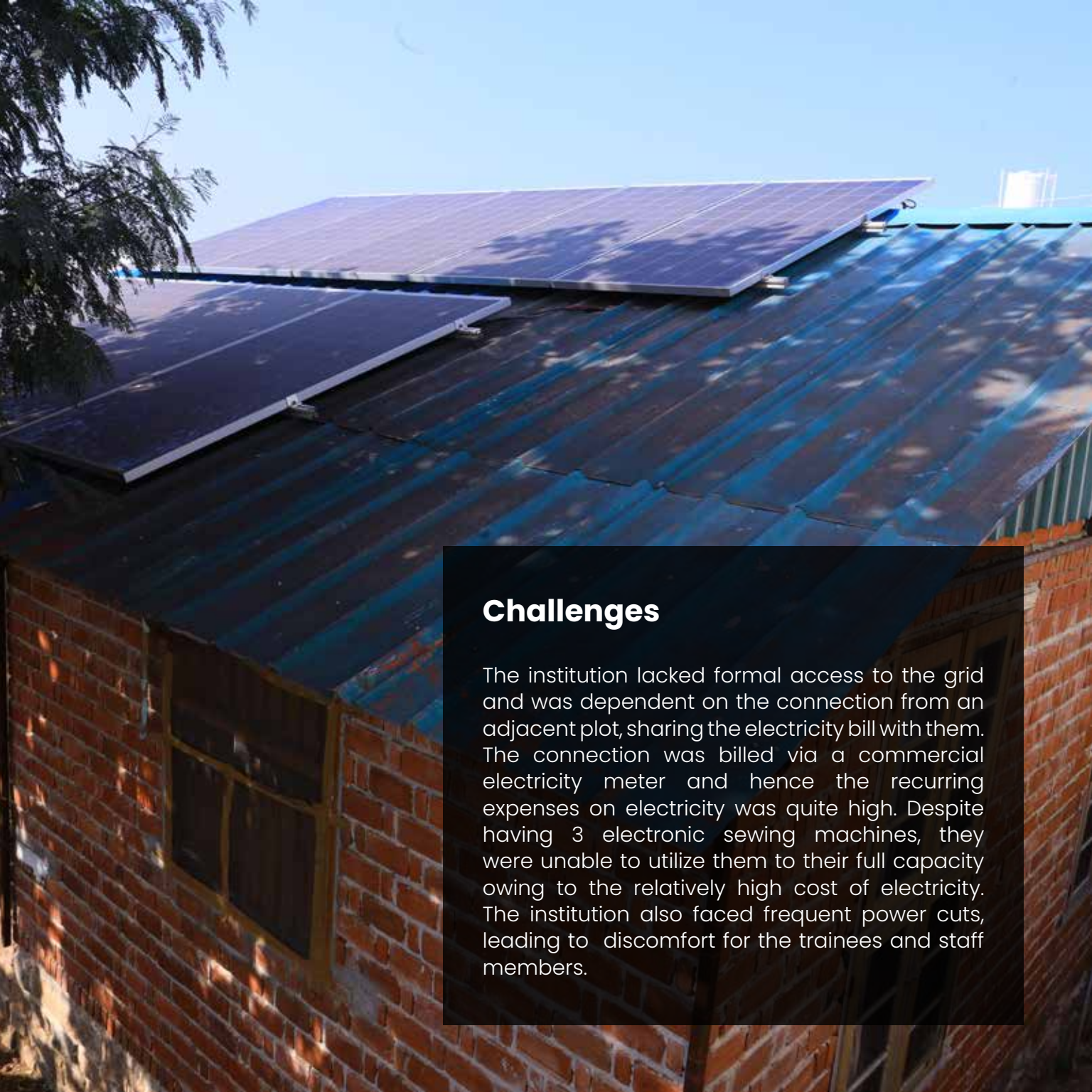
Mr. Pushparaj
Director
Trust for Handicapped Humanitarian Assistance of India

Bhoomika Centre for Learning

Livelihood center for vulnerable women
Madurai, Tamil Nadu

Background

Bhoomika Centre runs under the umbrella of People's Education for Action and Liberation (PEAL). PEAL has been working with young girls with mental challenges for the last 10 years through its special school program. The school has been converted into a livelihood center-cum-day care center for young girls and is called the Bhoomika Centre. It also functions as a community interaction center for their families and is an inclusive space for women with intellectual disabilities. Through this center, they have been building the capacity of these young women through efforts ranging from essential life skills for daily activities to livelihood-based skills such as natural dyeing of fabric and tailoring, which is sold locally, to enable them to earn a living.



