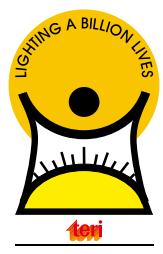


# Journey towards a Billion

– A quarterly newsletter of the Lighting a Billion Lives<sup>©a</sup> Initiative

Volume 6 • Issue 1 • January 2014



## Commentary

Over 1.4 billion people in the world still lack access to electricity. Roughly 30 per cent of these people are in India alone. In this conspectus, TERI's 'Lighting a Billion Lives' (LaBL) and 'Improved Cook Stove' (ICS) initiatives are benchmarks in its work for global sustainable development and its commitment towards creating innovative solutions for a better tomorrow.

While the LaBL programme aims at bringing light into the lives of billions of rural people by replacing kerosene and paraffin lanterns with affordable solar lighting devices; the ICS programme has been set up with an objective to reduce indoor air pollution and the hardships of women through the provision of clean and efficient cooking solutions.

We are pleased to share a few statistics with our readers on the progress of these initiatives. Since its launch in 2008, the LaBL programme has been implemented in 2,543 villages across 22 Indian states. In addition, the programme has also reached out to approximately 22,000 families overseas — translating into a significant 1,100,000 lives which have been positively transformed through the programme.

We are grateful to and appreciative of our 125 grassroot implementation partners and 25 technology partners for the resounding success of the programme. We are also thankful for the invaluable support of our partners for the development of efficient solar lanterns and for the on-ground establishment of solar charging stations. We are pleased to inform our readers that 87 corporates, 91 individual donors, 125 multi- and bi-lateral agencies, 131 government and public sector undertakings, and 147 other sponsors have been a part of this collaborative process, enabling LaBL to emerge as an umbrella brand and become a catalyst of change.

The ICS programme is following closely, with continued efforts to promote the use of improved cookstoves. TERI has been able to impact 5,000 households under this programme with the numbers growing every day.

Both the programmes are being implemented through an entrepreneurial model of energy service delivery. Solar lighting products and improved cookstoves are being disseminated through the establishment of local 'energy value chains', linked to grassroot entrepreneurs (Energy Enterprise or EEs), which form the backbone of the wholesale and retail market channel. The Department for International Development (DFID), United Kingdom, is also supporting TERI through financial aid to increase access to clean energy technologies, both for cooking and lighting in rural areas.

Over the years, the programmes have been successful in evolving from a grant-based campaign to a more strategic, collaborative, and convergent enterprise-based model. This intrinsically involves building capacities of stakeholders at various levels of the value chain to enable them to function in a self-reliant and sustainable manner.

As the programmes continue to receive encouraging response and support from all its stakeholders across the value chain, we at TERI remain committed and passionate to promote 'sustainable and clean energy for all', for inclusive growth and development.

We are confident that we will continue to make a difference to various communities in India and impact their lives in a meaningful way through our partnerships with institutions and individuals who share our vision in reaching out to a wider community.

I H Rehman

Director, Social Transformation Division, TERI

## INSIDE THIS ISSUE

### Perspective

Expanding Energy Access, Improving Women's Lives

3

### Footprints

5

### Voices from the Field

The Story of Mahmuda Village

7

Entrepreneurial Spirits

8

### Partnership

Indus Towers Joins Hands with TERI to Light Rural Homes with High Efficiency Solar LED Lanterns

10

### In Conversation

T N V Satyanarayana Energy Entrepreneur, Andhra Pradesh

12

### Torchbearer's Special

Their Journey, Our Journal

14



A TERI Publication

## USER'S COMMENTS

(Translated from the local languages)



It was like a dream come true, when my six-day-old son was able to breathe clean air after his birth. This has been possible due to the installation of the solar lighting system in our home. I use the solar lighting system every night to light up my child's room and we don't need kerosene lamps for lighting anymore.

**Beena Singh**

Swarupberia, South 24 Parganas



Now I can study for added hours during the night. I am a student of Class III and want to be a school teacher when I grow up. Light was a dream for me before, even though I live just a few kilometres away from the metro city of Kolkata.

**Karuna Mandal**

Daughter of Santipada Mandal  
Iswaripur, North 24 Parganas

### WRITE TO US

Send us your comments/suggestions about the newsletter and the initiative. You may send the feedback form to [raju.dube@teri.res.in](mailto:raju.dube@teri.res.in)

Name:

Organization:

Country:

Email:



*My journey in the last six years,  
Together with all my friends  
and peers, took me far, far and  
wide, Making 2,388,928 lives of  
people bright.*

Since 2008, LaBL has reached more than 2,549 villages across 22 Indian states, and has also spread to parts of Africa and South Asia.

### LaBL Team

Social Transformation Division  
The Energy and Resources Institute  
Darbari Seth Block, IHC Complex  
Lodhi Road, New Delhi – 110 003, India  
Tel. (+91 11) 2468 2100 and 4150 4900  
Fax (+91 11) 2468 2144 and 2468 2145

For more information visit our website:  
<http://labl.teriin.org>  
Copyright © TERI 2011



Read our Monthly E-zine  
at [http://labl.teriin.org/  
index.php](http://labl.teriin.org/index.php)

[http://www.  
facebook.com/  
lightingabillionlives](http://www.facebook.com/lightingabillionlives)

# EXPANDING ENERGY ACCESS, IMPROVING WOMEN'S LIVES

**T**here are approximately three billion people who rely on conventional solid fuels such as biomass and coal to fulfil their basic energy needs. Unimproved and traditional energy sources are costly and force rural households to divert their limited income from other critical needs including education and basic healthcare, towards the fulfillment of energy requirements. Access to energy is particularly woeful in South Asian and Sub-Saharan regions, accounting for more than 95 per cent of the world's population.

