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# ENERGY ENTREPRENEURSHIP INCUBATION PROGRAM

Supported by

SHAKTI SUSTAINABLE ENERGY FOUNDATION

## BACKGROUND

The electricity situation in Bihar has always been far from ideal, but it has become particularly critical since the division of the Bihar state in 2000 when most of the electricity generation plants fell into the jurisdiction of the newly formed state of Jharkhand. Bihar ranks second on the list of least electrified states with only 52.8% of villages and 6% of households electrified, leaving 85% of the population with no access to electricity. With such a wide gap between demand and supply, decentralization of electricity generation and promotion of renewable energy solutions are possible long-term solutions.

## OBSTACLES

The large players of the decentralised renewable energy segment have struggled to capture the huge potential of the rural energy market primarily because:

1. The rural communities are widely dispersed
2. Varying energy requirements from region to region
3. Non-existent last mile sales, distribution and service networks

## VISION

Though the potential and need for renewable energy products in rural India is substantial, large scale private sector technology providers had not been able to tap into this vast and viable market primarily due to the non-existence of an organized, last-mile rural sales, distribution and service chain. Shakti Sustainable Energy Foundation (SSEF) recognized this gap and realized that large-scale private-sector technology providers can play a crucial role to overcome this challenge by establishing forward linkages with grassroots enterprises.

Towards this end, Shakti Sustainable Energy Foundation supported Villgro to develop and implement a Energy Entrepreneurship Incubation Program (EEIP) in 5 districts of Bihar over a period of 20 months in 2013-14. EEIP aimed to create a pool of entrepreneurs, who were technically as well financially equipped, and wanted to invest in enterprises delivering rural energy services. These entrepreneurs will help plug the last-mile gaps in the delivery chain of decentralised renewable energy solutions. They will support large scale decentralised renewable energy players by expanding private sector led business and offering customised products and services to energy poor rural consumers.

## THE APPROACH

The first challenge for EEIP was to attract and identify potential entrepreneurs interested in setting up energy service enterprises in rural areas. Villgro partnered with the following organizations, which were trusted by rural communities in Bihar and had good outreach in villages:

1. Saija Finance, a popular Micro financing institution in Bihar
2. Government bodies like Prime Minister's Rural Development (PMRD) and District Administration offices
3. Bihar Rural Livelihood Promotion Society (BRPLS), also called Jeevika
4. Self Help Group institution like the Barabar Women Federation, promoted by the Women Development Corporation of Bihar

With the help of these organizations, EEIP conducted workshops to generate awareness about the potential of a renewable energy enterprise, which included options of different technologies, business models, and also arranged interactions with existing entrepreneurs.

Through these workshops, 175 potential entrepreneurs were identified. Finally, 13 entrepreneurs opted to set up energy enterprises. Of these, 9 are individuals and 4 are village organizations.

Villgro then conducted entrepreneurship and skill development workshops with these entrepreneurs equipping them to run their enterprises and understand solar technology better. Of the various entrepreneurial options discussed with the trainees, the following 3 were chosen:

a) Solar Charging Stations (SCS) for Lantern Recharge: Each SCS came with 50 individual lanterns, which could be recharged every day by an attached solar panel. Entrepreneurs could rent

the solar lanterns to customers for a fee.

b) Solar retailers: Solar retailers could provide customers with a wide range of solar products depending on their needs.

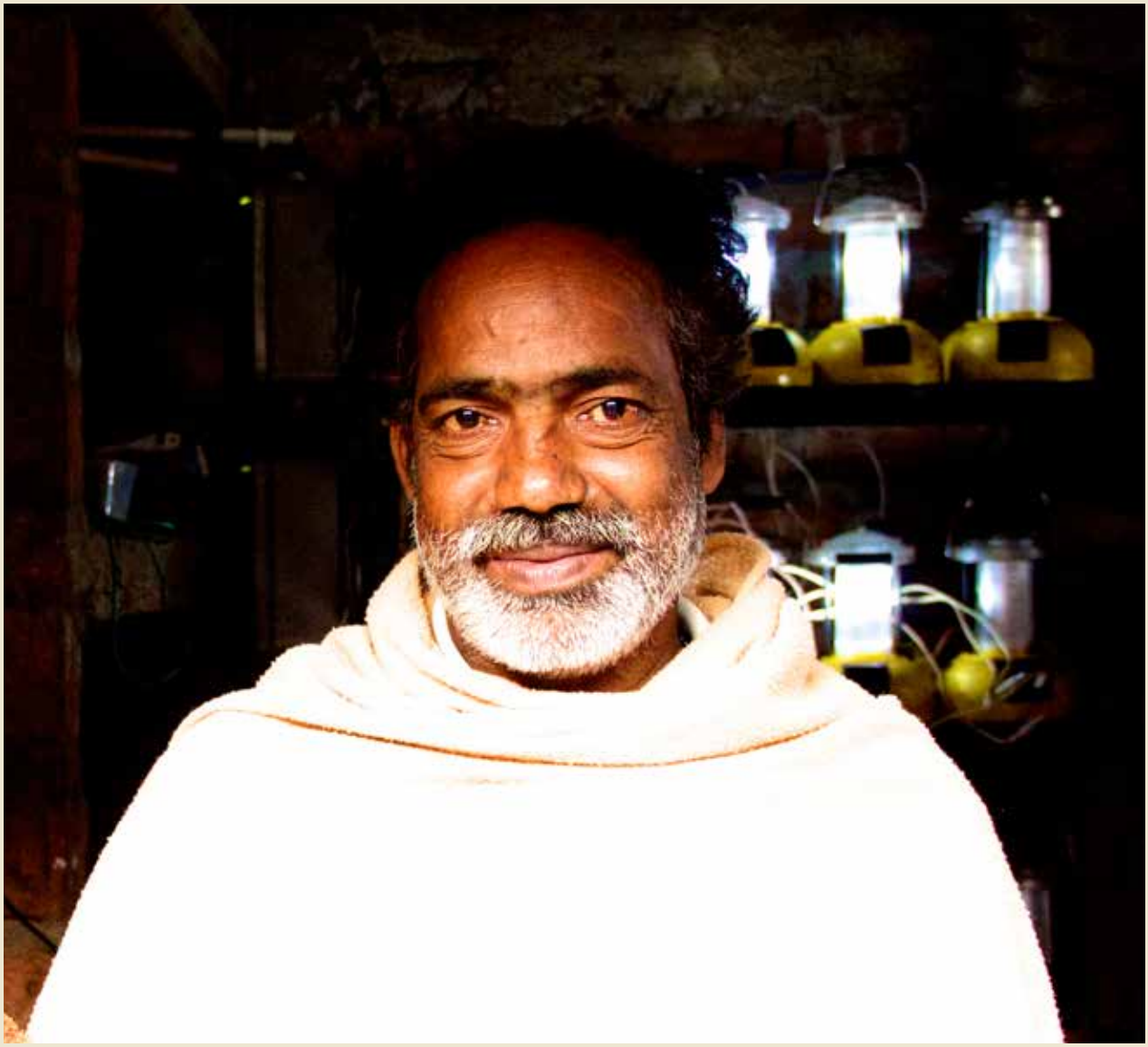
c) Solar mini-grids: Each Solar mini-grid could provide two lighting points and one mobile recharging point to 40 homes in the range of 250 meters. Entrepreneurs could charge customers for this service.

