Energy Access Monitor

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Rural Electrification

96% rural electrification completed in Odisha. The Odisha government on Friday (15 July) said that electrification work has been completed in around 96 per cent of villages in the state. Energy Secretary R.K. Verma said that there are total of 47,677 villages in the state as per the 2011 census, and out of them around 45,236 villages have got power connectivity by June 30 (i.e. around 96 per cent of the villages).

Taking a review meeting over rural electrification, Chief Secretary Aditya Prasad Padhi directed to cover the villages and hamlets in saturation mode and in a time-bound manner.

- ✓ "Out of the balance 2,441 villages, 541 have been identified as uninhabited villages. Detailed action plan has been prepared to cover rest of the villages," said Verma. The rural electrification work has been allocated to agencies like PGCIL, OPTCL, OREDA and NTPC. In the meanwhile, preparatory steps like detail survey, preparation of the projects and bidding have been expedited.
- ✓ Odisha Renewable Energy Development Agency (OREDA) has targeted to complete electrification of 275 villages by November this year. Out of this, 198 villages would be connected through micro-grid, and 76 would be covered through stand-alone solar projects, said an official. Around 12,000 households would be benefited through this scheme.

Notably, the state government has targeted to complete the electrification work by October-November, 2016. Access to electricity across the country has been targeted to be accomplished by March 2017 by Union government.

Power thieves in rural India steal over 20% of electricity. India is looking to its countryside to understand how more than 20% of power distributed by state retailers goes missing. Rural Electrification Corp. plans to install equipment that will transmit usage data from metres at each of the country's 100,000 rural feeder stations, one of the final electricity distribution points between power plants and customers, said Ritu Maheshwari, the federal company's executive director. She also said that data from the meters, which will be installed by state retail companies, will be streamed live to the public. According to her the aim of the organization is to make sure that "They know exactly how much electricity is flowing through the rural feeders", it helps spotting and solving problems faster. It also helps in understanding the trend in rural power consumption.

Tracking rural usage is part of Prime Minister Narendra Modi's vision of reforming the country's power sector and lighting every home in the country by 2019. Regional distributors lose almost 23% of the electricity they buy through theft, unmetered usage and dissipation through old wires, hurting their finances and preventing them from repaying debt. A federal-government plan to make them profitable has set a target of bringing that down to 15% by 2019.

- ✓ **Phone Apps:** The data gathered from the feeders will be posted on a new smartphone application. Similar apps have been created by the central government to track electricity pricing, transmission projects and rural electrification.
  - ➢ Regional electricity distributors are reimbursed by state governments for selling power below cost. The retailers sought Rs.36,420 crore in subsidies during the year ended March 2014, according to a report by Power Finance Corp., a lender to power projects.
  - ➢ Distributors aren't getting reimbursed adequately, making it difficult to repay loans amounting to nearly Rs.4.1 trillion and to purchase all of the electricity required by the populations they serve.
  - ➢ That leaves the country's power plants running below capacity, while one in five people go without electricity.
- ✓ India's agricultural sector, the mainstay of the rural economy, accounted for 21.7% of electricity consumption in the year ended March 2014, while contributing just 8% to power retailers' revenue, according to the latest data provided by Power Finance, which also studies the performance of state power retailers. Industrial users, who pay higher tariffs to partially subsidize agricultural customers, accounted for 29.2% of the consumption and 41% of revenues.

One India, 15 July 2016 | The Indian Express, 20 August 2016 | First Post, 17 August 2016 | Mint, 31 August 2016

Solar PV mini grids could boost energy supply to rural India. As many as a third of Indian households lack access to grid electricity. Many of these households use traditional cooking methods, which are highly polluting and a grave danger to health. Supporting a transition to stable electricity remains problematic, however, even with government targets aiming to have the country wired up by 2022. A new analysis suggests mini grids, leveraging solar PV, is a sustainable and flexible way forward – although it requires national and international backing.

India has a vast population, estimated at 1.25 billion people. Supplying electricity to everyone has posed considerable difficulties to the

country's government. As it stands, around a third of the country's households do not have access to the grid. While the grid itself is seen as comparably inefficient and in a state of dis-repair. Many of those that lack electricity use highly inefficient fuel sources, including the combustion of wood and agricultural waste, which are a health hazard in their own right, as well as a source of GHG emissions. The use of such materials, the World Health Organisation estimates, kills between 300,000 and 400,000 people per year.