The acute lack of 'energy access' impedes development at the local and national level. As a corollary, agriculture, livelihoods, education, access to clean water, health, and general well-being are impacted. Ever-increasing population levels have caused a pressing need for clean, affordable, and sustainable energy solutions, which are now indispensable, given the growing strain on the planet's limited resources.



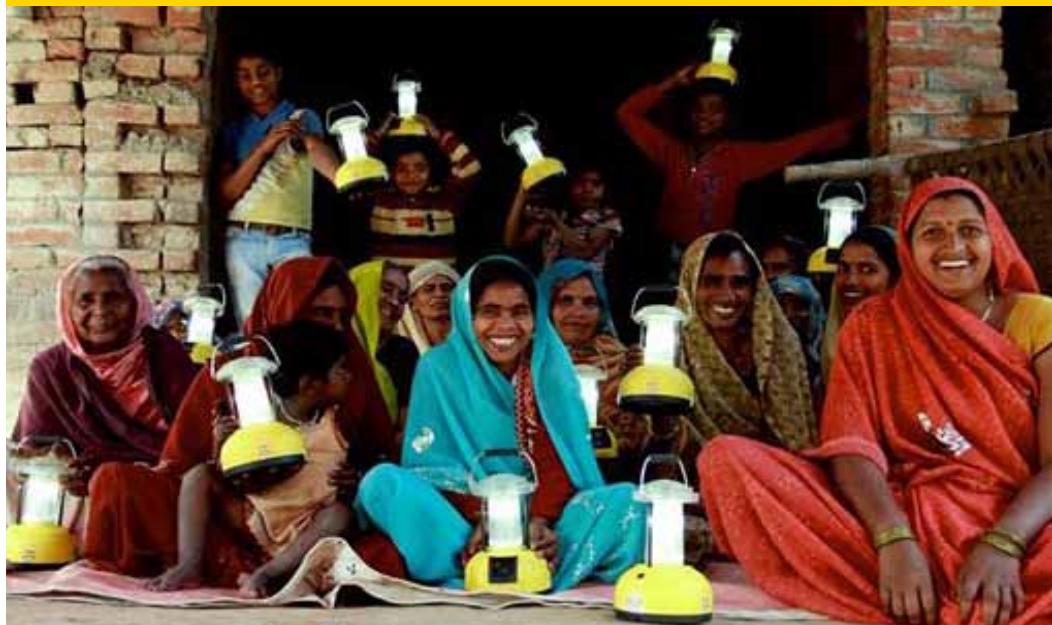
Without energy, small and medium enterprises cannot

function at maximum capacity. Without energy, industry cannot survive. Without energy, women and girls will continue to spend long hours looking for fuel sources, and

will not have jobs.

**Kandeh K Yumkella**

Director General, UNIDO, April 2013



## Energy Access and Women

In most developing countries, women experience the lack of access to energy more severely than men. This is because women are more closely associated with household activities, and are generally expected to fulfil energy requirements in the household. In the absence of reliable or sustainable sources of energy, women and girls are forced to endure time-taking and physically draining tasks of collecting fuels, preventing them from engaging in developmental, educational, or livelihood activities in a meaningful way.

Further, extended exposure to smoke and fumes from biomass-based cooking and kerosene-based

lighting leads to health hazards among both women and their children, who spend maximum time within the confines of the house, inhaling toxic air.

Policies and programmes also seem to have overlooked the direct relationship between women and 'energy access' and have failed to integrate their concerns into plans, even though women are a key part of energy solutions and must play an integral role in defining the way forward on access to clean, affordable, and sustainable energy. There is visible under-representation of women in energy decision-making processes at international and national levels.

A few exceptions where women are heading policy level posts, such as in Zambia, South Africa, Botswana, and Uganda, there is evidence that gender issues have a higher consideration in energy policy formulation.

It is, therefore, imperative to realize that at the grassroot level, the economic amelioration of women is what will lead to their empowerment and bring a transformative change in the community as a whole. One way of bringing women into the mainstream is by absorbing them into the energy value chain — by giving them the opportunity to become 'energy entrepreneurs'. Women are believed to associate more value towards social and collective benefits in comparison to men, who tend to gravitate towards individual gains. Recognizing this, the Women Energy Empowerment (WEE) approach views women as active agents of change, rather than just passive recipients of welfare and development assistance — and stresses on political mobilization and institution building as a means of their empowerment.

## **Building an Inclusive Energy Value Chain**

While policy decisions and formulations will take their due course of time, TERI has started the movement of inclusion at the grassroot level. This approach realizes that in order to address gender inequality and to empower women, it is vital to ensure that women have equal opportunities in energy related jobs and training.

Through the 'Lighting a Billion Lives (LaBL)' initiative, TERI is working to displace kerosene and paraffin lanterns with efficient solar lighting devices for communities across the world. Unimproved and traditional energy sources have high monetary

U U  
Women can and must play an active role in planning, producing, supplying, and managing energy. There can be no energy for all that is sustainable unless we tap into the energy, engagement, and expertise of women.

**Lakshmi Puri**  
Acting Head of UN Women  
April 2013

and physical costs, and in the absence of a reliable alternative, rural households are forced to divert money and resources from other critical needs, such as, education and healthcare, to fulfil their energy requirements.

Solar energy can be harnessed to bridge this gap. The introduction of improved cookstoves, which require lesser fuel and are more thermal efficient, will considerably reduce the need for biomass collection, allowing women and girls more time and resources for other activities like education and alternative livelihoods. It will also reduce the 'energy divide' between villages that have access to energy and those which are still not connected to electricity grids and end up paying much higher prices for sourcing inefficient and conventional fuels due to added transportation costs.

