Renewable Energy Monitor

February-March 2017

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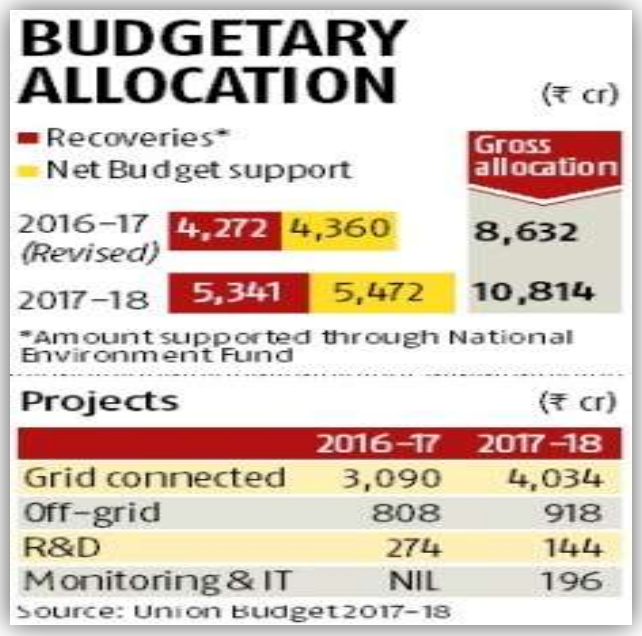
Policy

Renewable energy: Funding to depend on coal cess kitty. The budgetary allocation to the ministry of new and renewable energy (MNRE) has increased 26 per cent to Rs 10,814 crore for 2017-18. However, the projects would have to depend on the coal cess pool, as more than half of the ministry's budget would come from the NEF (National Environment Fund). Close to Rs 5,341 crore worth of funding would be sourced from the NEF (earlier called the National Clean Energy Fund). NEF is collected by imposing cess of Rs 400 a tonne on domestically produced and imported coal, lignite and pite. The coal cess estimated to be collected in the coming year is Rs 29,700 crore.

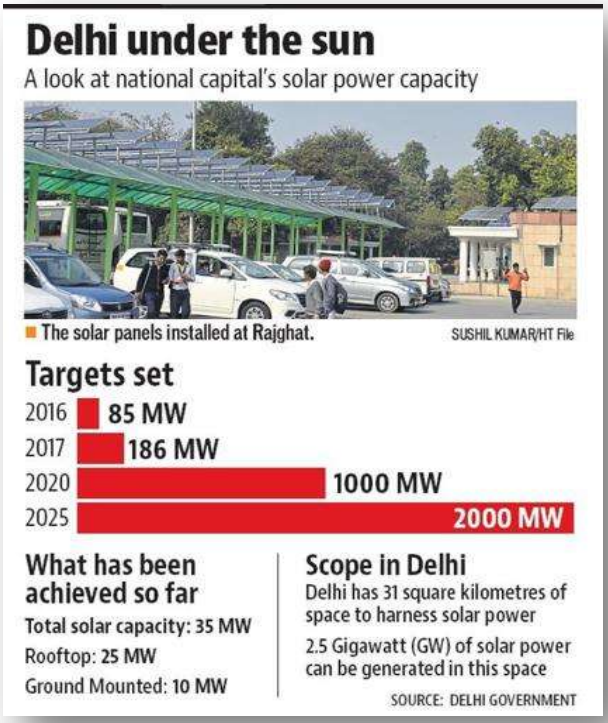


Projects lined to be funded from NEF are grid-connected solar projects, green corridor projects and wind and small hydro units. Of these, grid-connected solar projects would get the lion's share, followed by the green corridors.