- ✓ Reducing household dependence on fossil fuels, while connecting people to the grid, has become an important policy initiative of the Indian government, with a timetable set out to provide electricity to the entire country by 2022.

New analysis from Ricardo Energy & Environment, commissioned by the UK Foreign Commonwealth Office and in close collaboration with business partners, finds that an effective way of supplying electricity to hundreds of millions of homes in India can be achieved through solar (PV) mini grids.

- ✓ These grids meet sustainability standards, are flexible and provide a "powerful method of quickly bringing energy generation to rural areas."
- ✓ The research highlights, however, that the current value chain for the mass production of such grids is lacking. The firm recommends the development of international supply chains, national policy and financial structures to make renewable technology practical.
- ✓ Practical steps that can be taken towards the scale-up of the technology includes:
  - ➢ Supporting private sector and local supplier innovation,
  - ➢ Developing business models to 'de-risk' solar energy projects, and
  - ➢ Defining technical standards for mini grid design and installation.

This machine converts food waste to gas for cooking. An Israeli company "Homebiogas" has developed a "digester" that converts organic matter into biogas. Though this biological process has already been known for several years, Homebiogas has produced one of the first home-scale systems, one that can be installed in just a few hours.

The Homebiogas technology which converts food-waste to gas for cooking.

Each year, 1.3 billion tonnes of food go to waste around the world, representing a full third of the food intended for human consumption. In Europe and in the United States, consumers are the primary culprits. According to a European Commission study from 2010, individuals and families are responsible for 42 percent of food

waste, ahead of agribusiness (39 percent). But from Homebiogas's technology the leftovers can be used to produce gas which can be used for cooking.

- ✓ According to the company, from one kilogram of trash (leftover food or animal faeces), the digester produces 200 litres of gas, and this allows to cook for one hour at high heat.

The system is usable in rural areas and villages, but also in suburban and urban areas, though one need to have a garden. The advantage is that it allows one to bring clean energy to areas where access to electricity is limited. But it's also a machine that can be used in developed countries. To be more precise it works best in countries where it's higher temperatures, as it accelerates the process.

Konecranes' waste-to-energy technologies help unlocks bioenergy potential. A broad range of lifting and materials handling technologies specifically designed for waste-to-energy (WTE) and biomass applications is being introduced to Australasia, India and China by Konecranes as the region develops its bioenergy potential.

- ✓ The technologies - including unmanned full automation, remote operation stations, remote monitoring and maintenance reporting products - are focused on applications such as biomass, refuse and ash/slag.

Konecranes Australia National Industrial Equipment Manager, Mr Peter Monaghan says the WTE market has considerable growth potential because these technologies allow customers to save money and run their businesses in a more sustainable manner.

- ✓ These WTE cranes can be equipped with Global Technical Support connection, remote monitoring and a computer interface capable of semi or fully unmanned automation or a remote for manual handling, as well as a range of features and benefits to maximise production and minimize running costs.
- ✓ Their waste handling cranes are designed with smart features, which manage critical crane functions to reduce structural stress, increase efficiency and prolong equipment life.
- ✓ The storage is managed by the crane. Every time crane deposits or picks up material, it updates the storage in that coordinate location. The same modular solutions used in these WTE cranes are applicable to Biomass Handling Cranes.

Indian Scientists Design Device to Collect Solar Energy. Indian scientists have designed a new device they hope will solve one of the biggest problems with the use of solar energy. They call the device a solar tree.

- ✓ Solar trees have metal "branches" extending from a tall, central pole at different levels and each branch holds a photovoltaic panel.

Daljit Singh Bedi is the chief scientist at the Council of Scientific and Industrial Research, or CSIR, in New Delhi, India. The CSIR laboratories are where the solar tree was designed. According to him, the shape of the solar trees

makes it possible to fit more photovoltaic panels in a space than traditional systems do. This means less land would be needed to produce solar energy.