Thereafter Villgro connected the entrepreneurs with energy technology providers (like TERI, SELCO, Minda NewGenTech, D.light, Thrive, Orb) based on the kind of enterprise they were interested in.

Villgro also helped the entrepreneurs secure loans, where required, from MFIs like Saija finance. Subsequently, Villgro also supported and guided the entrepreneurs continuously over a period of 3-4 months until the entrepreneurs were ready to be completely independent.

Read further for more details on each of the 13 social enterprises set up and incubated by EEIP.

# FROM SHOPKEEPER TO COMMUNITY 'LIGHT KEEPER'



Vijay Shah, 47
Kashmar Village, Saran District

Vijay Shah, lives with his wife and three children. When he was younger, he worked as a tempo driver, but fed up of spending all his time on the road, he started working with a marriage tent supplier. A few years later, with his family growing, and needing a stable income, he took a loan for Saija finance to open a grocery shop.

Like most villages in Bihar, Kashmar struggles to get regular and reliable power supply. Most inhabitants spend their evenings in the pools of light cast by kerosene lamps. Those who can afford it, pay the diesel generator owner for some electricity in the evenings. "Not everyone could afford to pay Rs. 150 per month for each light. That too, the generator runs only for 3 hours in the evening," says Vijay.

## BETTER QUALITY OF LIGHT

In February 2013, through an executive of Saija finance, Vijay got to know about Villgro's EEIP. After attending one of the awareness training workshops, he felt confident that here was a way he could make money and serve the community at the same time. He was most interested in the Solar Charging Station (SCS) option, which was manufactured and installed by TERI. "These solar lanterns are 100 times better than an ordinary kerosene lamp. It gives much better quality of light. It costs lesser, runs longer and doesn't give out toxic fumes. All in all it's a winner," says Vijay.

EEIP then organised a field visit to Nevada district, where TERI had already sold and installed a few Solar Charging Stations. Any doubts that Vijay had were soothed after he saw the enterprise and met the entrepreneur.

He decided to take the plunge and invested Rs. 15000 from his savings towards purchasing the equipment. Villgro helped him secure the remaining amount as a loan from Saija finance and placed the order with TERI on his behalf.

## 'WORTH EVERY PENNY'

When the Solar Recharging Station arrived in Kashmar there was a lot of excitement in the village. Yet, it took time and effort to generate demand. Vijay came up with plan to showcase his product: "At 4 am, I walked out with 10 solar lanterns in my hand towards the village tea stall. Immediately, shopkeepers and farmers who leave home at the same time saw the product and started to ask me about it. I gave the 10 units away for trials. On the same day I got 10 regular customers."

Vijay charges his 35 regular customers Rs. 5 per day for each solar lantern. He keeps 15 remaining solar lanterns on stand-by for one-time customers who may require lights for an occasion or an emergency. He explains,"I am able to charge these customers between Rs. 10 and Rs. 20. These 15 standby solar lanterns bring me more money by the end of the month, than the ones I hire out every day."

Vijay's first customer Mala Devi says, "You can't help but fall in love with this light. It has made such a difference to our lives. We can even work early in the morning, before sunrise. It's dependable. It's completely worth every penny. I can't survive without this lantern anymore."

> "Knowing that I will make at least Rs. 6000 a month has given us a sense of security that we have never experienced before. With the grocery store there's no guarantee on how much you will make at end of the month, so we had to constantly negotiate with life."

The most positive impact has been on the village's children. Most of the children in Kashmar are busy with family chores in the day and end up studying in the evenings with the aid of a kerosene lamp. Vijay says, "Education is key for my community to uplift itself. Now with the clean bright light of the solar lanterns the children are able to study

better. This gives me a lot of joy."

The business has brought some much-needed financial stability for Vijay and his family. "Knowing that I will make at least Rs. 6000 a month has given us a sense of security that we have never experienced before. With the grocery store there's no guarantee on how much you will make at end of the month, so we had to constantly negotiate with life."

Vijay hopes to purchase one more Solar Charging Station this year after he had repaid his loan to Saija. He has also been able to motivate two other entrepreneurs, Manish Kumar and Kameshwar Prasad, to join EEIP. "I am so glad I have been able to encourage two other people join EEIP. It is of course helping them earn a living, but more importantly more lives are getting touched by solar power,"says Vijay.

Vijay Kumar and his wife next to their Solar Charging Station

# A SECOND CHANCE AT HOME AND BUSINESS

Kameshwar Prasad, 46
Taraiya Village, Saran District

Kameshwar Prasad with his solar panel

Kameshwar Prasad worked as a tempo driver for most of his life while his family lived in his native village of Taraiya, in Saran district, Bihar. Decades spent on the road picking up and delivering commercial goods all over Bihar had left him little time for his family; four of his daughters are now married and have moved out of home.

After a serious accident in January 2014, Kameshwar quit this job and decided to spend more time at home with his ever growing family. Hoping to build a sustained source of income, he invested his lifetime savings of Rs. 100000 in a trunk and steel cupboard making business. Although he got a lot of orders in summer, the earnings started to dwindle post the wedding season.

> "Summers are a busy time in these parts. All the weddings happen in the summer plus there are some important festivals during that time. I think even these 50 units won't be enough then."

## GAUGING MARKET POTENTIAL

Kameshwar then heard about Villgro's Energy Entrepreneur Incubation Programme from his relative Vijay Shah, who had joined EEIP and was running a Solar Charging Station in Kashmar village in the same district. Considering the electricity situation in his village he knew that the rechargeable solar lanterns were bound to have a market. Power supply in Taraiya is unreliable and sporadic at best.

With support of Villgro and Saija finance, Kameshwar conducted an initial survey to measure the viability of the product. With a large market just a kilometre from his home and 500 odd households in the village, he got a positive response. Kameshwar says, "Households here spend Rs. 8-10 per day on kerosene to light their lamps. These lamps burn only for 3-4 hours and give very poor quality light. Whereas, here was a product that could be used in 3 different modes depending on the requirement and could provide light for up to 10 hours when fully charged. People were very excited when I told them about it."

Convinced of its potential he decided to join EEIP. Villgro helped Kameshwar open a bank account

and apply for a pan card. Once the documentation was in place, Kameshwar invested Rs. 15000 as the minimum deposit money towards the business. Villgro helped him secure the rest of money through a loan from Saija. Villgro also placed the order with TERI for the Solar Charging Station on Kameshwar's behalf. Once the payment was done, TERI installed the unit in October 2014.