(Source: Business Standard, 4 February 2017)

Centre doubles solar park capacity to 40,000 MW. The Cabinet has approved the doubling of solar park capacity to 40,000 MW, which will entail an additional 50 solar parks to be set up at a cost to the government of Rs 8,100 crore. Additional 50 solar parks, to be commissioned by 2019-20, will be 50 MW of capacity; the Centre is also considering smaller parks in Himalayan and other hilly states where contiguous land is difficult to acquire. The state governments will first nominate the SPPD (solar power park developer) and will also identify the land for the proposed solar park. The proposal will then be sent to the Ministry of New and Renewable Energy for approval, following which the SPPD will be sanctioned a grant of up to Rs25 lakh. Following this, the government will provide central funding assistance of Rs20 lakh per megawatt or 30% of the project cost, whichever is lower.

Expert panel gives green nod for Etalin hydel project in Arunachal Pradesh. Chiming in with a push for using water as a strategic resource, an expert panel of the environment ministry has given the green clearance for the 3,097 mega-watt (MW) Etalin hydropower project in Arunachal Pradesh. The move is also in accordance with the government's push to establish prior user rights on rivers that originate in China and an effort to fast-track projects in the north-east. Etalin is proposed to be completed in seven years. The green nod to the Rs25,296.95 crore project on the Dibang river basin came during the last meeting of the environment ministry's Expert Appraisal Committee (EAC) for River Valley and Hydroelectric Projects on 30-31 January.



Delhi's new solar policy a windfall for high capacity plants, households. The Delhi Solar Policy is going to give households the much needed push to generate and use renewable energy, but the biggest gainers of the policy are going to be those who go for high capacity plants.

The power department has formulated five categories under which applications for installing solar systems would be accepted. The first two categories are 1-4 kW and 5-10 kW, which are small-capacity plants primarily aimed at flats and houses. The third one, installations above 10 kW, is primarily for schools, companies, hospitals and office buildings.

(Source: The Hindustan Times, 3 March 2017)

The policy has been formulated under the Capex and Resco model. Under the Capex model, there will be no fixed tariff. The bill will depend on the energy generated by the user while in the Resco model, there will be a fixed tariff. Under the Resco model, there will be two types — One where for the first year, a consumer will have to pay less than Rs 3.33 per unit for the first year and in each subsequent year the tariff would increase by 5%. In the second type, a flat tariff of less than Rs 5.10 per unit will be charged and this rate would be constant for the 25 years.

New Delhi railway station to get waste-energy plant. The New Delhi railway station will soon have a waste-to-energy plant of its own that will help recycle solid waste generated on its premises. The national capital is the second city, besides Jaipur, that will have such a solid waste management plant. The railways had decided to set up the waste-to-energy plant at New Delhi railway station in 2016, following directions from the National Green Tribunal. The daily collection of solid waste at New Delhi railway station is about 32 tonnes per day.

The upcoming plant, spread over 15,000 square metre area, will have recycling capacity of 15 tonnes per day. The consultant RITES, after a survey of the New Delhi station which handles operation of around 300 trains and daily average passenger load of about 5 lakh recommended installation of a plant there that works on bio-methanation technology. The railways will purchase the electricity generated at the plant at rates applicable for a domestic user, and procured energy will cater to the needs of the station itself, officials said.

The Hindustan Times, 2 February 2017| Business Standard, 4 February 2017| The Hindu, 22 February 2017 | Mint, 23 February 2017| The Hindustan Times, 3 March 2017|

Solar

Tariffs for world's biggest solar power plant hit all-time low of Rs 2.97/unit. Tariffs for solar power have fallen to record lows below Rs 3 per kilo-watt hour, providing a boost to the government's green energy drive. Renewable energy producers quoted the prices, at which they will sell solar power, to win contracts to develop the world's largest solar power plant of 750 MW in Rewa, Madhya Pradesh. Under the Rewa contracts, there will be 5 paise per annum escalation in tariff for 15 years. A so-called levelized tariff the value financially equivalent to different annual tariffs over the period of the power purchase agreement (PPA) of around Rs 3.30 per unit will be levied. Such low tariffs will help the government's solar energy drive, which is aimed at reducing dependence on thermal power and reducing greenhouse gas emissions to meet India's commitments within the UNFCCC (United Nations Framework Convention on Climate Change).