Challenges

The institution lacked formal access to the grid and was dependent on the connection from an adjacent plot, sharing the electricity bill with them. The connection was billed via a commercial electricity meter and hence the recurring expenses on electricity was quite high. Despite having 3 electronic sewing machines, they were unable to utilize them to their full capacity owing to the relatively high cost of electricity. The institution also faced frequent power cuts, leading to discomfort for the trainees and staff members.

Solution and Impact

A 3 kW solar-powered inverter system has been implemented at the center to power lights, fans, sewing machines- both industrial and domestic as well as an overlock machine to trim and sew.

Post the intervention, they are now able to run a full-fledged tailoring training unit for women with intellectual disabilities. Solar powering has meant the sewing machines can be operated without power interruptions and trainees are enthusiastic about the experience of operating a solar-powered sewing machine. The center has also received enquiries about solar-powered sewing machines from a women entrepreneur who is running a tailoring unit in the locality. This illustrates how such institutions could become champions for decentralized renewable energy solutions within the community and local region.

The institution is now looking forward to upgrading their solar inverter system in order to power additional appliances such as an electric stove and a refrigerator for their fabric dyeing unit.

The institution's electricity bill has been reduced by approximately 50 percent. Currently, they are paying an electricity bill of approximately INR 1000 per month.

Testimonial

“The holistic approach to ensuring accessibility for solar energy solutions is essential. We are now able to run our tailoring unit without worrying about recurring cost on energy. The after sales service by the clean energy enterprise has also been prompt, ensuring reliability and sustainability of the solution”

Ms. Jeena Rita David
Secretary
People’s Education for Action and Liberation

Leonard Special School for the hearing impaired

Special School, Madurai, Tamil Nadu

Background

Leonard Special School for the hearing impaired in Virangur consists of grades 1-8, with a residential facility for 85 children. Apart from food, accommodation and special education, children are provided with exclusive services such as counseling and speech therapy. They are also engaged in various extra curricular activities such as computer classes, tailoring, dance and yoga.

Challenges

The institution is situated in a rural area, which faces severe power cuts while also facing high temperatures particularly during summer. The frequency of power cuts increases during the summer and rainy seasons. It hinders the ongoing classes, and post sunset turns out to be even more inconvenient for the children staying on the premises of the institution. The institution does not have a power backup facility and is dependent on grant money for survival. The monthly electricity bill of INR 6,000 acts as a burden on the limited grant money available to them.

Solution and Impact

A 6 kW solar powered inverter system installed in the center. The intervention is powering fans, lights and sewing machines. 29 existing fans and 36 tube lights have been replaced with energy efficient lights. Three existing manual sewing machines have been retrofitted with solar powered electric motors. Two solar powered street lights have been installed in the premises.

The intervention has ensured uninterrupted power supply to the institution, which has increased wellbeing and convenience for children and staff members. The street lights are helpful in ensuring safety of the shelter home post sunset. The institution is planning to use the money saved on the electricity bill for other welfare activities for the children.

The solar powered sewing machines are being utilized to train the mothers of children who are a part of the day school. The children typically come from low income families and thus, tailoring training with the help of solar powered sewing machines is enabling them to explore a livelihood option. The institution is able to save approximately INR 3200 every month on electricity bills.

Testimonial

“The intervention has provided us the opportunity to expand our services to the mothers of our beneficiaries. The enthusiasm among the tailoring trainees is high because of solar powered sewing machines.”

Sr. Margaret Vennila
Principal
Leonard Special School for the hearing impaired

To collaborate or for more information, reach out to us

info@selcofoundation.org
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