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'Solar Mamas' Get Power to Rural Mexicans Utilities Can't Reach

A lack of electricity remains a barrier to development for many of the world's impoverished communities

by ADAM WILLIAMS

IN A remote village on southern Mexico's Pacific coast, 62-year-old fisherman Jose Barriento relaxed on a rope hammock after dinner in a darkened room with bare cinder-block walls and a corrugated metal roof.

The only light was from the flickering screen of a television set — a luxury that was impossible in this community until his wife, Norma Guerra, became a "Solar Mama".

Barriento and Guerra are lifelong residents of Cachimbo, a tattered town of about 150 people on a barrier island in Oaxaca state with lots of palm trees, few roads and infrequent rainfall. There also wasn't any electricity, so everyone used candles or kerosene lamps.

Guerra, 52, stopped going to school after fourth grade and spends most days helping her husband prepare and sell fish that, in a good week, can fetch 3,000 pesos (RM619.20).

But in 2014, Cachimbo took a small step toward modernity.

Under a quirky programme designed to empower poor rural communities around the world, Guerra and three other local women went to India for six months to be trained as electrical technicians.

They returned to instal dozens of solar panels, battery packs and wiring that now run lights and appliances all over the village.

"Cachimbo was difficult, ugly and always dark," Guerra said as she sat on a green plastic chair under the palm-thatched roof of her patio.

"Just walking around town you risked falling. With the solar kits, a lot has changed. You can go to bed later. Kids can do their homework at night. For the women, it allows us to do our chores in the home while men continue their labours. Everything is easier now that there is illumination."

A lack of electricity remains a barrier to development for many of the world's impoverished communities, which don't have access to essential tools of the modern economy like mobile phones or refrigeration.

An estimated four billion people aren't connected to the Internet, according to a joint study by *Bloomberg New Energy Finance (BNEF)* and Facebook Inc.

Getting Connected

About 1.1 billion people live without power and hundreds of millions more have unreliable supplies, said Itamar Orlandi, a *BNEF* analyst in Singapore who studies small-scale electric distribution systems in emerging markets.

In India alone, an estimated 240 million live in the dark, or almost a fifth of the population, the International Energy Agency estimates.

"Over the past few years, there seems to have been an increasing appreciation in the development community that electricity is crucial for other desirable outcomes such as health, productivity or connectivity," Orlandi said.

While most Mexicans have electricity, many of the country's less-populated areas aren't connected to a distribution grid, and extending wires to remote locations like Cachimbo can be very expensive to instal and maintain.

The government overhauled energy policy in 2013 to encourage private investment in the formerly state-controlled industry and is targeting stand alone systems like wind and solar for almost two million people living without power.

The first contracts for small-scale rural power projects were awarded by the government last year. Two more are planned this year to raise as much as 4.8 billion pesos in investment, which will bring Mexico's electrification rate to 99%.

The country needs to raise as much as 12 billion pesos in the wholesale electricity market by 2021 to get everyone connected, the energy ministry said in an emailed statement.

"As much as 86% of the national territory has optimal conditions for generation of solar energy," because the sun shines most of the year, said Hector Alonso Olea, secretary general of Mexico's National Solar Energy Association and CEO of Gauss Energia, a project developer in Mexico City.

Guerra didn't know anything about solar power when Sanjit "Bunker" Roy showed up in Cachimbo in late 2013.

Roy founded a centre that became known as Barefoot College in Tilonia, India, four decades ago to provide educational and vocational training for the rural and uneducated poor.

One of its most successful programmes is one

Roy dubbed the "Solar Mamas", who have installed solar-based electrical systems in 96 countries that provide power to more than

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650,000 people.

Barefoot College

Barefoot College supports its programmes by raising about US\$4 million (RM15.48 million) a year from donors, mostly from the Indian government, according to the college's CEO Meagan Fallone.

Companies also contribute, including Apple Inc, Goldman Sachs Group Inc and Islamic Development Bank, she said.

One supporter is Rome-based utility operator Enel SpA, which has assets in Mexico and tipped off Roy that Cachimbo would be a good candidate for "Solar Mamas".

The programme is unusual because it focuses almost exclusively on providing skills to women rather than men, who Roy jokingly called "untrainable" when he explained his philosophy in a 2011 TED Talk.

"This is the only training programme in the whole world where an illiterate woman can become an engineer," Roy said in a 2013 documentary about "Solar Mamas".

"He told us that if the men are given the opportunity, when they get back to town, they will leave," Guerra said.

"Women have roots here, such as children, grandchildren. Women will come back with the ability to generate electricity and they will stay in the community."

The four "Solar Mamas" from Cachimbo spent six months training in India.

After returning home in October 2014, they installed more than 60 solar kits provided by Enel, which operates wind turbines nearby that generate power for customers on the mainland, a few miles across a salt-water lagoon from the village.

The Mexican government says it wants 35% of its electricity from renewable resources by 2024.

While solar energy accounts for less than 1% now, that could jump nearly tenfold over the next two years to 5GW of generating capacity, according to Gauss Energia's Olea.

That could represent US\$5 billion of investment, including some in isolated communities, he said.

Two other Mexican communities got "Solar Mamas" after Cachimbo. Four indigenous Comcaac women from Sonora state — near Arizona in the US — were trained in India last year, after another group from the Yucatan peninsula, said Rodrigo Paris, head of Latin America for Barefoot College.

While Guerra still gets a small stipend organised by Barefoot College when she makes repairs to the local solar units, she put her training to good use a few months ago when the strongest earthquake that Mexico has recorded in the last century hit the state of Oaxaca, killing

almost 100 people and demolishing infrastructure in one of its largest cities, Juchitan.

Guerra loaded her boat with solar panels and made the three-hour trip to the city, about 60 miles away.

She went door-to-door to install equipment in homes that lost power, providing the only lighting available for many residents over several days.

"At a time when people felt so insecure and scared, they were so happy to have some form of light," Guerra said. "It gave me so much satisfaction to be able to provide it." — *Bloomberg*

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Guerra at her home in the town of Cachimbo

Pics courtesy of Yael Martinez



A solar panel, instaled by Guerra, is seen on a building in Cachimbo



A woman passes in front of a market destroyed in the September earthquake in Oaxaca

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