JNNSM UPDATE 2016 SUNNY DAYS AHEAD
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POWER WATCH

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COVER STORY

Decentralised renewable energy solutions may be the best way to empower all our villages.

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Cover pic courtesy: Hero Future Energies

JNNSM update 2016: Sunny days ahead?

Decentralised renewable energy solutions may be the best way to empower all our villages, says R Srinivasan.

Pics courtesy: Tata Power Solar

The latest Central Electricity Authority (CEA) figures peg India's solar PV capacity at 7.45 gigawatts (GW) and at the time of going to press, as per Ministry of New and Renewable Energy (MNRE), in the current fiscal, solar is expected to achieve its highest-ever annual capacity as the target has been set at 12,000 MW. As per inputs provided by the Central Electricity Authority (CEA), around 15,400 MU has been generated through solar energy during the last three years. So even as we contemplate on India's trajectory of growth going forward, let us take a look at some recent developments in the solar sector.

In response to a query about JNNSM targets and how it has fared compared to Phase 1, Corporate PR-India Power Corporation Ltd said, "The Jawaharlal Nehru National Solar Mission (JNNSM) was launched on 11th January 2010 by the PM. The mission is aimed at reducing the cost of solar power generation in the country through (i) long-term policy; (ii) large-scale deployment goals; (iii) aggressive R&D and (iv) domestic production of critical raw materials, components and products. The mission will create an enabling policy framework to achieve this objective and make India a global leader in solar energy. The existing target for adding grid-connected solar PV under Phase 1 (2010-13) was 1000 MW and Phase 2 (2013-17) was 3000 MW. As on March 2016, India's combined solar PV installations have crossed 6000 MW."

About the WTO issue, Corporate PR-India Power Corporation Ltd opined, "In 2013, the US brought a complaint before the WTO arguing that the domestic content requirement imposed under India's national solar programme is in violation of the global trading rules. Specifically, it said, India has violated its "national treatment" obligation by unfavourably discriminating against imported solar cells and modules. In other words, India was discriminating between solar cells and modules which were otherwise identical on the basis of the national 'origin' of the cells and modules, a clear violation of its trade commitment. The ruling has come under intense criticism, particularly from environmentalists, as undermining India's efforts towards promoting the use of clean energy. The panel ruling, however, is not final and reports indicate that India will prefer an appeal to the appellate body."

Solar parks on waste land

Power Minister Piyush Goyal said that the government is encouraging the use of waste land for installation of solar power plants and that setting up of solar parks is a step in that direction. Under the scheme, 32 solar parks of 19,400 MW capacity have been sanctioned in 20 states so far. The minister further stated that a solar capacity of 20,000 MW has been targeted under the existing solar park scheme, which includes use of waste land also. The government is monitoring the scheme in close coordination with the states and other stakeholders so as to

complete the projects in time for which various fiscal and promotional incentives e.g. capital subsidy, generation based incentive, accelerated depreciation, viability gap funding (VGF), concessional excise and custom duties etc., are provided to project developers, the minister added. The government has also identified deserts for setting up of solar and wind energy projects. According to a study conducted by Power Grid, there is a total available potential of 315.7 GW of solar and wind power in Rajasthan (Thar), Gujarat (Rann of Kutch), Himachal Pradesh (Lahaul and Spiti) and Jammu and Kashmir (Ladakh), with an investment requirement of Rs 43.7 trillion spread over till 2050.