The Programme has also continued to emphasize and promote women's participation in the provision of clean lighting solutions. There is already evidence of a marked shift in the prosperity and development of communities where interventions have been successfully implemented. Women are healthier, happier, and have more time to extend their

workdays and contribute to the household income by taking up alternative income-generation activities.

Over the years, the Programme has identified and trained over 750 women across 2,500 villages and 22 states. As 'energy entrepreneurs', women become responsible for the operation and maintenance of centralized solar charging stations. The enterprise runs on a rental model, where the entrepreneur provides lighting services to households in the village or community on a per day rent basis. A part of the rent is used to meet the operation and maintenance costs of the solar charging station and the remainder constitutes the entrepreneur's monthly income. Just like men, women have also become involved in the end-to-end energy service delivery channel, providing after-sales assistance and repairs to end-users.

With access to information, business and technical skills, credit and market linkages, women may well become the largest contributors and beneficiaries of energy linked entrepreneurial activities — making them economically self-reliant and independent decision-makers. ■



### TERI Receives PMI Project of the Year Award (NGO), 2013

**A**dding to growing recognition and appreciation for the 'Lighting a Billion Lives (LaBL)' initiative, the Project Management Institute honoured TERI with the 'Project of The Year' award under the NGO category, at its National Conference held in New Delhi in September 2013.

The world's largest not-for-profit membership association for project management professionals, the Project Management Institute (PMI) has directed specific focus in identifying and acknowledging Non-Governmental Organizations (NGOs) who have delivered superior results in the implementation of projects, programmes, and other developmental initiatives through the exemplary application of project management principles.

As part of its evaluation process, the Institute took into account LaBL's implementation processes and last-mile-delivery efficiencies, that form vital links in the value chain directly affecting the end-user. Consideration was also accorded for efforts put in by project teams to develop innovative interventions enabling energy access

for a wider community, the critical involvement of key stakeholders and developing partnerships at the local level. The jury made special mention of the robust processes and accountability mechanisms established across the board through this initiative.

Winners were announced in six award categories from a total of 77 nominations at the PMI National Conference, held on September 27, 2013, at the Leela Kempinski Hotel in Gurgaon, Haryana.

### RVNL Officials Visit 'LaBL' Project Site, Kolkata

A sensitization visit to 'LaBL' project sites in South 24 Parganas, Kolkata was organized on December 5, 2013, for a team of 40 senior officials of Rail Vikas Nigam Ltd (RVNL) as part of their CSR and sustainability training programme.

Supplementing an existing CSR project in the area, RVNL partnered with TERI in 2013, extending financial support for the installation of 500 solar home lighting systems in poor and backward households in the Canning-II and Bhavnagar blocks. In association with the Ram Krishna Math (Naora), as

monitoring agency and sustainability partner, TERI successfully installed the home lighting systems and imparted operational training to local technicians and end-users; and is currently in the process of identifying a local 'energy entrepreneur' who can provide after-sales services.

During the visit, Dr K K Chaudhuri, Director and Chairman, CSR Committee, RVNL and his team interacted with several end-users and were extremely satisfied to learn about the positive impact of solar lighting in their lives. The success and visible progress as a result of this collaboration has created further prospects for TERI and RVNL to come together in the endeavor to light up another 500 to 1,000 households in the area.

### Capacity Building for Implementation Partners

TERI is constantly working to close the 'energy gap' in rural India, through the development of local value chains and the deployment of renewable energy technologies. To make the value chain a robust and effective system, TERI engages 'energy entrepreneurs' at the grassroot level as wholesale and retail agents, and further supports them through a pool of technicians and volunteers from local partner organizations.

Recognizing the limited exposure that the 'energy entrepreneurs' and technicians have — at the grassroot level — in technology, sales, marketing, and finance, TERI makes sure that capacity-building and skill development exercises are conducted at regular intervals on the latest renewable technologies, their functions, and mechanisms.

As part of this scheme, TERI was pleased to collaborate with Selco Solar Pvt. Ltd, a social





enterprise promoting livelihoods through sustainable energy solutions and services, to organize a skill training programme at Manipal, Karnataka for distribution and implementation agents associated with the 'Lighting a Billion Lives (LaBL)' and ICS programmes. The five-day programme was conducted from September 3–8, 2013 and was attended by 27 participants from four states. Instruction was delivered in Hindi and Telugu, with the group divided into two batches on the basis of their preferred language. Participants received training on various technical aspects including sales and marketing techniques, installation processes and after sales service for end-users. They were also sensitized on Selco's in-house projects including the Light for Education Project, the Hawkers Project (lighting for petty traders and street vendors), and the Solar Home Lighting Project.

### **ACTS-TERI Workshop on Renewable Energy, Nairobi**

A collaborative international workshop on 'Clean Energy Access in the Kenyan Context' was held by

the African Centre for Technology Studies (ACTS) and The Energy and Resources Institute (TERI) on December 9 2013.

Organized under the spectrum of the DFID-TERI Clean Energy Access Programme, the workshop focussed on the accessibility and sustainability of quality 'clean' cooking and lighting products in Kenya. The event drew participants from various stakeholders in the energy fraternity including government institutions, academia, micro-finance institutions supporting renewable energy, public benefit organizations, research organizations and fabricators and entrepreneurs of solar lighting systems and cook-stoves.

The day-long workshop witnessed an enthusiastic exchange of ideas and information. Key points of discussion revolved around existing clean energy business models in Kenya and lessons learnt from past experiences, conformity to quality and standards in cooking and lighting products as well as tackling issues in after-sales services for ICS and lighting products; and ideas on breaking barriers in financial accessibility for renewable energy

technologies. The dialogue also highlighted existing untapped opportunities for value chain agents, including enablers, actors, and support service providers, who hold the potential to stabilize the acceptance of renewable energy technologies among local communities.