## BUSINESS IS BOOMING

For the first three days, Kameshwar gave the solar lanterns for free on a trial basis to shops in the market. It worked as a marketing strategy, because it helped spread the word in the village about the new product. Thereafter he started to charge Rs. 7 per unit per day.

The demand for the units has increased steadily over the months. On an average Kameshwar rents out 25-30 units a day. Over and above this, when people hire lights for an occasion or emergency, he charges them Rs. 15-20 rupees per light, depending on the requirement and the client. "It has given the villagers a safe, clean, dependable and economical source of light. Once you use it, you can't go back to using a kerosene lamp."

The new business assures Kameshwar an income of Rs. 6000-7000 a month, which is what he used to earn as a driver. "It is for such small amounts of money that people migrate to cities and leave their families and homes behind. I am now able to do it from the comfort of my home,"he says.

He is confident that business will pick up even more in the summer months when the demand is more and the power supply is further stretched. "Summers are a busy time in these parts. All the weddings happen in the summer plus there are some important festivals during that time. I think even these 50 units won't be enough then."


Kameshwar Prasad with his family

# A YOUNG ENTREPRENEUR SEES A NEW OPPORTUNITY

Manish Kumar, 25
Kharika Village, Saran District

Manish Kumar is a young entrepreneur who runs a telecom services shop in the main market of Kharika. When Manish heard about the Solar Recharging Station installed in neighbouring Kashmar from one of his customers, he immediately recognized the opportunity. Given the abysmal state of electricity supply in his village and neighbouring areas, this was a business with huge potential to grow.

## A SUITABLE ENTERPRISE MODEL

Manish contacted Vijay Shah who had brought the Solar Recharging Station to Kashmar and expressed his interest. Vijay Shah told him about EEIP and the support being offered to entrepreneurs.

Manish and Vijay then attended a workshop at Hajipur, which gave him more information about the product and what Villgro was trying to achieve. "The workshop taught me a lot. I realized that here was not just an opportunity for me to make money, but an opportunity to provide a crucial service to my society and it has the potential to touch many lives," says Manish.

He also understood that the solar recharging station was easy to run and maintain, which was an enterprise model that suited him. Even in his absence, anyone in his family can plug in the solar lanterns in the day for recharging. "It is a business that doesn't need a lot space or time. At the same time demand for reliable lighting will always be there," he adds.

To start the enterprise he raised Rs. 15000 himself and Villgro helped in securing a loan from Saija Finance for the remaining amount. Villgro also helped him the documentation process. He says, "I have always believed that you should not let go of a good opportunity. And this, without doubt, was a great opportunity."

Manish understands the significance of having a dependable source of light. "People used to keep activities in the night to a bare minimum. A product like this allows people to increase their hours of work and as a result helps them earn more for a living. All in all it can help change the fortunes of a community."

Unfortunately the particular unit that was delivered to Manish had a technical problem, which he realized soon after the delivery. However, he was impressed with the EEIP team's responsiveness. They got the unit picked up almost immediately and he is now waiting for the new unit to arrive from Delhi.

"Having worked in a technical field, I know that things like this can happen. The good thing about EEIP is that they train us for basic trouble shooting and technical understanding of the equipment. Hopefully once I get my new unit I can start renting out the units soon. I am confident that I will be able to rent out at least 20 units from day one. People have already booked them with me. I can't wait to start!"

Manish Kumar standing next to the solar panel of a Solar Charging Station

# THE LIGHTWALA FAMILY

Shivshankar Rai, 28
Harbanspur Village

Shivshankar Rai with his customers

Shivshankar Rai is the father of three children under the age of 10. He used to work as a marble polisher in a marble trading company in Mumbai. But when two other workers in the company died on the job and their families received no compensation, he decided to return to his village and start farming on a small piece of land that he owned. "Life as a farmer is tough, but not life threatening", he says.

His village, Harbanspur, lies in the floodplains of the river Ganga. Land here is fertile but every monsoon when the river swells up, a lot of the crop gets damaged. With a young family and only a small piece of land in his name, Shivshankar constantly struggled to make ends meet. He says,"I never had any money. Whatever money came into my hands disappeared before I knew it."

## A HEALTHIER OPTION

It was through Saija Finance, from whom Shivshankar had previously taken a loan,that he got to know about Villgro's EEIP. He attended one of the awareness training workshops in Hajipur and learnt about the various Energy Enterprise options that they were supporting.

Living in a village of 1,400 households that have no electricity connection, Shivshankar immediately realised that the Solar Recharging Station business option would have immense potential in his village. He knew each household was spending a minimum of Rs. 200 - 250 on kerosene oil to light their lamps. The fumes from the kerosene lamps also made the children sick very often, and families were spending additional

> "For a village like ours that doesn't have any electricity, solar is the reliable solution."

money for doctors and medicines every time. He explains,"When you use a kerosene lamp, the fumes it expels are toxic. If you sleep with it on, the next morning you have thick black soot in your nostrils. No wonder our children were falling ill so often."

For Shivshankar, the first hurdle was to raise the minimum investment money of Rs. 15000. Seeing Shivshankar's interest and the potential for the product in his village, Villgro decided to let him pay this minimum investment amount over a period of a month. They also ordered the equipment for him and helped him raise the remaining money from Saija finance.

Being illiterate, Shivshankar had to create an innovative system to rent out the systems to permanent customers and keep a tab on which unit has been taken by whom. He requested his customers to bring along two passport size pictures. One of them he stuck at the bottom of the solar lantern and the other he stuck in his register. He now hands the solar lantern to the person based on the image at the bottom of the map and puts tick marks next to their photos in the register so that he can keep a tab.

Charging Rs. 5 for per solar lantern per day, he is now able to make Rs. 6000 -7000 from the solar lights. With this stable income coming in he has also been able to start a small grocery store at home and purchase a flour mill that runs on biogas. He has also been able to buy a small piece of land where he now grows vegetables. He says gratefully, "These lights are the Goddess Lakshmi for us. It has helped my family find financial stability and security, which we have never experienced before. I never used to have any money with me. Nowadays, I always have some cash in my pockets. I can't thank God enough for all this."

Village children studying using a solar lantern

## GODDESS LAXMI AT HOME

In a village that has never had any dependable source of lighting, the arrival and installation of Shivashankar's lantern recharging unit created a buzz of excitement. For the first 2 days he gave the units for free on a trial basis. He says, "Once people experienced the clean and bright light of these solar lights, they began to book it in advance. Many of my customers prefer to pay monthly, so that their bookings are secure for a whole month."

