

RENEWED POWER BANK

VILLAGERS IN AND around the coal mining areas in Talcher, Odisha, constantly complain of skin and eye irritation, respiratory diseases and other allergies, apart from ash deposits in rivers. Talcher, also known as the Coal City of Odisha, is

home to several mining industries and often the villagers bear the brunt of environmental and health hazards.

“Since people fall sick more often they fall into the debt trap because they cannot afford to treat their increasing sickness and morbidity at present,” writes Utkal University’s Rabindra Garada, in a paper published in IOSR Journal of Humanities and Social Science.

Talcher is just one of 600 coal mines in India, part of which also aids in producing power. Undoubtedly depleting resources of renewable energy (RE) and associated health and environmental fears have com-

Several challenges plague the renewables energy ecosystem despite budgetary support and growing entrepreneurs entering the sector **By Roy Varghese**

pelled the government and individuals to explore options of RE sources in India.

Efforts in the sector haven’t gone unnoticed by the Narendra Modi government. Budget 2017 allocated Rs 5,473 crore — up from Rs 5,063 crore — to the Ministry of New and Renewable Energy (MNRE). Media reports also point out that Prime Minister Modi has allocated Rs 210 billion to boost India’s solar power manufacturing sector.


The MNRE, headed by Cabinet Minister Piyush Goyal is also pioneering the cause of RE sources to supplement the energy requirements of the country. Goyal, one among the many ministers active on social media, tweeted on 7 April: “For the first time, India’s capacity addition in RE sur-

ENERGY CORRIDOR TOP 3 STATES IN WIND & SOLAR PRODUCTION

WIND POWER	SOLAR POWER
TAMIL NADU 7,684.31	TAMIL NADU 1,590.97
MAHARASHTRA 4,664.08	RAJASTHAN 1,317.64
GUJARAT 4,227.31	GUJARAT 1,159.76

Total capacity in MW as of Jan 2017

Source: Greenworld Investors 2017



passed the conventional power capacity, with 15.3 GW (gigawatt) in FY17."

RE has also become critical to the movement against the risks of climate change. India's commitment at Paris COP21 to reduce 33-35 per cent carbon emissions by 2030 and increase RE to 40 per cent of the energy mix by 2030, is set to expand India's RE portfolio. The government has also announced the goal of reaching the production of 175 GW of RE by 2022. There is proof to the sector's enthusiasm in surpassing all records: at 31.1 GW, India attained 4th position in

global wind power installed capacity. In fact, FY17 was a historic period for the Indian RE industry as wind energy has surpassed its previous records with 5,400 MW installations. The previous highest installation was 3,472 MW in FY16. The RE industry even attracted an investment of over \$6 billion in FY17 and the cumulative installations of the sector is about 64 per cent of India's total grid interactive RE capacity.

How Things Stack Up For India

Coal-based power plants account for more than 60 per cent of India's total power production. In fact, India spent a massive Rs 4.5 lakh crore on crude imports in 2016. To cut down this cost substantially, it is vital to step up on application of the alternative energy sources. The MNRE is planning to achieve 175 GW by 2022 through 60 GW from wind power, 100 GW from solar power, 10 GW from biomass power and 5 GW from small hydro power.

So, does wind energy and solar power generation, the two grand jewels of India's RE production mix, seem a viable entrepreneurial option?

Going by the numbers it sure does. Wind energy accounts for nearly 61 per cent (27,441 GW) of renewable installed capacity, making India the world's fourth largest wind energy producer. In FY2015-16, wind power accounted for 8.5 per cent of India's total installed power capacity, and 2.5 per cent of the country's power output (See: *Energy Corridor*). "India's wind energy sector has witnessed unprecedented acceleration last year, propelled by technology and conducive policy environment for renewables, by central and state governments," said Suzlon CMD Tulsi Tanti in his blogpost in 2016.

His confidence is not without reason. "The growth was way higher than the industry estimates of 30 to 40 per cent," he further added. Tanti sure has his finger on the pulse. In the past two years, there has been a 100 per cent growth in RE sector, which has never happened in India's energy history. Pune-based Suzlon is India's largest RE company with over 11 GW in installed capacity.

Then, there are others like Gurugram-based ReNew Power Ventures who are gearing up to achieve remarkable power generation capacities. ReNew Power announced that the company has doubled its power generation capacity in a single year's time to cross 2,000 MW (2 GW). In FY17, the company made investments of Rs 6,700 crore to add 430 MW of solar and 626 MW of

wind capacity.

ReNew Power has over 3,000 MW of commissioned and under construction clean energy capacity across states including Gujarat, Haryana, Tamil Nadu and Andhra Pradesh. Over the last six years, the company has increased its capacity manifold — starting from 200 MW in FY 2011-2012 to 2 GW as on 31 March.

