

Solar Mamas Engineer Energy Security

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Down-to-Earth Village women receive training for testing and wiring solar devices in Tilonia, Rajasthan Hema Yadav

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To buck migration, the Barefoot College has turned to mothers and grandmothers to light up villages

Satabhaya village, in Kendrapada district of Odisha, is barely 65 km from the district headquarters, but it can be called remote by any yardstick. Located inside the Bhitarkanika wildlife sanctuary, it remains deprived of basic facilities such as roads and electricity.

Abutted by the Bay of Bengal, the village is the only one left standing after the constant ingress by an aggressive sea swallowed up six other nearby villages over the past 40 years. Each time a cyclone comes around, villagers cower behind sand dunes before going back to pick up the pieces in their devastated homesteads. When Phailin struck in October 2013, the villagers managed to scramble to safety, but were far unluckier during the Hudhud's rampage in October 2014.

Eking a living in such harsh conditions, the villagers now see a ray of hope — solar lanterns promise to light their path to development.

In Rajasthan, at the opposite end of the country, is yet another remote village, Tilonia, located far from its district headquarters. Here the solar lamp not only lights lives but also fetches an income, as the inhabitants of this desert village manufacture them.

Barefoot engineers

The Barefoot College in Tilonia, established nearly 30 years ago by Bunker Roy, is busy training new batches of the 'solar mothers and grandmothers', also popularly known as the 'solar mamas'. These barefoot solar engineers rarely have formal education, but the dedication to work for their village is a must in them. So the college narrows its choice of trainees to women who are middle-aged and older, as they are least likely to move out of the village. A young woman, on the other hand, often leaves her village after marriage. So also the men, who are likely to scout for better opportunities outside the village after receiving the training.

In fact, the Barefoot College stresses on the importance of common sense. "Common sense is in short supply and people are accustomed to believe that only a paper degree means education, development and empowerment," says Roy. "The Barefoot College has proved that urban trained experts and professionals can easily be replaced by paraprofessionals from villages who have never been to college or have technical training of any kind. They learn on the job, through trial and error."

From solar energy to health, and from rural water supply to education, the Barefoot College taps the potential of local villagers to find solutions to a range of needs. Having a better understanding of local problems, they are better able to help fellow villagers and are accountable to their community.

After a six-month training, the solar mamas are adept at assembling solar lamps, relying on colour codes and symbols to guide them. The hands-on practical training equips them with skills that include fabrication of charge controllers and inverters, core winding, printed circuit boards, testing, wiring, installation of solar panels, and repair and maintenance of the lamps.

"These barefoot engineers have lighted up villages using solar energy not only in the remote areas of Ladakh, Barmer and Sikkim in India but also in Bhutan, Afghanistan and about 20 countries in Africa," says Roy.

The spreading glow

Aged 40 and above, the solar mamas include several grandmas who arrived for training in Tilonia from countries such as Ghana, Malawi, Kenya, Sierra Leone, Liberia, Philippines and Papua New Guinea. Back home, they will go on to train many others.

Thanks to the initiative, two lakh people now have clean energy and light in 16 states of India and 17 other developing countries.

The Tilonia campus itself has 45 kW solar modules and five battery banks that power 500 lights, several fans, a photocopying machine, more than 30 computers and printers, a pump set, a small telephone exchange and a milk booth with freezers. All these modules and applications were assembled by women who have not studied beyond Class X.

As the movement spreads, its products are diversifying. The parabolic solar cooker is fast becoming popular, and a 'Women Barefoot Solar Cooker Engineers Society' has been registered by the rural women who manufacture them. This environment-friendly, cost-effective, daytime cooker has an in-built spring and clock system that can be accurately set to complete one rotation in a fixed time; this, in turn, rotates the cooker to track the sun's movement and catch the sunlight on the reflectors throughout the day.

So, once the cooker has been adjusted in the morning, uninterrupted cooking is ensured for the rest of the day.

The barefoot engineers show how remoteness can be tackled with off-grid energy solutions.

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