The impact the enterprise has had on Shivshankar and his family is evident immediately. In the evenings, his home is a buzz with customers who have come to pick up the solar lanterns, some to buy supplies from his grocery store and others who need their wheat ground. His wife Minti Devi can't hide her pride. She says, "Now everyone in the village and even nearby villages knows us. They call us the lightwala family. Makes us feel very proud."

Shivshankar wants to continue his quest with solar power and bring other products into his village. "For a village like ours that doesn't have any electricity, solar is the reliable solution."

He also recognises that this business can have an impact on many lives. "I don't think there is anything better than illuminating the lives of people. If someone is poor and they need the solar light for an emergency, I don't even charge them. Through these solar lights I have also gotten to be a part of people's celebrations when they hire them for weddings, and other occasions. What can be better than that?"

# A VILLAGE TEACHER SEES A BRIGHTER FUTURE

Harendra Das, 30
Diwantok Village, Vaishali District

Harendra Das standing next to the solar panel of his Solar Charging Station

Harendra Das is a teacher at the government school in Diwantok village of Vaishali District, Bihar. Not far from the banks of Ganga, surrounded by banana plantations and wheat fields, Diwantok is a large village with 3000 odd families. Like most families in his village, Harendra Das also comes from a family of farmers. A university graduate, he joined the Bihar State Teaching Service in 2003. He teaches Maths, Science and Sanskrit language at a government-run school in the village. With no electricity connection in his part of the village, most of his community depends on kerosene lamps for their lighting needs after sunset.

## CONTINUED SUPPORT

When Harendra heard about Villgro's EEIP from one of Saija's Executives, he wanted to find out more. He attended one of the awareness workshops conducted by Villgro and went on a field trip to Nevada district where TERI had successfully installed four Solar Charging Stations. Meeting the entrepreneurs in Nevada and seeing the demand for the products, Harendra Das decided to join the programme.

He then attended training workshops organized by Villgro on financial management, maintenance of equipment and troubleshooting. "These sessions helped to remove any fears and doubts I had about the financial feasibility of the business model or its technical aspects. Even after the training I have continued to get support from the Villgro and their partners," he says.

Harendra invested Rs. 15000 from his savings towards the purchase of the Solar Recharging Station Unit; Villgro helped him raise the rest of the amount from Saija finance.

## 'PEOPLE RESPECT ME NOW'

There was a lot of excitement within the community when Harendra told them about his new venture. The villagers looked forward to having a clean, reliable and economical lighting option. On the first day, he gave a few units for free to his friends and family on a trial basis. He also gave some to shopkeepers in the village, so that more people could see the product.

"The villagers immediately observed that the solar lanterns were far superior to the ordinary kerosene lamps and far more economical. Where they had to spend Rs. 10 - 15 on kerosene per lamp per day, now they had a better product for one third the price." Within the first 10 days of setting up the system, all 50 solar lanterns were getting rented out.

This venture has helped Harendra Das have an addition source of income. But it's the teacher in him that is overjoyed at seeing the progress his students are making in their studies. He says proudly, "I can see a clear improvement in some of my students who hire the solar lanterns from me. Darshan Kumar, who previously used a kerosene lamp to study, struggled to do his homework and read at home. Now he is one of the best students in class. That one solar lantern has become a tool for him to secure his future."

The villagers are effusive in their gratitude for Harendra Das for starting this enterprise. Other than the children using the solar lanterns to study, the adults in the village are able do a lot more work after dark. "I was already well known in the village because I am a teacher in the local school. But now people respect me. You can't put a value on that," says Harendra Das.

Seeing the impact that the solar lanterns have had on the lives of the villagers, Harendra Das plans to buy one more unit in a few months. "Seeing the current condition of electrical supply in Bihar and the cost of kerosene oil, I feel that the potential for such an enterprise is immense. Other than an opportunity to make money as an enterprise, it's also an opportunity improve people's lives," he says.

Harendra Das next to his Solar Charging Station

# A FARMER TURNS ENERGY ENTREPRENEUR

Pintu Shah, 23
Diwantok Village, Vaishali District

Pintu Shah with family

Pintu Shah comes from a family of farmers. His village is not too far from the banks of the mighty river Ganga that governs all aspects of life in these parts. Although the villagers get displaced every monsoon due to the village's proximity to the river, the fertile land here gives them very good yields. Most of villagers, including Pintu Shah and his family, cultivate bananas. Other than farming, Pintu's family also runs a small grocery store in their home, which provides daily supplies to the villagers.

Living in a joint family of 10 members, Pintu is always looking for new sources of income. When Harendra Das started the Solar Recharging Station in another part of the Diwantok village, Pintu immediately saw its business potential. His part of the village, although connected to the grid, only got 6-8 hours of electricity on a good day. He then also met Shivshankar Rai who was running a Solar Charging Station the neighbouring village of Harbanspur.

## BUSINESS POTENTIAL

Through Shivshankar Rai, Pintu got in touch with the Villgro EEIP team and attended their workshops. Convinced by the potential of the enterprise, he enrolled himself to be a Solar Charging Station entrepreneur. He then invested Rs. 15000 towards the purchase of the equipment and Villgro helped him raise the remaining amount from Saija finance.

## A SIMPLE, FLEXIBLE BUSINESS MODEL

The villagers of Diwantok welcomed his initiative. With 3,000 households in Diwantok with poor to non-existent electricity supply, the need for such a product was immense. "As soon as it was confirmed that I would get a unit, the villagers were very excited and waited anxiously for its arrival."

Pintu was able to rent out all 50 units in the first week. Today, he has 40 permanent customers who pay him a monthly fee of Rs. 150 and he is able to make Rs. 6000 per month from renting out the solar lanterns. In addition to this, he keeps 10 units on stand-by in case someone comes to him in an emergency or for an occasion. In such instances, he charges Rs. 10 per unit. He explains that even at that price his enterprise helps members of the community save money.

"Previously people would hire a generator if there was a wedding in the family. A generator costs at least Rs. 3000 a day. Now people have an option of hiring 10 or 15 solar lanterns from me. Even if I charge them ten rupees per solar lantern on such occasions, they only spend Rs. 150. So it is a financial gain for them too."

Most of Pintu's customers use the lights at home, primarily to help their children study. Before these solar lanterns, most villagers used kerosene lamps or homemade lamps using kerosene in a bottle with a wick, known locally as a dibri. "In the poor light of a dibri, children really struggled to read and write and women struggled to cook. The fumes from these lamps also caused a lot of health issues. Now the people in my village have a dependable, economical, healthier, brighter option. Why won't they choose it?"

Pintu Shah next to his Solar Charging Station

In addition to giving the villagers access to clean, affordable energy, this business model has proven to be simple for rural entrepreneurs. It needs a commitment of only 2-3 hours a day and can be run out of a small space, by anyone. Pintu says, “Sometimes when I have to travel to the city to get supplies for our grocery store, even my nephew or my wife can take care of charging the lanterns. It’s so simple.”