In a first, solar power lights up Indian warship. For the first time in the country, solar panels have been installed on an Indian warship. The survey class vessel INS Sarvekshak, attached with the southern naval command, has been fitted with 18 sheets of solar panels atop its hangar. The 300-watt panels generate about 5.4kW power. One of the challenges faced by the project was that marine environments were not suitable for normal solar panels, as saline and humid surroundings would damage it and the wind speed can affect the panels, which may get uprooted while at sea. So, flexible panels that had anti-rust properties, were marine compatible, could withstand high wind speeds, and perform on flat installations and had very low weight. 10 batteries are used for storage and meter reading were noted of solar power consumption to carry out a power audit and look at using solar power for more devices.

Solar power: New tech from MIT makes solar cells more efficient. According to the MIT Review, researchers at the famed technology institute have been able to develop photovoltaic cells that can perform at double the efficiency rate of a conventional PV cell. Unlike in the latter's case, where the energy of the light rays is converted directly into electrical energy, here the cells first convert light into heat before converting it back into light, but within a spectrum that solar cells can use. Though the cells only operate at 7% efficiency at present, researchers believe this can be increased to 64%, which is twice that of a conventional PV cell. While this is not the first attempt to produce these solar thermophotovoltaics, what MIT researchers have been able to achieve is creating an absorber-emitter that can conduct photon recycling, to produce more heat, thus creating more light. Though the process is expensive, what can make it really cost-effective is if MIT can somehow create a thermal storage system and use it even when there is no sunlight.

Use of solar panels for green power on rise in Mumbai. Nearly 60 housing societies and commercial buildings in Mumbai have already started generating their electricity requirement by using rooftop solar power plants. Currently, these housing societies generate about 1,400 units of green power a day. And it goes beyond Mumbai. More than 400 other establishments across the state have set up their own solar energy panels to reduce their need for power generated by using coal. That's more than 11,500 units of green power across the state. The quantum of power generated in Mumbai alone is a huge relief on the pollution front. The total quantity of green power generated everyday across the state is equivalent to planting 1.75 lakh trees as this amount of green power replaces an equal amount of power that would otherwise be generated by using coal - a source of pollution.

Mint, 11 February 2017| The Economic Times, 13 February 2017| **The Financial Express, 24 February 2017|** The Times of India, 22 March 2017

Gujarat, Andhra Pradesh refuse to pay more for wind power. Two of India's high wind energy potential states have refused to buy wind power at a rate higher than the one arrived at the country's first ever wind power auction, putting in jeopardy about 500 MW of projects in these states. The auction, completed in February, had brought wind power tariff down steeply to Rs 3.46 per kwH. But before the auction, power regulators in Andhra Pradesh and Gujarat had set the tariff for 2016-17 at Rs 4.84 per kwH and Rs 4.19 per kwH respectively. Now, neither of the states is willing to sign power purchase agreements (PPAs) at a tariff higher than Rs 3.46 per kwH.

Maharashtra to restart wind power purchase agreements after 3 years. The Maharashtra State Electricity Distribution Company, the main power utility, is set to resume signing power purchase agreements with wind developers in the state after a gap of almost three years. One developer confirmed that his company had been called to complete the formalities. For the past three years, unused wind generating capacity had been piling up in Maharashtra, with the MSEDCL reluctant to buy power at high prices from developers who had completed their projects. Sustained pressure from the developers and some prodding by the Centre, which has embarked on an ambitious renewable energy programme, may have prompted the discom's change of heart. About 450 MW of installed wind turbines, amounting to an investment of over Rs3,000 crore, remained unutilised due to MSEDCL's dillydallying and risked turning into non-performing assets by the end of March.

