



India's 'furious pace' of uptake

As PES was going to print, a cabinet meeting chaired by the Chief Minister of India's Madhya Pradesh, Mr Shivraj Singh, approved the proposal for commissioning the world's largest solar power plant in the Rewa District. We take a look at the shining star of the solar world.

As per projects announced until now, once commissioned, the proposed Solar Park would be the world's largest solar PV power plant, with a total solar installed capacity of 750 MW. Acquisition of 1,500 hectares of land for the Rs45 billion (\$750 million) project is said to be close to completion. 112,000 Solarmodule auf 800 Metern Höhe / 112,000 solar modules at an elevation of 800 meters

Slowly but steadily, Madhya Pradesh has been upping its game by creating a solar friendly investment climate, currently placed third after Gujarat and Rajasthan in terms of solar power installed capacity. Earlier we'd reported on how the project had received a pledge of low cost financing support from the World Bank, to an extent of 49% of the project cost.

The state government has floated a joint venture with the Solar Energy Corporation of India (SECI), to develop the power plant as a solar park. The entire capacity will be completed in three tranches of 250 MW each. In fact, SECI has plans to inaugurate the plant just in time for the 2016 Independence Day celebrations in India.

Once completed, the project is expected to generate about 1.25 billion units of electricity every year, offsetting about 1 million tonnes of CO2 emissions.

With the work on land acquisition complete, and laying of transmission lines under way

(by Power Grid Corporation of India), SECI would be looking to start the tender process for the solar park in the very near future. A part of the plant capacity is expected to be reserved for domestic manufacturers.

Currently, the solar park at Charanka, Gujarat, is India's largest solar power project (with over 210 MW capacity). And while Gujarat has been India's most successful state to date in implementing solar policy (Phase I & Phase II) and India's leading state in terms of total installed capacity of solar power plants, Gujarat has also been able to tackle the issues of suitable land development, grid infrastructure facility & power transmission facilities and more by successfully developing Asia's Largest solar park, known as 'Charanka Solar Park'.

The one-of-its-kind "Solar Park" in Gujarat is a commendable example of the eco-friendly initiatives undertaken by the government of Gujarat. The Nodal Agency for the development of this unique park is the Gujarat Power Corporation Limited (GPCL). The Gujarat Solar Park is one of Asia's largest solar harvesting parks, designed to mitigate the impact of climate change and to protect the environment, making the solar sector vibrant and viable not only in India but also across the globe.

This 590 MW "Solar Park" is located at Charanka, in the Patan district in Gujarat and is spread across 5,384 acres of unused land. It has state of the art infrastructure with the provision of harnessing rainwater, besides power evacuation at the doorstep. The installed capacity is 214 MW from 21 developers, accounting to 25% of the total solar generation developed in India.

The Solar Park also has the capacity to generate 100 MW of wind power and already two turbines, each of 2.1 MW has been commissioned in making the park, which is the biggest solar-wind hybrid park in the world. The Solar Park also accounts for 3,42,400 tons of Carbon Emission Reductions (CERs), which is one of the largest CERs contributing project in the renewable energy sector.

The development cost of the park was Rs 4,500 crore, which includes Rs 550 crore for infrastructure and land acquisition and Rs 3,996 crore for the Solar Power Plant (developers' investment), besides creating employment opportunities for more than 1,000 people on a permanent basis. The Gujarat Solar Park has been one of the most innovative projects in the solar energy sector, having a large concentration/cluster of solar power generating units at a single location, thereby reducing the cost substantially (40%), and bringing down solar tariff to pave the way for large-scale development of solar power projects.

Background

India is densely populated and has high solar insolation, an ideal combination for using solar power in the country. Moreover, its other energy resources are relatively scarce. In the solar energy sector, some large projects have been proposed, and a 35,000

km² (14,000 sq mi) area of the Thar Desert has been set aside for solar power projects, sufficient to generate 700 to 2,100 GW.

In July 2009, India unveiled a US\$19 billion plan to produce 20 GW of solar power by 2020. Under the plan, the use of solar-powered equipment and applications would be made compulsory in all government buildings, as well as hospitals and hotels. In January 2015, the Indian government significantly expanded its solar plans, targeting US\$100 billion of investment and 100 GW of solar capacity by 2022.

According to a 2011 report by BRIDGE TO INDIA and GTM Research, India is facing a perfect storm of factors that will drive solar photovoltaic (PV) adoption at a “furious pace over the next five years and beyond”. The falling prices of PV panels, mostly from China but also from the U.S., has coincided with the growing cost of grid power in India.

Government support and ample solar resources have also helped to increase solar adoption, but perhaps the biggest factor has been need. India, “as a growing economy with a surging middle class, is now facing a severe electricity deficit that often runs between 10% and 13% of daily need”.