For Pintu Shah, the solar lantern business has also helped the business of his grocery store. “A lot of times when people come to collect the solar lanterns, they also end up buying other supplies from us. Our monthly sales have clearly increased after starting the solar lantern business,”he says.

Pintu hopes to get another unit, once he has paid off his loan to Saija. With over 3000 households in his village alone, he feels confident that there will always be demand for such a product. “Each household in my village needs a product like this. The potential is immense if I consider other neighbouring villages nearby, where there is no electricity supply whatsoever.”

Pintu Shah in his grocery store

# A YOUNG PAINTER STRUGGLES TO FIND AN ACCEPTING MARKET

Aarti Kumari, 21
Kasiyarna Village, Madhubani District

Aarti Kumari with solar products

Aarti Kumari lives with her mother and three siblings in Kasiyarna village, which is nestled near the grand ruins of the Rajnagar Palace. “Rajnagar used to be the administrative hub for the king of Darbhanga who ruled over most of North Bihar. Our family has always lived in this village. I am told that my great grandfather work as a gardener for the king.”

Aarti Kumar is a university graduate and also a Madhubani painter. She got to know about EEIP through her mother, Sudamma Devi, who is a community coordinator for Bihar Rural Livelihood Promotion Society (BRPLS) also known as Jeevika. EEIP collaborated with JEEVIKA in the Madhubani district to identify and develop a network of entrepreneurs in the local community.

At the time, most households in the village depended on kerosene oil lamps, spending Rs. 250 - 300 per lamp on kerosene oil. Richer families paid Rs. 100 per light per month for three hours of diesel generator electricity in the evening. In addition to this, families also spent on getting their mobile phones recharged. “The shops in the market charge you Rs. 5-10 rupees to charge the mobile for an hour. Today, everyone has a mobile, but without electricity, everyone easily ends up spending another Rs. 100 per month just to charge their phones. You can’t help it, otherwise you will be cut off from the world,” says Aarti.

## RETAILING HAS ITS CHALLENGES

Aware of the problems faced by the community due to poor electricity supply, Aarti was inspired to be a part of the programme. She says, “When I got to know about EEIP, our village used to get 5-6 hours of electricity a day. On most nights there was no electricity. So when I got orders for my paintings, I would have to work in the day as Madhubani is very delicate work and you need enough light. But my studies used to suffer, as you can’t study for very long in the poor light of a kerosene lamp.”

After assessing the needs of their village and Aarti’s and Sudamma’s reach within the community, Villgro advised Aarti to become a Solar Retailer under the EEIP. She became a business associate for Selco, which was promoting its individual home lighting system in this area at the time. This system provided two LED lights and a mobile charging point for each household with a solar panel. Aarti was able to sell 20 units in a span of 6 months.

"The good thing about working for Selco was that they were flexible with receiving the money in installments. This made it possible for people to buy the product. Otherwise for people to shell out Rs. 7900 in one go would have been difficult," she says.

However, in October 2014, Selco decided to shut down their operations in this part of Bihar, as they were not able to make the number of sales they had projected. EEIP then helped Aarti by connecting her with another technology partner, D.light, which provides solar lights for varying needs in a wide range of prices. Aarti felt that these products – which start at Rs. 500 – would be easier to sell. She purchased inventory worth Rs. 27000 in November 2014; however, she was able to sell only one solar light until January 2015.

She says,"People see the product, but don't buy it. One of the main reasons for this is that the power situation in our village has improved considerably since last year. We now get 16-18 hours of electricity a day. Plus, there are a lot of rechargeable Chinese solar lights in the market, which are much cheaper. People refuse to understand that the D.light products are far superior and come with a two-year warranty."

The other challenge that Aarti faces is social. As her marriage is currently being arranged by the family, she is not allowed to interact and meet people on her own. "When you live in a village, there are some restrictions that are put on young girls, especially those of a marriageable age. I have to function in this society and have to live by its rules," says Aarti's mother Sudama Devi.

Aarti is aware of the potential for such an enterprise and that she needs to tap into new markets, where the demand is more. "An additional source of income is always welcome in our family, with my siblings still studying and expenses always mounting," says Aarti.

She wants to go to nearby villages that are still off-the-grid with her mother and give demonstrations about the products. She says, "After I get married, I will have to move away from this village, so I am trying to get my mother involved in the business now. With her network within the community thanks to Jeevika, I hope we are able to sustain this enterprise and do some good for the society at the same time."

Aarti Kumari with her mother, Sudama Devi

# AN AFFLUENT FARMER EXTENDS HIS COMMUNITY WORK

Amarendra Kumar, 56
Umanbigha Village, Gaya District


Solar retailor, Amarendra Kumar

Amarendra Kumar is from an affluent and respected farming family. With his children working and studying outside Bihar and trusted staff taking care of the farms, Amarendra felt he could do more with the time he had on hand.

He heard about EEIP through a relative in Jahanabad and attended one of Villgro's awareness training workshops. Having led the campaign demanding electricity supply in his village for many years, Amarendra realized the significance solar energy can play to electrify rural India. Although his village finally got electricity six years ago due his efforts in negotiating with the local government, the electricity supply was still only for 5-6 hours on an average per day. Villages nearby didn't have any electricity supply. The condition was dire and it needed an out-of-the-box solution. Amarendra was convinced that solar energy would be the answer.

## JOINING EEIP

Amarendra conducted a survey in his and other neighbouring villages and spoke to people about solar products and their advantages. Encouraged by the positive response, he decided to become a solar retailer under EEIP.

Villgro helped him set up a meeting with the dealer of solar lights called D.light. They had a range of products from Rs. 500 to Rs. 2000, fitting everyone's budget. In addition they also gave a two-year warranty on their products. He made an initial investment of Rs. 35000 towards inventory. He says, "The money didn't pinch me as I didn't have to invest in a shop. I could run this retail store from the spare room in our home. Everybody in the village and neighbouring villages knows my place."

Amarendra initially invested time in holding meetings at his village giving demonstrations about the product. He also distributed pamphlets displaying the entire product range to villages nearby. This paid off. Since he officially started his business in September 2014, he has been able to sell at least 25-30 units per month. During the Diwali festival season, he was able to sell over 55 units in a single month. He says, "What has helped is the range of quality products, which are made in India, and available in the market. These are not fly-by-night operators like the cheap and flimsy imported products with no warranties, which had flooded the market a few years back. These are good quality products to suit every pocket."

## IMPACT

For Amarendra Kumar, this business is much more than the additional income it brings him every month. Coming from a family that has always worked for the welfare of his village, this work allows him walk in the footsteps of his father, who did a lot of community work. “Darkness makes you vulnerable in so many ways. It hinders progress. It can make you hopeless. It is only when you have experienced life in darkness that you can appreciate what a reliable source of light can do for a family, for a community.”