Wind developers at risk as India copes with dual payment system. India's wind-energy industry is seeing the viability of projects called into question as it adjusts to Prime Minister Narendra Modi's transition away from two separate systems to pay for clean power. The government is shifting toward auctions to buy electricity from wind, phasing out feed-in tariffs that guarantee a fixed price to producers for their power. Utilities that pay for the power are pushing developers who qualify for the fixed payments to match the lower costs auctions are achieving.

The result is threatening the economic viability of work by developers. They say that more projects will fall into disarray without a uniform policy setting out how the industry gets paid. During the policy transition phase, developers locked into higher feed-in tariffs may run into difficulty because their equipment and finance costs are predicated on the tariff, said Mr Santosh Kamath, partner and head of renewables at KPMG in India. As a result, projects may need to be renegotiated and who ends up taking the hit remains a question. The dueling systems have further implications for projects that would add hundreds of megawatts in wind capacity.

After hydro, Himachal Pradesh plans to tap potential of wind energy. Known for its vast hydro power potential, Himachal Pradesh government is now exploring the possibility of promoting non-conventional wind energy in a big way. As far as 12 sites have been identified in the state at different locations in Kullu, Chamba, Kinnaur, Lahaul-Spiti, Kangra and Shimla districts and the first project with a capacity to generate 0.5 MW power is being set up at Rangrik village of Lahaul-Spiti district. Of the 12 identified sites, six sites are located in tribal districts. Moorang, Kalpa and Pooh have been identified in Kinnaur district; Kaza, Keylong and Lingti at Lahaul-Spiti district; Chamba has two sites at Bharmaur and Dalhousie; Kullu district has two sites at Dalash and Chunagai (Arsu). Kangra has one site at Dharamshala and Shimla at Chopal.

Presently one hybrid (2.00 MW solar + 0.5 MW wind energy) project has been proposed to be set up at Rangrik in Kaza sub-division of Lahaul-Spiti district at an estimated cost of Rs 30.72 crore by

Himachal Pradesh State Electricity Board Limited (HPSEBL) in joint venture with Solar Energy Corporation of India (SECI).

The Economic Times, 23 March 2017| The Economic Times, 22 March 2017| Mint, 29 March 2017| The Economic Times, 30 March 2017

Investments

Japan's JERA acquires 10% stake in ReNew Power for $200 million. JERA Co. Inc. has bought a 10% stake in ReNew Power Ventures Pvt. Ltd before a proposed initial public offering of the clean energy firm, valuing the company at $2 billion. Set up in 2015, JERA is an equal joint venture between Japan's largest utility TEPCO (Tokyo Electric Power Co) and Chubu Electric Power Co.

JERA's portfolio of power projects include plants in Thailand, Indonesia, Vietnam, the Philippines, Taiwan, Qatar, Oman, the United Arab Emirates, the US, Canada and Mexico. For JERA, this might just be the beginning of its Indian energy play.

Greenko Energy raises Rs 1,010 crore from GIC, Abu Dhabi Investment Authority to power growth. Greenko Energy Holdings raised $155 million (Rs 1,010 crore) from existing investors Singapore's sovereign wealth fund GIC and ADIA (Abu Dhabi Investment Authority) in one of the largest fund-raising exercises in the renewable energy sector. The funds will be deployed to help Greenko expand its clean energy portfolio to 3 gigawatts from 2GW. Hyderabad based Greenko said it has signed a definitive agreement that will see GIC invest $123.9 million and an ADIA subsidiary invest $31.1million in a release on Monday. Greenko last year got $230 million in new funds from an entity owned by ADIA and an affiliate of GIC Singapore at a $1 billion valuation. ADIA invested $150 million while $80 million came from GIC. GIC remains the majority shareholder following the fresh round of investment with a stake of 60-65%, while ADIA has around 15%.

Mint, 19 February 2017| The Economic Times, 28 March 2017