Sumant Sinha, Chairman & CEO, says, “In April 2016, we were the first company in India to achieve 1 GW of commissioned RE capacity.”

The wind-solar hybrid solution is also one of the aspects that companies like Suzlon are now focusing on. This hybrid solution leverages the complementary generation cycle of wind and solar. This enables better utilisation of the existing grid and also helps to save land and power evacuation infrastructure costs.

What Ails The Sector?

Grandeur plans, money allocation and speeches do not offer solutions to on-the-ground hurdles. The RE sector too is plagued by several hurdles.

One of the biggest challenges before the sector, according to Su-Kam's MD & Founder, Kunwer Sachdev, is the government subsidy. This is because the customer has to run from pillar to post with their application to receive the subsidy and then the time period to actually receive the money is quite long. Due to this, a lot of

customers lose interest.

Gurugram-based Su-Kam, like Suzlon, is developing specialised products for developing countries in off grid (standalone power system) and on grid solar power solutions. For example, Su-Kam has achieved success in installing DC powered, off grid solutions in various villages of Uttar Pradesh where grid connectivity is negligible. These solutions are cost-effective and easy to install and maintain. “We are the only company that has products approved by MNRE and we are looking at our partnership in a big way,” says Sachdev.

Another issue ailing this sector is of net metering, a billing system which credits solar energy system owners for electricity they add to the grid.

Unfortunately, the power department does not provide meters through which a customer can feed excess power back to the grid.

Meanwhile, Black & Veatch India's approach in the Indian RE space is the same as the one that has brought the company success in other global markets — deliver world-class solutions with local talent. The Kansas-based company has delivered 18,000 MW of solar PV projects globally covering professional services and engineer, procure, construct (EPC), and have successfully completed solar projects in Gujarat and Rajasthan.

At the nexus of the growth in renewables and addressing distribution challenges is the growth in microgrids. This is especially relevant to the Smart Cities mission, a project launched by Modi in 2015 to create 100 smart cities and revive 500 existing ones. To fuel this project and to provide energy access to the millions in villages, in June 2016, the government proposed development of 10,000 renewable microgrids and mini-grids. According to the MNRE, a ‘mini grid’ is defined as a system having a RE-based electricity generator with capacity of 10KW and above, and supplying electricity to a target set of consumers through a public distribution network. A ‘micro grid’ system is similar to a mini



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Su-Kam

grid but having a RE based generation capacity of below 10KW.

Despite efforts from government and enterprises, the RE sector — being intermittent sources of electricity — also suffers from the missing cost competitive, large-scale electricity storage technology. However, companies are attempting to provide solutions here. “Having provided balance-of-system conceptual design for multiple battery energy storage systems totalling more than 100 MW, this is another area of renewable technology where we combine global best practice with the capacity to deliver with local resources,” says Anand Pattani, Country Manager & MD, Black & Veatch India.

Waste-to-energy (WTE) is another exciting source of RE because unlike wind and solar it is not intermittent; in addition, WTE dovetails with the Smart Cities missions’ requirement for citywide sewage treatment infrastructure and the Swachh Bharat Mission.

Sunny Side Up

In India, solar power generation is becoming an increasingly viable option. As of late 2016, the country’s solar grid had a cumulative capacity of 8,626 MW. The government has recently expanded its solar plans, targeting 100 GW of solar capacity by 2022. Companies such as Suzlon, Tata Power, NTPC, etc., are setting up solar power plants. The economics of solar technology is changing fast with the capital cost of setting solar power plant declining steadily (See: *Soak Up The Sun* on Page 80).

Even NTPC, India’s largest electric generator, is tweaking its expan-



“We are industry leaders particularly in aerodynamic technology which is one of our biggest USP”

TULSI TANTI
CMD, Suzlon Group

sion plans to become the biggest RE company in the next 10 years. The state-owned company’s Rs 5 lakh-crore capital expenditure plan will be skewed towards adding RE capacity instead of setting up more thermal units. Of the 10,000 MW of RE capacity planned, NTPC has commissioned 250 MW and has started work on developing 3,010 MW of projects. It also plans to set up about 800 MW of solar plants on water reservoirs at thermal power plants. NTPC, in March, put up solar panels in backwaters next to their Kayamkulam plant in Kerala.

Slowly and Steadily

Corporates and individuals also need to be handheld when it comes to

adopting better energy sources. In 2011, CleanMax Solar, a rooftop solar power developer based in Mumbai, enabled more than 100 corporates and leading institutions to adopt on-site solar power, with a cumulative on-site capacity of more than 80 MW. “We provide hassle-free models to our corporate clientele, which has made solar power adoption easier for them,” says the company’s co-founder Andrew Hines.