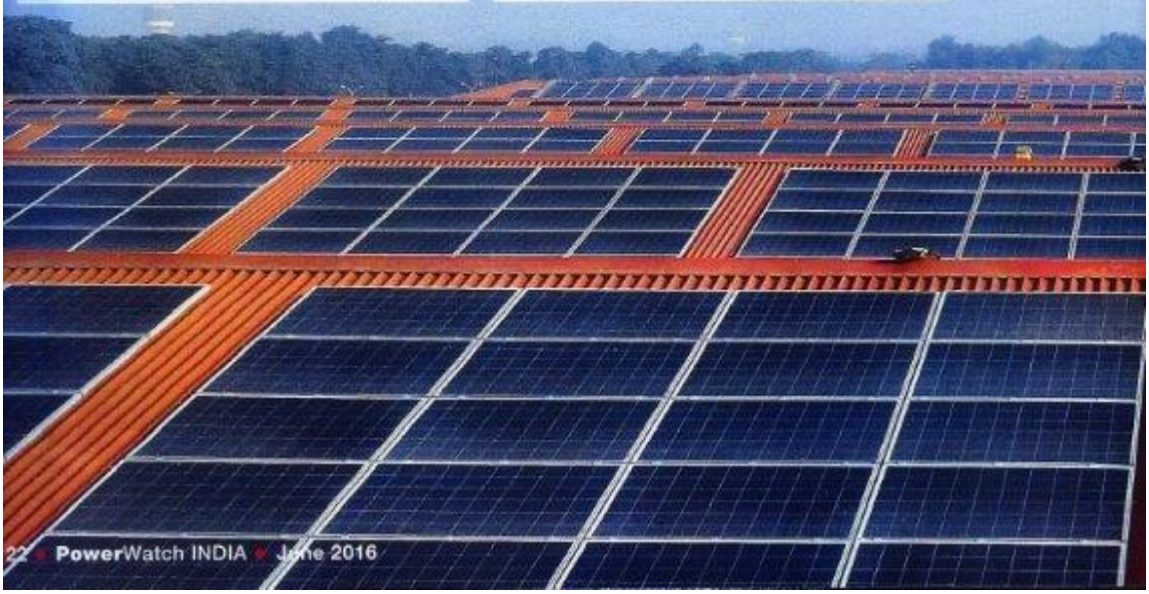
Rooftop solar

Even though India is blessed with over 300 days of sunshine in a year and has sufficient rooftop space, most of its potential is currently untapped. From the 100 GW power generation target from solar, India aims to achieve 40 GW through grid-connected rooftop solar by 2022. Rural India is hugely dependent on diesel for energy and as per reports consumes over 2 billion litres of diesel every year. An AT Kearney report added that India spends about Rs 8,500 crore a year on diesel for its telecom towers. Realising the importance of this segment, in December 2015 the Cabinet Committee on Economic Affairs chaired by PM Narendra Modi approved the scaling up of the budget from Rs 600 crore to Rs 5,000 crore for implementation of grid-connected rooftops systems over a period of five years up to 2019-20 under the National Solar Mission (NSM). This will support installation of 4200 MW solar rooftop systems in the country in the next five years.

Rooftop solar, unlike grid-level solar projects, eliminates theft, transmission and distribution losses and land acquisition woes. It can help decrease emissions since as per a recent World Health Organisation report, 13 out of the top 20 most polluted cities in the world are located in India. In fact, 40 GW (out of the 100 GW target) will result in abatement of about 60 million tonnes of CO_2 per year and take India nearer to its climate change commitment. Fortunately, most Indian states in the last two years have increasingly adopted rooftop solar systems. The Haryana government has made it mandatory for buildings with 500 square yards plot size or more to install such systems with Tamil Nadu, Madhya Pradesh, Rajasthan and Karnataka showing interest and Gujarat is creating solar cities by employing rooftop solar solutions.

Solar cities

World-wide urbanisation and economic development are leading to a rapid rise in energy demand leading to enhanced Green House Gas (GHG) emissions so countries are increasingly adopting Solar Cities. These cities aim at a minimum 10% reduction in projected demand of conventional energy at the end of five years, through a combination of enhancing supply from RE sources and energy efficiency measures. In a



solar city all types of RE sources like solar, wind, biomass, small hydro, waste-to-energy etc, may be employed.

Feed in tariff (FiT) in the states

Queried about the feed in tariff (FiT), especially where there is a call for different FiT for different states with higher isolation levels and the need for a consistent policy regime, Corporate PR-India Power Corporation Ltd, said, "To achieve the revised target of 100 GW solar power by 2022, FiT needs to be implemented in all the states. The designing of FiT system should be based on insolation level, land and evacuation arrangements."