Leading the way

Meanwhile, India’s first satellite controlled Single Axis Tracking East West Tilt Technology based solar power plant has come up at village Lalpur of District Hoshiarpur. This solar power plant has been constructed by a Mumbai based company Aditya Medisales with an investment of Rs 35 crore and it will produce 4.2 MW of electricity.

After inaugurating the plant in April, Revenue and Renewable Energy minister Bikram Singh Majithia informed that Single Axis Tracking East West Tilt Technology follows the path of the sun during the day to generate 8 percent more units of electricity as compared to solar power plants having traditional fixed type structures.

He also revealed that India’s largest rooftop solar power plant of 7.50 MW at Radha Soami Satsang at Beas (Amritsar) would be expanded to 31.5 MW which would make it the world’s largest rooftop PV plant. Thanking the Radha Soami Satsang, Beas for this he requested other religious heads of Deras to install rooftop solar power plants on their premises.

Congratulating Aditya Medisales, which is part of the Sun Pharma group, for investing Rs 35 crore on this project, he also asked the company Aditya Medisales to invest more in the field of renewable energy production in Punjab as the state provided the best environment for investment in Renewable energy sector. “It would make a

“There are excellent career opportunities in the renewable energy sector today. Solar energy systems have to be well-designed. There is no one-size-fits all solution”

huge difference towards protecting environment and generating clean energy,” he said while adding that Punjab had fixed target of generating more than 4200 MW solar power by the 2022.

The minister said that different companies had already invested more than Rs 1,300 crore in solar power projects while an investment of around Rs 1,700 crore is in the pipeline. He further added that more than 1,500 Applications have been received under net metering Solar Roof top and the Government was going to further promote the concept ‘Generate your own clean and green energy and protect the environment for future generations’.

As one source recently commented: “There is no looking back. The number of buildings on solar power will only grow now. It is inevitable.” In big cities like Bengaluru, the passion for renewable energy was restricted – until recently – to early converts. But the Karnataka Solar Policy 2014-2021 is set to change all that, as more and more individuals as well as residential and office complexes, malls and hospitals recognize the economic benefits of installing solar systems.

The policy aims to create avenues for the generation of 3% of the total energy consumption in the state through solar-based systems by the year 2022. And to make this happen, the government has made it easier for citizens and institutions to enter into the kind of contract Vansay has with Bescom – where they can sell excess power generated back to the ‘grid’ at Rs 9.56 per unit. This also circumvents the need for people to invest in inverters and batteries for storing the excess electricity. Installation costs have come down hugely.

This simple move has the potential to open the floodgates to solar power in the city – and beyond.

While that would mean covering every inch of rooftop space with solar panels – and let’s admit, that’s not going to happen anytime soon – what is already happening is that many institutions, small and big, are converting to solar. Among the ‘big’ examples is Chinnaswamy Stadium, where the Karnataka State Cricket Association (KSCA) recently inaugurated a massive

solar plant – about 13 of the perimeter of the stadium is now covered in solar panels capable of generating 400 kW of electricity (6 lakh units per annum).

Among the ‘small’ but equally important frontrunners is Jagriti Theatre in Whitefield, which has installed 10 solar panels on its rooftop capable of generating 2 kW of energy. This is enough to cater to the theatre’s electricity needs, except the stage area lighting and air conditioning unit. “We have 300 days of sun in Karnataka, whereas Germany, which is the leading user of solar energy in the world, has around 110 days. It should be obvious that we are sitting on a goldmine of energy,” says Jagdish Raja, founder of Jagriti.

“The awareness about the potential of solar power and its scalability has gone up hugely in the past two years,” says Himadri Nandi, founder and MD of the city-based MRO TEK, the company that executed the solar energy project at Chinnaswamy Stadium, where it installed a 400 kW roof-top grid-connected solar power generation plant. According to Nandi, solar energy is ready to take the big leap in Bengaluru, and he says his company, which has installed around 130 solar power plants around the country, is in talks to install many plants of varying capacity in other locations.

Among them is an Electronic City stadium for five-a-side football where floodlights will also be solar-powered. Nandi says his company is talking to several real-estate and mall developers to install large-scale solar power plants on their premises.

Srinivas Kumar, CEO of RenXSol Ecotech Private Limited, which was involved in the Chinnaswamy project as consultant to KSCA (it was in charge of design, engineering and project management for the mega project) says solar power represents a huge entrepreneurial opportunity in Karnataka.

“There are excellent career opportunities in the renewable energy sector today. Solar energy systems have to be well-designed. There is no one-size-fits all solution, and every house, apartment complex or shopping mall has to have its own customized solution,” says Srinivas. “Solar should be designed for use, not for lying idle,” he adds. ■