Amarendra Kumar with a customer in his solar retail shop

# A COLLEGE GRADUATE DREAMS BIG


Ash Narayan Jha, 42
Kachua, Darbhanga District

A graduate of Patna University, Ash Narayan Jha started his career as a sales and marketing executive with an FMCG company in 2000. Being in sales, he travelled extensively in Bihar and met people from different walks of life. “Those travels were a great education for me. It made me aware of the various issues faced by people in Bihar. One of the most common problems everywhere I went was the shortage of electricity.”

He realized that, like his village, there were thousands of villages across Bihar that were not even on the grid and even those that were got a few hours of electricity in a day. Millions of families in rural Bihar depended on the polluting kerosene oil lamps or home-made lamps called dibris, which provided very poor quality light and were at times very dangerous. He wanted to do something about it, but didn’t know where to start.

In 2010, Ash came across an ad by Thrive Solar Energy, which was looking for sales executives in Bihar. Thinking this could be the opportunity he had been waiting for, he immediately applied for the job and was soon hired. As part of his training Ash had the opportunity to visit Pagadipilli, one of India’s first solar-powered villages, located in the state of Andhra Pradesh. He says, “When I visited Pagadipilli, I immediately knew that solar energy was the answer to Bihar’s energy crisis. I promised myself that, one day, I would turn my village into Bihar’s first solar-powered village. ”

Solar retailor, Ash Narayan Jha

Ash’s passion has only grown every time he has connected someone with solar energy. He says, “When I worked in a FMCG company, the impact that the product made on a customer’s life was limited. But now I was literally lighting up people’s lives. I was improving the quality of their lives.”

## CREATING CUSTOM SOLUTIONS

When Ash heard about EEIP and attended an awareness workshop held by Villgro, with the enterprise development support on offer, he saw an opportunity to finally make his dream a reality. He quit his job at Thrive and joined EEIP so that he could give his new endeavour 100 per cent of his time.

Of the various business models supported by EEIP, Ash chose to be a solar retailer. He explains, “This model gave me maximum flexibility. Being a solar retailer, I am able to provide tailor-made solutions for each of my customers, depending on their requirement and budget.”

EEIP connected Ash with technology providers like Thrive and D-Light and assisted him in become their official retailor. Ash also sources components of other technology providers from Patna city to design and integrate solar systems based on individual customer requirements.

## ENABLING OTHER BUSINESSES

In the market where Ash runs his solar shop, he already has 26 happy customers. He has provided an LED light and fan to the local barber, Narendra Thakur, who would previously

shut shop at sundown. He says, “Now Narendra is able to work till 8.30-9 in the night, which means he is able to earn more money. Also the fan has helped in improving the overall customer experience and his job satisfaction.”

Ash has also enabled other new businesses to open in the village. “Recently a young man, Mohammed Jahangir, asked if I could give him a solar solution for a photocopy machine and a soldering machine. He was keen to open a shop but with the unreliable electricity supply in the market, he couldn’t do so,” says Ash. He provided Mohamed Jahangir a solar panel that could take the load of both the soldering iron and the photocopy machine.

Other than 26 shops in the market, Jha has also provided solar solutions to 13 households with very varying needs. Ajit Kumar Mishra, who comes from an affluent landed family in the village, can’t stop praising Ash’s efforts and passion. In his part of the village, there has been no electricity for the past 22 years because a damaged transformer never got repaired. With Ash’s help, Ajit and 13 other families were able to electrify their entire homes and run all household appliances on solar energy. He no longer needs the diesel generator that took care of his basic electrical needs for 22 years. “You cannot imagine what not having electricity does to a community,”he says. “It disconnects you from the rest of the world. It’s like living in medieval times.”

For Ash, leaving a secure job and starting this enterprise was a bold move. He has invested over Rs. 100000 of his savings towards setting up his shop and purchasing inventory from dealers but returns have been slow and sporadic. As cash flow is always a problem in rural areas, he usually has to except payments in instalments with no interest from most of his customers.

However this hasn’t dampened his spirit. He says, “Although I am not yet making enough money to sustain my family and have to dip into my savings every month, the satisfaction I get by connecting someone to solar energy is immense. This is my passion and I will continue to widen my reach and fulfill my dream of solarising my entire village one day.”

Mohamed Jahangir working with a solar powered soldering iron

# AN ORGANIZATION SCALES UP ITS IMPACT

Barabar Women Federation

BWF CEO Sunil Kumar with members of Kalanaur village

## ABOUT BARABAR WOMEN FEDERATION

Barabar Women Federation (BWF) is a community-based organization, which was set up in 2007 in the Jehanabad district of Bihar. Over the years, BWF has been at the forefront of many groundbreaking community development initiatives in this district. With a network of over 16,000 women across 22 panchayats of Jehanabad, BWF has empowered, mentored and guided women from the most socially and economically vulnerable sections of the community.

## A COMMUNITY-BASED SOLUTION

Access to electricity has been a pressing problem in many villages of Makhdumpur, where BWF operates. Many villages are without any power supply here and even those with electricity connections,have only a few hours of unreliable power supply per day. On an average, every household spends at least Rs. 150 on a single kerosene oil lamp. Other than this, every household also had to pay Rs. 5 to shopkeepers every time they wanted to charge their mobile phones. So when Villgro approached BWF about EEIP, the organization was keen to support the programme and find a community-based solution for the power crisis.

Villgro organized a workshop in Jehanabad for members of BWF, where various solutions to the energy deficit – which could also provide entrepreneurial opportunities for individuals or enterprises – were discussed. BWF decided to purchase and operate a solar micro power grid as a community-based federation. This micro grid would provide two LED lights and a mobile charging point each to 40 homes for six hours everyday after sunset. For this service, BWF would charge a monthly fee.

After some deliberation, the federation decided that this grid would be installed in Kalanur village which houses 40 families belonging to the socially and economically backward Musahar community. As a true community-based enterprise, BWF even allowed the community to fix the monthly fee for the service. The reasoning being that only when the community is part of the decision-making process will it have a sense of ownership over the micro grid. The community decided on a nominal rate of Rs. 100 per household per month.

“We are in no hurry to get back the money we invested. Our first priority is to serve the community. According our calculation, we should be able to recover the money in a couple of years and the money earned thereafter will

be seen as profit for the 16000 members of BWF," says Sunil Kumar, CEO, BWF.

Villgro then aided BWF to identify and work with the technology provider Minda NexGenTech Ltd. to install a Solar Micro Grid. Villgro also helped BWF work with the community and helped in answering any questions or concerns the community members had regarding the initiative. A series of village meetings were convened with the help of women SHGs in Kalanaur to share the idea of micro power grid and it's advantages.

## TRUE SOCIAL ENTERPRISE

This initiative has had a deep impact on lives of Kalanaur's villagers. They feel a huge sense of pride that they have been part of such an initiative and have been able to light up their village on their own terms. For the children, the initiative has ignited an interest in education. As soon as the sun sets, all the children of the village gather in one hut to study together under the bright LED lights. "They used to hate studyingwith kerosene lamps before. Now, our children are excited to study. They even help each other and encourage each other," says Asha Devi.