Another player in the solar space, First Solar began as a module supplier in 2011. In 2016, the company completed an important milestone of shipping /installing more than 1GW of its CdTe thin film modules in India making it one of the top 3 PV module companies to do so in India and the first thin film PV maker to have achieved this. Sujoy Ghosh, Country Head, First Solar, India, says, “We are executing 60MW of developed projects in Karnataka and will participate in the upcoming capacity auctions both at the Federal and at the State level.”

However, despite several players in the field, challenges such as demand generation persists. Given that power is a concurrent subject, the State entities who are the primary consumer of energy need to align with the Centre’s policies. This does not happen readily. The implementation and enforcement of renewable purchase obligations (RPO) that are the primary driver of bulk demand for RE are still behind their targets. The improvement in financial health of the state-owned distribution companies is critical for the country to implement market mechanisms that will eventu-

5,525 MW against 12,000 MW solar target FY17: What went wrong?

1. The underlying assumption of solar parks to start operating by 2016 with bids floating around did not happen. Infrastructure for the park is not ready
2. Delays in tendering and PPA (power purchase agreement) signing process. Every time there is a new low bid (Rewa), tender activity freezes as all states want the bids to get down to those levels. Discoms are hesitant in signing the PPAs and want Rewa replication
3. The dismal performance in the solar rooftop segment, lesser encouragement from the Discoms and poor implementation of net metering policies
4. Lack of RPO (renewable purchase obligation) compliance and strict enforcement. Government agencies not equipped to handle the 12,000 MW challenge.

175 GW by 2022: Too ambitious?

1. The appetite of the Discoms is not suitable for the aggressive renewable power addition. The creditworthiness of the distribution companies is questionable which plays a critical role in determining the bankability of a PPA
2. The sector is likely to face troubles post 2018, with three major challenges — Grid stabilisation, Spinning reserves and storage. Who will incur the cost of all three?
3. India is far behind in storage innovation and is at the mercy of countries like Japan for technology breakthrough
4. The challenges of grid integration continue to increase and fail to be robust enough for the sector
5. The pace of investment in the government's Green Energy corridor is not fast enough, with its timely completion under radar
6. Despite falling tariffs, the issues of curtailment of RE sources and delay in payment needs to be addressed as soon as possible, to maintain the upbeat investment sentiment in RE. Otherwise, these assets could easily turn stressed
7. The targets are set top down from the central government without figuring out how states will be able to achieve this. The policies are in place, they need to be followed and executed

— Naina Sood

ally be sustainable for both generator and consumer, and only then would we achieve true energy transformation in the country.

Various state governments too are working towards appropriate guidelines and on ground local issues. Unfortunately, the evacuation infrastructure has not grown at the same pace as generation in the past several years, leading to evacuation bottlenecks in certain states.

According to Manish Chourasia, CEO, Tata Cleantech Capital, land and power evacuation continue to remain challenging for the RE sector. The financial health of state-owned Discoms still remain a big concern even though the government has taken several noteworthy initiatives to improve the financial positions of

Discoms. Much of this will depend on the successful implementation of government's three years plan to bring down the commercial and technical losses to 15 per cent from current level of around 27 per cent

Meanwhile, biofuels, energy derived from biomass, offers great potential to reduce India's excessive dependence on imported crude oil, which is used for producing transportation fuels like petrol. Indian government is promoting biomass-based renewable fuel like ethanol that can be added to petrol. This also helps in reducing emission of harmful greenhouse gasses and thus help combat evils of climate change and global warming. Ethanol as a fuel or fuel

additive has not been explored in a big way in India so far, due to the production and distribution challenges. However, ethanol offers huge potential in not only reducing India's oil imports but also fulfilling the COP21 Paris summit obligations. India has been planning to raise ethanol blending mandate to 20 per cent.

Pramod Chaudhari, executive chairman of Pune's Praj Industries, feels the need for sharpening the focus on propagating use of biofuels

"The central and state level policies should complement each other"

PRAMOD CHAUDHARI
Executive
Chairman,
Praj Industries

in India. "The central and state level policies should complement each other," he says. This will fast track establishment of 2G ethanol industry in India according to Chaudhari.

While the central government is giving Rs 15,000 crore to municipal corporations over the next three years under the Swachh Bharat Mission for cleanliness, waste-management and WTE projects, an increased allocation or a dedicated fund for such WTE projects would serve to meet the goals of increased energy from RE sources and a cleaner India. www.businessworld.in

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