In conclusion, the forum agreed that there was a pressing need for all members of the value chain to realize the necessity of continued innovation in developing solutions to combat climate change; supplemented with an effort to create region-specific technologies through constant improvements in existing products, mitigating adverse effects on health and reducing dependence on conventional fuel sources. It was also agreed that leading institutions such as the Kenya Bureau of Standards Certification Body (KEBS), the Kenya Industrial Research and Development Institute (KIRDI), and the European Research Council (ERC), needed to accord immediate and urgent attention to set policy and regulation benchmarks, to eliminate products that compromised international quality standards. ■

# THE STORY OF MAHMUDA VILLAGE

Mahmuda is a small village located in the Islampur Block of Nalanda District in Bihar. The village is home to more than 8,000 people, primarily earning their living from cultivation and other allied activities, such as poultry farming. Like many other villages in the country, the people of Mahmuda lack access to key infrastructure facilities such as proper roads, adequate sources of drinking water, and electricity. Despite the establishment of infrastructure for the distribution and transmission of power under the Rajiv Gandhi Vidyutikaran Yojana (RGVY), the village is yet to get connected to a grid and receive electricity. However, with the provision of solar lanterns in the village, a range of possibilities have been unlocked for the people of Mahmuda.

In 2012, as part of the 'Lighting a Billion Lives (LaBL)' initiative, TERI installed a solar charging station in Mahmuda. Baby Devi, an enterprising woman from the village, came forward and was appointed to operate and manage the facility. More than just a lighting device to be used in homes after dark, the solar lanterns gained wide acceptance and became a source of new livelihood possibilities for the people of the village. Once the news about the successful intervention spread in the surrounding areas, opportunities came knocking on the door. Baby Devi was approached by a group of government officials who offered to train the women of the village in agarbatti (incense stick) making skills as part of a vocational scheme supported by the Punjab National Bank. Baby Devi enrolled herself and further trained 12 women in her

village. So in addition to renting out solar lanterns at night, she now also runs an agarbatti-making centre at her home, where women come every evening to make agarbattis.

Working in the bright and clear light of the solar lanterns, the women are able to put in extra hours and produce high quality agarbattis, categorized according to their thickness as super, medium and thin. Each woman is able to make three to four kilos of agarbattis a day, which earns her between three to four thousand rupees a month — a considerable amount.

Rinku, a 20-year-old woman, who rents the solar lantern and also makes agarbattis at Baby Devi's manufacturing centre, remarks, "If we did not have solar lanterns, we would still be making agarbattis of inferior quality, which sell for a much lower price than the finer agarbattis. The children too would not have been able to study for the extra two or three hours in the evening."

In addition to the use of solar lights for making agarbattis after dark, eight to nine lanterns are rented everyday by small shop owners to run their businesses post sunset. Ramu, 34, uses the solar lantern to sell milk in neighbouring villages at night. He shares that this was not possible earlier as it was difficult to navigate his way between villages in the darkness, but now it has become feasible

and boosted his income by three thousand rupees.

Shabir, another user, rents three lanterns everyday to take tuition classes for the children of the village between 7 to 9pm. He teaches a group of 20 children, and with the added hours of the evening, where it is now possible to teach more children, his income has gradually increased to approximately four thousand rupees a month.

The solar lantern has initiated a positive shift in the lives of the people of Mahmuda. Not only is it replacing



the harmful, fuel inefficient kerosene lamp, but it is also enhancing the quality of lives of people by providing a convenience within their homes as well as allowing them greater possibilities of livelihood, growth, and development. The villagers recognize and appreciate TERI's intervention and are grateful to their enterprising and forthcoming entrepreneur, Baby Devi, whose enthusiasm has led the village to be a brighter, safer, and more prosperous place. ■

# ENTREPRENEURIAL SPIRITS

**S**ince its inception in 2008, TERI's 'Lighting a Billion Lives (LaBL)' programme has reached more than 2,500 villages across India, ensuring their access to clean and reliable lighting through a range of renewable energy technologies including solar charging stations, solar home lighting systems, and solar micro-grids.

A typical solar charging station installed under the Programme consists of 50 solar lanterns, five solar panels, and five junction boxes. The solar lantern provides light for four to six hours, with an illumination of 200–250 lumens, equivalent to a

40-Watt incandescent bulb. If used on the dimming mode, the lanterns can provide light for up to eight hours as well. The centralized solar charging stations are operated on an entrepreneurial model of energy service delivery. The model seeks to provide cost-effective solar lamps, distributed through micro enterprises set up in unelectrified villages. Each micro enterprise is operated by a local 'village entrepreneur (VLE)', responsible for renting out the lamps every evening to households and enterprises at an affordable fee of ₹ 2 per day. The 'village entrepreneur' managing the solar charging station

is one of the most important links in the distribution process, since it is purely their willingness and cooperation that makes it possible for TERI to intervene at the village level and provide clean lighting solutions in an effective manner. In return, the VLE also gains a reliable means of augmenting household income by renting lanterns.

Two enterprising individuals who became 'village entrepreneurs' under the LaBL programme, share their success stories on using the solar lanterns innovatively to earn additional incomes based on their knowledge and skills.

## CASE I

**Entrepreneur:** Kishore  
Panchagarh Village,

**District:** Thane

**State:** Maharashtra

**LaBL partner organization:**

The Energy and Resources Institute



Kishore belongs to the Warli tribe of Panchagarh village in Thane, Maharashtra, where most of the working population has moved to nearby towns and cities in search of work. Due to the large scale of employment-induced immigration, the micro economy of the village has deteriorated to the point that those left behind are suffering from the lack of basic amenities and services.