- ✓ It takes about four-square meters of space to produce energy which otherwise would have required 400 square meters of space, so almost 100 times the space is saved.
- ✓ Scientists believe the energy a solar tree collects will be enough to power five homes. The space-saving tree will make it easier to provide solar energy to homes in cities. The trees will also take less space from farmers in rural areas.
- ✓ The design of the solar tree facilitates placement of solar panels in such a way that they are exposed more towards the sun and so are able to harness 10 to 15 per cent more energy.

India is the world's third largest producer of greenhouse gases. The country promised to reduce its rate of greenhouse gas production at the United Nations Conference on Climate Change in Paris last year. India said, by 2030, it would reduce its rate of greenhouse gas production by one third over its levels in 2005. The country's promise depends heavily on increasing solar energy. India has set a difficult goal of getting 40 per cent of its total energy from renewable sources by 2030. It also plans to reduce its use of coal. The cost of photovoltaic panels has gone down in recent years. This has made solar power cheaper and easier to use.

consultancy.uk, 11 August, 2016 | yalibnan.com, 23 August 2016 | altenergymag.com, 26 August, 2016 | learningenglish.voanews, 30 August 2016

Fighting the 'Silent Killer' with Cleaner Cooking. Anyone who has experienced the smog in Beijing or New Delhi won't be surprised to learn that air pollution is the leading environmental risk factor for disease. According to the International Energy Agency, each year around 6.5 million premature deaths can be attributed to air pollution. The Lancet describes air pollution as a "silent killer" responsible for more deaths each year than HIV/AIDS, tuberculosis and road injuries combined. And household or indoor air pollution particularly affects women and their children, because women are usually the ones cooking over open fires or old-fashioned cookstoves that spew harmful particulate matter, such as soot and toxic gasses, including carbon monoxide.

According to the World Health Organization (WHO), household air pollution kills more than 4 million people annually; 3 billion people around the world use solid fuels for cooking, mostly in low- and middle-income countries. But various environmental and health organizations say the solution already exists: **Cleaner Cookstoves**.

- ✓ Organizations such as the Global Alliance for Clean Cookstoves are trying to raise awareness about the economic and health benefits of switching to cleaner cookstoves; so far, their efforts have led to more than 50 million families adopting cleaner stoves and fuels.
- ✓ Along with being healthier, clean cookstoves are also greener, reducing the amount of carbon released into the environment. And in many places they provide a new livelihood opportunity for women.

Mercy Corps: In 2014, Mercy Corps began working on energy access in Myanmar, one of the poorest countries in the region. In Myanmar's "Dry Zone," which covers 13 percent of the country but is home to one-third of the population, an average family consumes 4 tons of firewood each year according to a Mercy Corps' assessment.

- ➢ Mercy Corps partnered with the Slow Life Foundation, which is funded by the Soneva Group, to purchase clean cookstoves from Envirofit, a Colorado-based social enterprise company.
- ➢ Envirofit's cookstoves still use firewood, but up to 60 percent less than a conventional stove, which cuts cooking time in half and reduces the amount of smoke and toxic emissions produced by 80 per cent.
- ➢ Together these organizations launched a program to help rural communities obtain Envirofit's cookstoves and give them the opportunity to earn a living by selling the cookstoves to others in their communities.

newsdeeply.com, 16 August 2016

India, US need to work on sustainable development: Richard Verma. Emphasising on the need to forge a strong partnership to achieve a more sustainable development, the US Ambassador to India, Richard Verma, on Thursday said India's ambitious development goals have the potential to "aggravate resource depletion and global warming".

"The challenge is clear for all of us: To pioneer a path towards a more sustainable future. The vision is also clear: India and United States build on a strong partnership and take a leading role to pioneer a new and more sustainable path to development," he said addressing the India Energy Access Summit in New Delhi.

He was of the view that though this growth will lift India's hundreds of millions of people into the middle class, but it has the "potential to aggravate pollution and aggravate resource depletion in India and exaggerate global warming".