About the government's massive RE generation target which could be affected due to evacuation issues, Corporate PR-India Power Corporation Ltd said, "The following measures could be taken:

a. Promotion of decentralised power generation
b. Implementing forecasting and scheduling
c. Automation of existing networks
d. Promotion of energy storage technologies
e. Implementation of a Green Energy Corridor."

Off-grid solar and wind solutions

The MNRE is implementing an "Off-grid and decentralised solar applications programme" to promote the use of solar power through solar home lights, solar street lights, solar pumps and mini micro grids to meet the energy requirement of rural areas. Central financial assistance equivalent to 30% of the system cost is provided under the scheme to encourage people in remote/ rural areas to adopt these systems, said Power Minister Piyush Goyal in the Rajya Sabha. The MNRE is also implementing a scheme 'Small Wind Energy and Hybrid System (SWES)' wherein both solar and wind energy are effectively utilised for power generation in remote areas by installing a hybrid system consisting of both solar photovoltaic and aero generator/small wind turbine technologies.

RE-based mini and micro-grid policy

A major focus of the present government is on empowering all the nation's villages and decentralised renewable energy solutions may be the best way to address these challenges. According to REN21's Renewables 2016 Global Status Report released in June, both developed and developing countries saw significant growth in decentralised renewable power. Bangladesh emerged as the world's largest market for home solar systems and developing nations like Kenya, Uganda, Tanzania, China, India, Nepal, Brazil and Guyana saw rapid growth in small-scale renewable systems, including RE-based mini-grids, providing power for off-grid communities.

In this context, as part of its draft policy, the Ministry of New and Renewable Energy (MNRE) is targeting deployment of at least 10,000 renewable energy-based micro and mini-grid projects across the country, especially in rural areas, with an installed renewable energy capacity of 500 MW in the next five years (at an average

capacity of 50 kW per project). As per the policy, a micro grid is defined as one that is powered by a source of less than 10 kW capacity and a mini grid as one with 10 kW or more. It is promoting decentralised energy solutions based on sources such as solar, wind, biomass, biogas, small hydro as well as energy storage technology. A mini or micro grid will supply power to a village or a group of villages and the ministry will employ energy service providers to install, own and operate the systems and in return accord certain privileges for implementation. The ministry intends to work with the various states and nodal agencies to build a supportive ecosystem for development of such mini-grids. "Each micro and mini grid project should aspire to provide energy for services beyond lighting such as fan and mobile charging," it added. The ministry has sought comments from all stakeholders by 20 June.

Solar-powered mini-grids are most promising for India to meet GDP growth and access to electricity for all. One 50 kWp solar PV plant with battery storage, and an aggregate mini-grid length of five km can power a host of small businesses, banks, petrol pumps, institutions, etc, and over 500 homes. Queried about how this segment fared in 2015, issues faced by the segment and expectations of how it may fare in 2016, Corporate PR-India Power Corporation Ltd, said, "In 2015, the central govt has finalised framework/guidelines for mini-grids, and some mini-grid projects had been implemented in the past years. Following are some major concerns/ issues w.r.t this sector which need to be addressed.

a. Lack of awareness about mini-grid concept.
b. Non-availability of long-term funds for system aggregator.
c. Non-guarantee of long-term power off-take arrangement."

The push for decentralised solutions is in addition to the focus on large-scale renewable power projects like solar parks."

The MNRE policy rightly calls micro and mini grids 'a promising solution to the challenge of energy access in India'. But these projects should also be viewed in the context of energy security, since India has an energy import bill of around $150 billion, which is expected to reach $300 billion by 2030. For these projects, every effort should be made to reduce costs, increase efficiencies and extend access to central financial assistance and other incentives to make them financially viable. Coupled with cost-effective storage technologies and more efficient modules, these micro and mini grids could be the game-changer in achieving the 'Power for all' aspiration.