There is absence of electricity and the whole village depends on three government installed hand-pumps as their only source of water. Education, health, and sanitation conditions paint a bleak picture of life in Panchagarh. The only source of income seems to be the cultivation of millets and pulses on community/shared fields or by working as farm labour on fields of neighboring villages — a stark contrast to the city of Mumbai, located just 80 kilometres away and home to one of the most prosperous industries, businesses, and people in the country.

Kishore considers himself lucky, to have had the opportunity to attend school till the eighth grade, and is one of the few literate residents in Panchagarh. He is often approached by villagers for advice on problems of ill-health, poverty, and other social disputes. Kishore is also a rare practitioner of the dying art of Warli in the village. Warli is the folk art of Maharashtra, traditionally created by tribal women, depicting scenes

from daily life in a rhythmic pattern. Kishore, however, had to give up his passion for painting after his elder brother, the sole earning member of his family, passed away a few years ago. This forced Kishore to take up a job as an office assistant in the city of Thane, even though it only earned him a meagre salary of three thousand rupees a month, barely sufficient to support his family of five. With a long commute to and from work every day, Kishore could only make time for painting in the evening after returning from work. But by the time he reached home, it was well past sunset and too dark to paint with the blurry light of the wick lamp.

In 2013, things took a positive turn when TERI, in partnership with the ICICI Bank, installed 40 solar charging Stations in 40 villages of the Wada Block, and Kishore was selected as the 'village entrepreneur' to operate the charging station in Panchagarh. To have a well-lit and smoke-free house seemed like a distant dream for the people

of Panchgarh till 2012, but this intervention has transformed their lives. Now women have better light to cook and mend in, while children are able to read and study their lessons in the evenings as well. Farmers carry lanterns to the field at night and stand guard against wild boars that damage their crops. Artists like Kishore are able to come home and paint, even if it is late in the night.

Kishore shares that all 50 lanterns provided to him under the project are rented out every evening, and returned to him by the next morning. He charges a daily rent of two rupees per lantern and for those who are not able to afford even this much, he has devised a clever way of receiving payments in kind — poorer villagers can pay for using the lanterns with a share of their monthly crop produce. This has helped in making the Programme inclusive at all levels, ensuring that even the most deprived section of people are not excluded from the benefits of better and cleaner light.

Kishore is able to earn an additional two thousand rupees every month by renting out the lanterns. But this income is small in comparison to what he earns from selling his Warli paintings, which he is now able to work on for longer hours in the light of the solar lantern. Kishore has become a smart businessman, and creates bespoke designs based on the demands of his customers. He earns around two thousand rupees per painting and manages to sell two or three paintings a month. It is heartening to see that the solar lantern has not only enhanced the income of an artist-cum-entrepreneur like Kishore, but has also helped in saving a dying art.

## CASE II

**Entrepreneur:** Vijay Kumar Pandey

**Village:** Paharpur Village

**District:** Nawada

**State:** Bihar

**LaBL partner organization:**

Sustainable Development Research Organization



Vijay Kumar is a 35-year-old teacher from Paharpur village in the Nawada District of Bihar. He lives in a joint family with his wife, four children, and the families of his brother and cousins. A graduate by qualification, Vijay teaches in the district's senior secondary school, which is attended by more than 500 children from Paharpur and other nearby villages. Besides the income earned from his teaching job, other members of the family contribute to the family income by working as agricultural labour.

Being a graduate and a teacher brings respect and responsibility for Vijay and many fellow villagers come to him seeking counsel and advice. It was no surprise then, that when a solar charging Station was installed in Paharpur in August 2012, the village unanimously nominated Vijay as the 'village entrepreneur' to run the station. Vijay put in place a meticulous process to operate the solar charging Station including, cleaning the lanterns each day

before renting them out, maintaining systematic records and problem solving. He also provides lanterns free of cost to people who are not able to afford the rent, and find it difficult to cover expenses during social events such as weddings.

Being a 'village entrepreneur' has resulted in an incremental increase in his monthly income by fifteen hundred rupees. However, as a teacher, for Vijay the most important benefit of the solar lantern is that he is now able to teach children at home in the evenings. Vijay uses two or three lanterns to teach a group of ten to fifteen students from 7pm to 9pm and charges the students a nominal fee to cover the expenses of running the lanterns.

Vijay takes immense pride in his role as the village entrepreneur for the solar charging Station as he finds that since its implementation in 2012, the community has been very happy with the solar lanterns. They no longer have to endure the hazardous smoke of kerosene lamps, and children in particular feel elated to see the light of solar lantern and look forward to studying. Vijay says that the biggest achievement is that the girls in the village feel much safer now. They attend school in the afternoon and complete their homework in the evening with the help of the solar lanterns. In fact from most of the homes in the village, it is the girls who come to collect the solar lanterns in the evening.

A dynamic person with strong perceptions, Vijay recognizes the solar lantern to be an important agent of change and a first step in making the lives of his fellow villagers better and brighter. He feels proud to have been given the opportunity to spearhead this mission. ■

# INDUS TOWERS JOINS HANDS WITH TERI TO LIGHT RURAL HOMES WITH HIGH EFFICIENCY SOLAR LED LANTERNS

**E**nergy access is the key to developmental growth in the 21st century and inclusive growth in rural India is not possible without improvement in the 'energy access' situation.