- ✓ In June 2015, India and the US set up PACEsetter Fund to support the Promoting Energy Access through Clean Energy initiative by providing early-stage grant funding to accelerate the commercialisation of innovative off-grid clean energy products, systems and business models.
- ✓ When they launched PACESetter Fund a year ago, it was a concept and an idea. They have launched another new fund to leverage another $1.4 billion in clean energy financing. That is on top of the $2.5 billion in financing (clean energy).

Business Standard, 11 August 2016

Women and energy access

The Women of Sunderban Show Us How to Ward off Tiger Attacks While Electrifying an Island Village. Darkness is generally associated with gloom, desperation, anxiety, fears, etc. all of which, until not so long ago, were a part of the everyday lives of the families living in the small, remote hamlet of Sardar Para in Satjeliya Island. According to one of its resident, she has lost one of his neighbours as a tiger took him to the bushes and nobody could help him as it was too dark outside. Over the years, Minati Aulia has seen many families lose their loved ones to incidents like these. She remembers how everyone used to be desperate to get an early start to their day because there was no way anyone could hope to do anything once the night fell. The men had to leave the fields for the fear of being attacked by a tiger coming from the Sajnekhali Wildlife Sanctuary in the vicinity, women were compelled to wrap up their household chores and the children were unable to do any schoolwork because they couldn't do much reading and writing by the faint light of an oil lamp.

Surrounded by the dense mangrove forests of the Sunderbans, this village of around 100 homes is not the easiest of places to live in; not only is there a looming threat of cyclonic storms in the region but it is also virtually cut off from the mainland. Incidentally, it takes a bus, boat and rickshaw ride from the nearest town of Canning in South 24 Parganas district to get to Sardar Para. Yet, fortunately for the largely tribal inhabitants of this hamlet, their womenfolk have diligently worked together to bring light and, consequently, much-needed change to their dreary existence through solar power.

- Four years ago, the World Wildlife Fund (WWF) came to the community with a proposal to electrify the village with solar power; a clean, renewable source of energy. But individual families were not too enthused at the prospect of having large solar panels dominating the rooftop of their house, and many other issues regarding the cost, maintenance, etc.
- According to an official involved in this project said that the things were streamlined when one the women (as part of the Sardar Para Paniyajal Samiti) of the village understood the idea of implementation of solar panels and clearly understood the benefits of having regular electricity in their area and were ready to brainstorm with the experts to come up with a viable plan.
- With cooperation of the committed self-help group (SHG) women, a workable solution was in place real soon: by mutual consent it was decided that instead of asking standalone families to mount a photovoltaic panel at home, a central charging station would be set up for everyone's convenience and each household would be provided with a battery-powered energy access kit, which could be charged at this station when it was low on power.

Women involved in the implementation of the solar panels.

Today the large shed, which serves as the "power station" of Sardar Para, is the most prominent structure in the village. It produces and stores about

4.1 kwp of electricity every day, which is adequate to meet the energy requirements of all the residents. The distribution module is straightforward: for a monthly fee of Rs 110 villagers can come to the charging station to charge the batteries that come with the energy access kit. The SHG women are responsible for collecting this modest charge as well as the maintenance of this nodal facility. The monthly payment allows families to gain access to the facility 10 times and the amount which is collected is duly deposited in the bank so that there is a ready corpus for them to tap in to whenever they need to buy new batteries; each battery lasts for around five years. "It was our SHG that convinced the larger community to back this project and even donate the land where the charging station has been built. Nowadays, we monitor its upkeep and the members are also in-charge of ensuring that the street lights throughout the village are in working order," shares Minati, the proud leader of the Sardar Para Paniyajal Samiti.

It has truly been a dramatic transformation for Sardar Para. As evening sets in, the streetlights come to life as do the bulbs in homes and there is a constant buzz of activities till late. In fact, several local enterprises – tea and snack stalls and quaint stores stay open way after sundown. Women, in particular, have been able to pace their chores – for instance, many go to fetch water from the nearby tubewell after sundown as they no longer fear animal attacks – and take out more time to chip in with some extra income generating work. For Minati and others, who used to solely depend on crab seed collection to augment their family earnings, the options have certainly expanded. Basanti Mondal, who was attacked by a crocodile once as she was collecting crab seeds at twilight, no longer needs to go to the riverfront she so dreads.

thebetterindia.com, 21 August 2016