For BWF, this initiative has given them the confidence to run similar projects in other villages of Jehanabad. They have been recognised for their efforts and it is also giving them a lucrative model to work with and create more social enterprises.

Sunil Kumar, CEO of BWF, says, "We also give loans to our members amounting to what we have invested in the micro grid. But when we lend the money, we are only able to impact a single family, maybe 4-5 individuals. But if we look at the investment we have made in this micro grid as a loan to the community, which they are paying back at a pace that is comfortable for them, we are able to impact 40 families, which is about 200 people. Plus the investment is in a tangible asset like the micro grid, which has a guarantee of 5 years. This is true social enterprise according to me."

Seeing the impact that this initiative has had, BWF is keen to purchase and run at least 2-3 more micro grids in other backward communities. They have also been able to encourage and inspire federations in Gaya who are interested in replicating a similar model in their district.

Children of Kalanaur village studying together under solar powered lights

# A VILLAGE ORGANIZATION GETS ITS OWN MICRO-GRID

Vaishno Village Organization

## ABOUT VAISHNO VILLAGE ORGANIZATION

Vaishno Village Organization in Alichauk village in Madhubani district was formed in 2011 under the Bihar Rural Livelihood Promotion Society (BRPLS), also known as JEEVIKA. With 300 members it is one of the most active and vibrant Village Organizations (VO) in the district.

## A COMMUNITY CHIPS IN

When Villgro collaborated with BRPLS in the Madhubani district in 2014 to identify and develop a network of entrepreneurs or community-based enterprises that could supply clean energy in these parts, the Vaishno VO was one of the first to recognize the opportunity.

The president of Vaishno VO, Kavita Kumari, says, "Until last year we had no electricity connection in our village. Of the 300 households, 200 used to get three hours of electricity in the evening from a diesel generator. The generator owner used to charge Rs. 100 for each bulb every month. People would primarily use it to help their children study. But three hours weren't enough for the children to study or for the adults to finish all their chores. We used to wait for the sun to rise to do most of our work."

Kavita realized that if she could convince 40 households to make a one-time investment of Rs. 3000 each to get a solar micro grid, they could have a dependable source of light for 6 hours everyday. "Solar energy is used extensively in my parents' village. I had faith in the technology," she adds.

Through workshops held by Villgro, members of the VO were able to get a better understanding of the technology. They were also assured of maintenance services after installation and warranty of the equipment, by Minda, the technology partner.

It took over a month for leaders of the VO to generate interest, answer queries and commit to the micro-grid. However raising Rs.3000 upfront was still a challenge for most households who were interested in being a part of the initiative. The VO then decided that all 40 households who were to be connected to the micro-grid should pay a minimum advance of Rs. 500. The rest of the money was raised as a loan from the VO. The households are repaying the loan to the VO with a monthly interest of 2%. Kavita says, "By lending money to the community, it benefits both the borrower and the Village Organization. The borrower is able to enjoy a rate of interest much lower than the market rate and the VO is earning some money which can go back to the community."

## AN INDEPENDENT LIFE

"The greatest impact of the micro-grid is that we are no longer dependent on anyone else; neither the electricity board, nor the generator owner. As long as the sun shines we know we will get light for at least six hours after sunset everyday. It allows us to do more work. Our children are able to study. It is saving us money. We have only gained as a community," says Phulo Devi, a VO member.

The successful purchase and installation of the micro-grid in Alichauk village by Vaishno VO inspired two other VOs in the district to join EEIP and do the same for their villages. It has also led to increased awareness about solar energy and equipment in the village. Many houses in Alichauk have now signed up for a scheme promoted by the Bihar Renewable Energy Development Agency (BREDA) that is providing solar energy-based individual home lighting solutions at a subsidized rate of Rs.1000.

The VO is now keen to explore solar energy for pumping water in the fields. "Most of us are farmers. The community spends a lot of money on diesel for the water pumps that irrigate our fields. If we can use solar energy to pump water too, it would benefit the community a lot," says Kavita Kumari.

Vaishno VO members with Micro Grid in the background

# A COMMUNITY MICRO-GRID BRINGS LIGHT, AND RESPECT

Ram Janki Gram Sangathan

Ram Janki Gram Sangathan VO members

## ABOUT RAM JANKI GRAM SANGATHAN

Ram Janki Gram Sangathan (RJGS) is a Village Organization under the Bihar Rural Livelihood Promotion Society (BRPLS) in Chaudhrana village of Madhubani district of Bihar. This village, like thousands of others in Bihar, had only 4-5 hours of electricity supply ever day. All that changed last year.

## CROSSING THE FIRST HURDLE

In 2014, through BRLPS, this VO got to know about Villgro's EEIP. The VO members were able to visit a pilot micro-grid project that was being run by Vaishno VO in the same district with the support of BRPLS and Villgro. The micro-grid provided 40 homes two LED lights and one mobile charging point for 6 hours every day after sunset. The one-time cost to each household was Rs. 3000. Seeing how well the micro-grid worked and was being run as a community asset by Vaishno VO, members of RJGS wanted to do the same in their village.

The next step for RJGS was to convince at least 40 households in their Village Organization to buy into this model. The self-help groups (SHGs) within the Village Organization played a crucial role in convincing members of the community about the advantages of solar energy. At meetings, they explained that the same amount they spent on kerosene oil in a year would get them a reliable, clean, safe source of energy. However, the biggest hurdle for most families was raising Rs. 3000 up front. Mina Devi, a member of the RJGS VO says, "We then decided adopt the same strategy as Vaishno VO and raise the money from the Village Organization, which the households could pay back with interest."

## HOMES BECOME SAFER

The impact of this initiative is evident. There is a sense of pride among villagers that they have a reliable source of lighting. "We are no longer the village that is always in darkness. People from other villages have even visited us to see how it works and they now wish they had joined the initiative too. People talk about our village with respect now," says Mina Devi.

For the villagers, the micro-grid has eased their lives manifold. Children in the village are able to study with a lot more ease under the bright light of the LED bulbs. Households are also able to save money that they used to spend on kerosene or on recharging their mobile phone batteries. They also feel much safer now that they are able to see clearly even after sunset. “Earlier, there was always the danger of insects or rodents entering our homes and biting us in our sleep or stray dogs stealing our food. Now we can at least see things clearly even after sundown and keep our children safe,” says Mina Devi.

For Gulab Devi, the village teashop owner, the connection to the micro-grid helped her increase her sales. “I am able to cater to customers even after sunset. People passing by, even after dusk, now stop for tea because my shop is well-lit. My shop has become a convenient meeting point for people not just from my village but also nearby villages,” she says.