The abysmal power situation in Uttar Pradesh has been an ongoing cause of concern as the supply of electricity is constantly and continuously falling short of demand. The last 20 years have seen power shortages remain at the 10–15 per cent level during regular hours, and during peak periods, the levels are even higher. According to the latest report of the Ministry of Power, the state's projected demand for the summer of 2014 alone is over 15,800 MW and the corresponding supply capacity is falling short by over 6,800 MW — which translates into unreliable and intermittent power

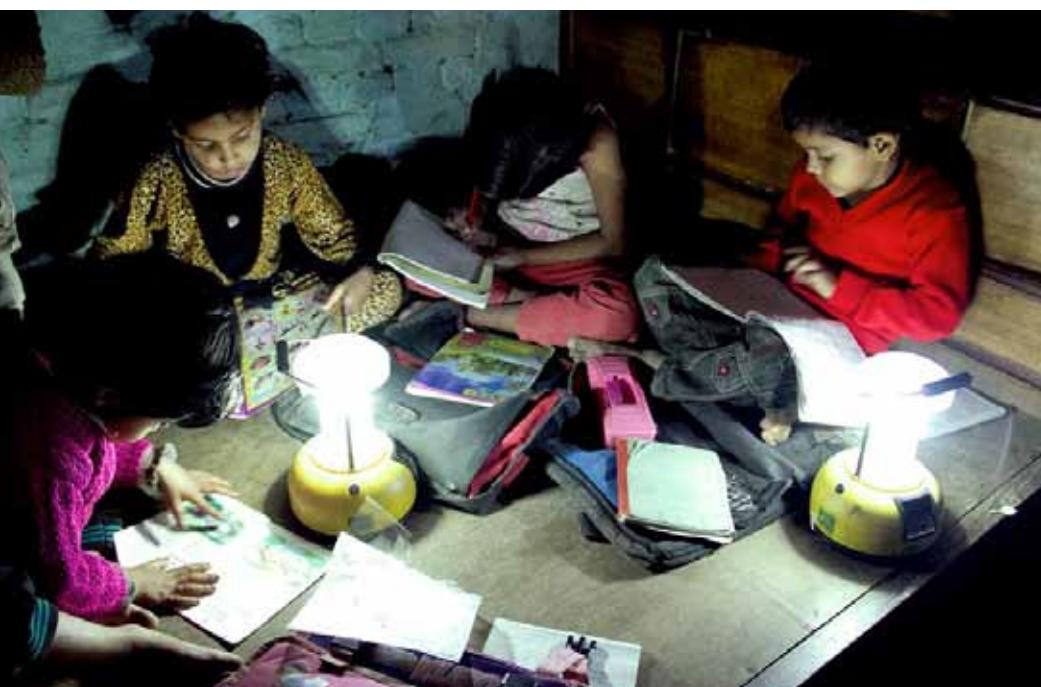
supply and prolonged periods of power cuts and low voltage. With tier one and tier two cities suffering acute power shortages, expecting power supply in the interior parts of the state is beyond the realms of reality.

Uttar Pradesh is also lagging behind in terms of employing alternative sources of power generation and electricity. While Gujarat produces 850 MW of electricity through solar energy, Rajasthan produces 201 MW, and Uttar Pradesh has just begun the process of moving to solar-based power generation with its first solar power plant at a capacity of two Megawatts becoming operational in January 2013 at Barabanki. This means that majority of the rural population in Uttar Pradesh is using kerosene lamps and paraffin candles for their lighting

needs. In addition to the high cost of procuring and using them, poor light and indoor air pollution are the immediate health hazards of using these lighting devices. The lack of energy access in these regions, therefore, means that after sunset the life here comes to a standstill —impeding education, development, and livelihood.

It is in this context that Indus Towers Limited has joined hands with TERI to achieve the shared vision of extending improved, clean, and affordable lighting solutions to 661 villages in the state of Uttar Pradesh. Indus Towers Limited is an independently managed company that offers passive infrastructure services to telecom operators. Committed to promoting alternative energy solutions that benefit the environment, Indus Towers Limited has entered a five-year partnership with TERI, to sponsor clean energy and rural entrepreneurship through the 'Lighting a Billion Lives' [LaBL] programme to over 165,000 people. The project covers the establishment of Solar Charging Stations (SCS) and Solar Micro Grids (SMGs); the facilitation of livelihood opportunities for village-level entrepreneurs, technicians, and end-users and the mitigation of CO<sub>2</sub> emission levels.

The first villages chosen for implementation under this partnership were in the Kanpur Dehat district where 3,650 households across 73 villages were made energy independent. TERI's local partner organization Shramik Bharti provided



onground support and assistance in the identification and selection of villages for the initiative, as well as for the appointment of women entrepreneurs to operate the solar charging stations. Each solar charging station included 50 portable solar lanterns and five junction boxes housing charge controllers with 10 sockets to plug-in and charge 10 individual solar lanterns at the same time. Each lantern comes with LED-based luminaries and plastic enclosures that contain rechargeable batteries and necessary electronics.

The Indus Towers–TERI partnership has also made it possible to graduate the energy service model from grant-mode to enterprise-mode. Communities are being encouraged to co-fund solar energy interventions in an effort to increase their stake and participation in the success of the project. Also, the ‘fee for service’ model which requires a per night rental to be paid for the use of solar lanterns is nominal enough to be affordable for everyone, but still generates a revenue stream that will ensure the ongoing maintenance and



operation of the solar charging station as well as become a second source of income for the entrepreneur. This will set in motion an internal cycle of revenue generation and service that will become self-sustaining and scalable in the coming years.

The collaboration is a critical step in addressing clean and sustainable energy challenges in Kanpur and Kanpur Dehat, spurring innovations

that help in enabling energy access for all. A localized, bottom-up approach has been adopted, establishing a series of good practices to tackle the challenges of providing clean lighting to people at the bottom of the pyramid. Key learnings have demonstrated that it is important to take into account the psychological impact of an intervention on affected communities to measure actual improvement in their quality of life, rather than focussing only on the establishment of a physical infrastructure. The success and sustainability of a project critically depends on the autonomy of usage and ownership by the community. TERI, therefore, intends to introduce the stand-alone ‘Integrated Domestic Energy System’ (for lighting and cookstove products) and will be piloting the same in the following months.

It is expected that at the end of the five-year partnership, carbon dioxide emissions of close to 5,000 tonnes would have been mitigated and more than 700 jobs would have been created. ■



# N V SATYANARAYANA, ENERGY ENTREPRENEUR, ANDHRA PRADESH

N V Satyanarayana is a founding member of Girijanavikas, a voluntary organization that has worked in partnership with TERI on multiple projects under the 'Lighting a Billion Lives (LaBL)' initiative, for the implementation of solar charging stations in the rural areas of the district of Visakhapatnam.

In his most recent mission, Mr Satyanarayana has taken up the mantle to establish an 'energy enterprise' in the tribal village of Chintapally in Visakhapatnam District. Through this enterprise, he aims to promote the use of energy efficient cooking and lighting devices and also intends to assess and ensure the ongoing functionality of previously established solar charging stations.

TERI was happy to be in conversation with Mr Satyanarayana and heard his views and experiences on working with us as a part of the Clean Energy Program. Here a few excerpts from the interview are:



## Tell us something about your work.

In 2001, with the inception of Girijanavikas, we began interventions in tribal villages of Andhra Pradesh, to create awareness on health and hygiene and encouraged people to construct individual toilets. Gradually expanding services, in 2004, a Residential Bridge Course (RBC) Centre was set up to educate and train 50 school dropouts at Gudem Kothaveedhi. As our activities intensified, the scope of community services also expanded and in 2010–11 we launched the Mobile Medical Unit (MMU) service. A Mutual Aided Cooperative Thrift Society (MACTS) was also established recently with the participation of 2,000 tribal farmers and a growing membership everyday.

We are constantly working to extend community development and support services across rural and tribal areas in the district to cater to specific needs of the people.

## What is the energy scenario in your area of operation?

Power and other basic amenities are absent in most of the villages in our area of operation. Remotely located and surrounded by hills and dense forests, there is no proper infrastructure or roads to transport facilities to these areas. Majority of the population meet their consumption requirements by cultivating small pieces of land accorded to them and supplement it by gathering Non-Timber Forest Produce (NTFP) from the adjoining forests.

Before TERI's 'Lighting a Billion Lives (LaBL)' intervention in the

area, people depended entirely on kerosene lamps for their lighting needs after dark. Though they procured these lamps from DR Depots run by the Girjan Cooperative Corporation Ltd (GCC), the constant need to replenish fuel (kerosene) required them to walk 10–15 km every month. Also, a limit of two litre a month was just not enough to get by the whole month, and most homes were left in darkness after a few days, when the fuel ran out.

## Tell us how your experience with TERI has been so far. Do you feel you have benefitted from this association?

Towards the end of 2011, I received a call from Mr Murthi, the South Area Coordinator for TERI. He introduced the organization to me and explained the work it was doing, and I felt convinced to take up the project to help the people of my community. After several members from TERI's local team visited and





interacted with us, a Memorandum of Understanding (MoU) was signed to formalize the association; and in our first joint effort, 19 solar charging stations and 640 lighting units were installed across 19 villages in the area. Following this, TERI advised us to set up a solar products shop at Chintapally village and we became 'entrepreneur-partners' for TERI. Our monthly turnovers have reached INR 50,000 and our organization has successfully installed an additional five solar charging stations and 300 lighting units across five new villages. In addition, we have also received orders for 50 biomass cookstoves and are confident that we can comfortably earn INR 9,000 a month through solar charging stations.



### **Apart from commercial and technical transactions, how has this association with TERI added value to you or your organization?**

After the MoU was signed, TERI organized a training exercise for Srinivasa Rao, a tribal youth at our institution. The exercise imparted important skills that enabled him to take up repairs for solar products in the local villages and help the community to continue using renewable energy products. I feel that after receiving this training, TERI has empowered Srinivasa with vital technical knowledge and skills that allow him the opportunity to lead his life anywhere in India by taking this up as a full-time profession.

### **How has working on social and environmental causes with TERI changed your business perception?**

Actually we give top priority to social and environmental issues. Even prior to our association with TERI, we were encouraging people to plant more trees and take up horticulture. We supported their efforts by providing plants, organic fertilizers, and access to financial assistance, and ensured there was enough water supply by setting up a gravity system and drip. It has always been our endeavour to create sustainable income sources for farmers.

After partnering with TERI, we have also directed our focus towards the protection of existing forests and affected a reduction in the consumption of firewood by introducing biomass cookstoves. Solar lamps have been introduced on a large scale to replace the kerosene lamp and mitigate its adverse effects as well as increase productivity and promote evening studies for children.

### **Describe your quality control mechanisms specific to TERI projects.**

We strictly follow norms stipulated by TERI and, therefore, there is no issue about quality control.

### **Can you share the details of repair and maintenance services specific to TERI projects?**

As I mentioned earlier, Srinivasa Rao, a tribal youth working with us, has been trained by TERI and is able to repair solar products at people's homes itself, which in a way also allows him to create awareness among users on how to use and maintain the lamps in a good condition.

In addition, we have also set up two service points for communities located in G K Veedhi and Chintapally, so that the people who require repairs can come and receive assistance directly at one of these stations. Hence, the local communities have been quite happy with TERI's solar products so far.

### **How do you plan to generate awareness about your venture in and around the areas of your operation?**

We have established a Mutual Aided Cooperative Thrift Society (MACTS), which is run by a large staff and has a membership of more than 2,000 tribal farmers. We involve our members in generating awareness and are also trying to convert some into customers and sales agents. In addition, we are also approaching trade and staff unions to improve the sales and in the event that a financial concern arises, then the required amount can also be provided from MACTS as a short-term loan. ■

# THEIR JOURNEY, OUR JOURNAL

The Lighting a Billion Lives — International Torchbearer's Programme (LaBL–ITP) was launched in 2010 with the prime objective of integrating students and young professionals as 'torchbearers' in the rural energy access framework. The Programme allows 'torchbearers' to gain on-ground experience and knowledge of interventions under the LaBL campaign and enables them to analyse, monitor, and manage the intended and unintended, positive

and negative social consequences of the campaign.