Village tea shop owner, Gulab Devi

# A VILLAGE'S MICRO-GRID HELP ITS CHILDREN STUDY BETTER

Mithila Village Organization

Mithila VO members with Micro Grid

## ABOUT MITHILA VILLAGE ORGANIZATION

Mithila Village Organization is one of the two village organizations in Palivar village in the Madhubani district of Bihar. Surrounded by sugarcane fields, Palivar's power story is similar to that of many surrounding villages. "Until last year, we used get only 1-2 hours of electricity a day. Sometimes there was no electricity for days. It really affected every aspect of our life. Our children struggled to study, we couldn't do any work after sundown, and the fumes from the kerosene lamps used make our children ill," says Chandrakala Devi, the treasurer of the VO.

## COMMUNITY LEADERS PERSEVERE

Then, in May 2014, Mithila VO got to know about Villgro's EEIP through BRPLS and heard about the micro-grid installed in Alichauk village under this programme. Fed up with their power situation, members from the VO visited Alichauk. Seeing the impact of the micro-grid in Alichauk, they immediately expressed their interest in being a part of EEIP.

However, convincing the villagers that the advantages of getting the micro-grid far outweighed the cost was an uphill task for the office bearers. Most villagers weren't ready to pay the one-time cost of Rs. 3000 for this service. The VO then decided that they would offer the service at Rs. 2000 and take the rest of the money from the VO fund. "We were convinced that our community needed something like this and we were ready to figure out a way to bring the micro-grid to our village at any cost," says Chandrakala.

## SUNSETS NO LONGER HALT ACTIVITIES

The villagers are thankful for the efforts of the VO leaders. Sonawati Devi feels that she is able to accomplish a lot more in day now. "Earlier, we had to restrict our activities after sunset. We used to even try and cook before nightfall, so that we could see what we were doing. Now with the light, I can do more work everyday. My monthly savings have also gone up."

The biggest advantage of the micro-grid, according to Chandrakala, is that the children are taking more interest in their studies. She

says, “Earlier, there would be no electricity on most evenings, which meant that the children had a ready excuse to not study. They really struggled to study in the low light of kerosene lamps; it was such a strain on their eyes. Now they all look forward to the bulbs going on at sunset, so that they can study.”

Her son Pankaj Kumar admits that he is enjoying his studies a lot more now and his teachers have taken notice of this. He says, “Thanks to the light, my brothers and I study together every evening and encourage each other. My teachers are impressed with my progress and say that, at this rate, I can score well in my Class X exams. I hope I can.”

Pankaj and his brothers studying together under solar powered light

Sonawati Devi cutting grass after sunset under solar powered light

# CONCLUSION

While the case studies showcase entrepreneurs who have successfully set up energy enterprises in Bihar, the Villgro EEIP has learnings that future initiatives in the area of energy enterprise incubation should keep in mind while designing programmes. Some of the challenges that EEIP experienced in discovering and nurturing micro entrepreneurs, mid course corrections adopted and learnings are listed below:

### ENTREPRENEURS APPREHENSION GRID EXTENSION AFFECTING THEIR BUSINESS PROSPECTS

Entrepreneurs are wary about setting up energy enterprises in rural areas, as they feel that grid extension will spoil business. In order to build confidence in potential entrepreneurs, the incubator needs to provide a realistic estimation of the probability of grid expansion, its likely effect on the business, and the risk mitigation factors the entrepreneur can include in the business model.

### FRESH GRADUATES AND TRADITIONAL ENTREPRENEURSHIP DEVELOPMENT CHANNELS NOT THE BEST SOURCE FOR DISCOVERING POTENTIAL MICRO ENERGY ENTREPRENEURS

Many youngsters see micro entrepreneurship as a stop-gap arrangement for income generation before moving into more secure jobs. Hence, businesses that require larger investments have no takers. EEIP soon realised that the 'ideal entrepreneur' may not be a youngster starting out on a career but a person who already has a reason to continue living in a village, for whom this activity becomes a source of additional income. In line with this, community owned systems more likely to succeed even though they don't conform to entrepreneurship in the true sense.

The above realisation also led to EEIP shifting from using traditional channels like MSME entrepreneurship development programmes, institutes with programmes in entrepreneurship, employment exchanges, etc. as sources for discovering potential entrepreneurs and looking at MFIs and local organizations with strong links with the rural communities to provide links to potential entrepreneurs.

### LOCAL PARTNERSHIPS CRUCIAL FOR BUILDING CREDIBILITY FOR THE PROGRAMME

The methodology adopted by EEIP during the early stages of the project was to create awareness among a large group of potential micro entrepreneurs and then select promising entrepreneurs from this group. However, EEIP realised that a programme being implemented by 'outsiders' did not have enough credibility in the eyes of the potential micro entrepreneurs in the rural areas. Thus, an intermediate partner who is active locally (especially one who can also provide finance) was crucial to success.Future programmes could start by developing partnerships with local institutions - ideally MFIs / SHG Federations/institutions that have existing network in the target areas and can bring in the financing and then use their networks to discover the entrepreneurs.

### MICRO ENERGY ENTREPRENEURSHIP REQUIRES PATIENCE, HANDS ON SUPPORT

Incubation of micro entrepreneurs requires rigorous and hands-on support on all fronts of enterprise development viz., technology, entrepreneurship, moral support, etc. and is time consuming. Thus, a large field presence (either directly by the incubator or by building suitable partnerships at the field level) is required for success.

EEIP also realised that a programme to develop micro entrepreneurship among first time entrepreneurs in underserved areas requires a longer gestation period to build confidence among all stakeholders before the actual implementation can begin. Potential programmes being planned in this area needs to keep in mind that the time required for such a project is longer than what a standard business incubation activity would require.

## BUY-IN FOR THE PROGRAMME FROM TECHNOLOGY PROVIDERS CAN IMPROVE SUCCESS RATE

The methodology adopted by EEIP was to identify potential entrepreneurs to sensitize them on rural energy market opportunities specifically around technology, operations, financing and enterprise creation aspects. The entrepreneurs were free to select the technology, business model and the technical partner (supplier). This approach gave the potential entrepreneur the flexibility to decide on which technology and partner she/he wished to take up depending on their financial capacity and suitability of the technology to the area, however, it resulted in technology providers showing lesser interest in the programme as they were not assured of business by putting in efforts. Future programmes should consider partnering with a couple of technology providers, both for funding and implementation responsibility, right from the beginning.

Shakti Sustainable Energy Foundation works to strengthen the energy security of India by aiding the design and implementation of policies that support energy efficiency and renewable energy.

Villgro is India's oldest and foremost social enterprise incubators, supporting innovators and social entrepreneurs during their early stages of growth. Since 2001, Villgro has incubated 103 such enterprises, generated around 4000 jobs, secured Rs. 873 million in follow-on funding, and touched over 6.8 million lives.

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