Torchbearers undertake a series of field assignments including field research and household surveys and are encouraged to take up other activities based on their interests and learning objectives, such as, feasibility assessment studies, case study documentation, impact analysis, fund raising, and secondary research. The opportunity to be directly involved at the execution level

allows torchbearers to garner valuable exposure in social dynamics, local solution building, and challenges in the implementation of developmental projects, data analysis, and interpretation.

It has been a privilege for TERI to have enthusiastic and eager torchbearers work with our onground project teams as part of the LaBL–ITP. We are happy to present insights and experiences shared by our torchbearers in this quarter.

## **My Experience with TERI**

As I sat in my school bus today, I tried to recollect my life-changing experience with TERI.

The day I got my very first task at TERI, I was on cloud nine. I was singing and dancing and my enthusiasm to go on a field trip was inexpressible. The next day, I pestered my father to drive me to Dhobi Ghat, a small group of villages near the Delhi Cantonment (where I suspected clean electricity was unavailable), at 5am in the morning. I did not want to miss the opportunity to interact with the people there.

Upon reaching the location, I struggled to accept what my eyes saw — the community, consisting of around 200 families, lived partially in a drain. We were greeted by Sangeeta, the Sarpanch (village head). Since this was my first visit, I was eager to roam around in the community and interact with people of all ages to understand their lifestyle better. I had three energetic children from the community as my guides, who I still remember — Ram, Harish, and Mala. They took me around their

community and provided insights on various things.

The dark and disheveled houses corroborated the desperate longing on the faces of everyone who lived there. I enquired about the various problems faced by the people. Sangeeta told us about the difficulties they were facing due to the lack of regular and affordable electricity supply, and ended her distress on a trembling note. As I was leaving, I noticed the proximity of the National Highway to *Jhuggi Basti* and realized that these people with their miseries have always been here, right in front of our eyes, spreading their hands out and calling for help, but we have become so inhuman that our ears are now indifferent to these cries. The mere thought of this fact made me shudder. I decided to do something about this personally, so I sent detailed reports about my visit to TERI.

With an aim to sensitize people and make them aware of the troubles of the underprivileged, I started visiting homes in my neighbourhood, sharing with them the LaBL



Campaign's goals, its past and current activities, and its impact on the communities. Many neighbours were extremely surprised to know how bad the situation was. They said that even though they had lived here for many years, they were not aware of the condition of the people at the *Jhuggi Basti* and were definitely willing to help uplift the living conditions there.

Seeing such an enthusiastic response, I felt that the impact of my efforts could be maximized if everyone gathered at one place. So, I invited all the prospective sponsors to a small snack party at my house, and gave a presentation on the troubles of the poor; I also screened TERI's LaBL

documentary film. The attendees were very moved and agreed to contribute. A feeling of pride in being able to do something for the poor encompassed me when I was able to raise INR 400,000 for TERI.

At a subsequent meeting, my senior at TERI pointed out that there was a possibility that certain villages near the Yamuna River, in Uttar Pradesh as well as in Bihar were still deprived of clean lighting solutions. Being aware of the implications of the situation, I went on a scavenger hunt to locate any such villages. But since I had no definite direction or guidance, even after a cumbersome day of searching, I came back with zero

results. My father then pointed out that I could try getting some help from the Ministry of Power and the Ministry of New and Renewable Energy.

This seemed like a good idea and I went straight to the department offices, and after a tireless day of going from one office to the other, I was able to find a list of villages in those regions. That rocket boosted my journey. After a few days of hard work, I was thrilled to find that every village near the Yamuna had already been helped by TERI.

However, one day during my field trip in Bihar, while walking through the fertile lands, I came across a poorly electrified village named Tektar in Darbhanga District. Immediately upon my return to Delhi, I reported my findings to TERI so that help could be provided.

### **Inside a village home, Tektar, Darbhanga, Bihar**

During my association with the LaBL Campaign as a torchbearer, I was exposed to the importance of building partnerships with potential sponsors and I learnt how to communicate with and convince prospective sponsors at a professional level. Hence, my journey with TERI made me more aware of my surroundings and imbibed in me a feeling of compassion towards the economically deprived sections of the society.

As these thoughts flooded my mind I realized my bus had already reached school.

Although now I am back at school, I am determined to contribute to TERI as much as possible in the future as well, to ensure that not only one billion people get access to clean lighting, but everyone beyond also has access to clean light in the future.

**Agam Gupta, LaBL Torchbearer**



# Lighting a Billion Lives International Torchbearers Programme

Ever wondered how to make a positive difference while you gain work experience? Here is your chance to be part of a four-week volunteer programme and be the difference that you wish to see in the world. The International Torchbearer Programme (LaBL ITP), a TERI Campaign, is designed to incorporate students and young professionals into the rural energy access framework through the Lighting a Billion Lives initiative. The Programme would create a cadre of socially conscious youth working towards a better and brighter future while facilitating the achievement of UN MDGs.

## WHY PARTICIPATE

The Programme will provide leadership training through field experience that will:

- Equip you with the skills necessary to further global sustainable development
- Educate and encourage you to bring about positive social change and promote a cleaner and greener world

## WHO CAN PARTICIPATE ?

- Students enrolled for degree programmes and above
- Affiliated student groups such as environmental clubs, community service groups, NSS wings, and others
- Young professionals with appropriate expertise

## HOW TO APPLY?

Details and applications at <http://labl.teriin.org>

**APPLY NOW FOR ANY OF THE FOLLOWING SESSIONS**

**Spring • Summer • Winter**