Renewable Energy Monitor

October 2016

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Policy

Tough penalty for flouting green power obligations. The power ministry may impose stricter penalties on state utilities that refuse to comply with renewable power purchase obligations. The Centre aims to set up 1.75 lakh MW of renewable energy capacity by 2030 many of these utilities have been flouting renewable power purchase obligations.

As a result, there is no demand for solar and wind capacities. At present, solar power purchase obligation averages out to 1.25% of the total power bought by all utilities. This is targeted to touch 3% by 2022, requiring a total installed capacity of 34,152 MW. According to people close to the development, the Centre may consider blocking funds to errant states from schemes such as the Deen Dayal Upadhyay Gram Jyoti Yojana for rural electrification and Power System Development Fund.

Sweden to spend up to $3.5 million on renewable energy R&D in India. The two countries launched a pilot micro grid project using renewable energy in the Andaman and Nicobar Islands in November 2015, the first stage of which has just been completed. Sweden has earmarked $2.5-3.5 million towards research and development on renewable energy in India. The Andamans project is a joint effort of the SEA (**Swedish Energy Agency**) and India's MNRE (**Ministry of New and Renewable Energy**). The project will use the 'E4T Microgrid' concept, developed by Sweden's leading research agency **STRI**, which combines a renewable energy source with smart energy storage and load management, and is scalable. The SEA and MNRE have also completed two more studies in the same region – the first on the prospects of setting up more micro grids, and the second on how to make the Andamans completely free of fossil fuel use. The three studies together cost around $900,000.

Cabinet nod to cut price of ethanol procured by fuel retailers. The government cut the price of ethanol procured by state-run fuel retailers such as the Indian Oil Corp. Ltd by about 20% to Rs 39 per litre for 2016-17 but cushioned the impact on ethanol suppliers by making the price exclusive of both central and state taxes, which will be paid to them additionally. The procurement price for 2015-16 was Rs 48.5-Rs 49.5 a litre, inclusive of all taxes and transportation charges. Suppliers' realization as per the price fixed for 2015-16 was about Rs 40.5- Rs 41 a litre.

As per the new price, there is a reduction of up to Rs 2 a litre. The government effected the slight reduction in sugar mills' price realization on ethanol in the wake of better sugar prices which offered them an alternate market. Also, the lower oil prices in world markets eased the pressure on oil companies to blend ethanol with auto fuel. Exclusion of taxes from the procurement price brings clarity on the price as the country is set to introduce a new indirect tax regime of GST (goods and services tax) from the beginning of next financial year. Oil refiners will compensate suppliers for the 12.36% excise duty on it and for the applicable state level VAT (value added taxes). The revised price will apply for the period from 1 December 2016 to 30 November 2017 and that the revised ethanol price will be factored into any fortnightly revision in price of petrol or diesel.

India Inc increases focus on reducing carbon emission, CDP. Corporates are increasing focus on setting emission reduction and renewable energy targets besides putting up an internal price on carbon as part of risk mitigation, according to **CDP's latest climate change report.**

As many as 47 firms on the BSE 200 index have disclosed information related to climate change as against 34 companies in 2010. The report assumes significance following India, the world's third-largest emitter of greenhouse gases, ratifying the landmark Paris climate deal earlier this month,

giving a significant push for the agreement to come into force. CDP, through a study of these 47 companies, has found that there is an increasing focus on setting emission reduction and renewable energy targets with 38 companies reporting current targets for cut in emission. About 15 of the 38 companies have short term emission target (till year 2020).

India Lab announces endorsement of three innovative investment vehicles. The India Innovation Lab for Green Finance announced endorsement of three innovative investment vehicles that will help drive millions of dollars of needed investment to India's clean energy and green growth targets. This announcement is in partnership with the India Lab's public and private Lab Members, including the Indian Ministry of New and Renewable Energy, the Ministry of Finance, the Indian Renewable Energy Development Agency, the Asian Development Bank, ReNew Power, the World Bank, and the development agencies of the French, UK, and US governments, among others.

The three endorsed instruments, which were selected from among a highly competitive pool, and refined and developed over the course of a year, will now move forward for piloting in India with the support of the India Lab's members. They include a rooftop solar financing facility, a new lending platform for green investments, and a currency exchange instrument.

The Economic Times, 3 October 2016| The Economic Times, 5 October 2016| Mint, 14 October 2016| The Financial Express, 26 October 2016| India Infoline 28, October 2016

India receives payment for 500MW SunEdison solar project. State-owned SECI (Solar Energy Corp. of India) said the government received fees needed for a 500-megawatt solar park, won by bankrupt renewable-energy developer SunEdison Inc., to go ahead. Solar-park charges of Rs.200 crores along with signed implementation agreements have been received. SunEdison Energy India Pvt., a subsidiary of Maryland Heights, Missouri-based SunEdison, bid a record low in November 2015 for the right to develop the Andhra Pradesh solar farm.

Rs 20 lakh crore Madhya Pradesh solar power plant to fuel refineries. The Union petroleum ministry signed an agreement on 23 October 2016 with the Madhya Pradesh government, at the **global investor summit in Indore**, to set up a 2,700 MW solar energy unit, for an investment of Rs 20,700 crore. Mr Dharmendra Prasad, union minister of petroleum said Indian Oil Corporation and Oil India both owned by the central government will set up the plant. The power generated will be for government refineries.

102 NDMC buildings to have solar panels. Taking a step towards renewable energy, the power department of NDMC (New Delhi Municipal Council) plans to install solar panels at more than 100 buildings within their jurisdiction. Under the Smart City project, solar panels would be installed at 102 buildings of which 28 would produce 1.5 MW energy and 74 would generate 1MW power. The council has already installed panels at 45 buildings that produces 3.1MW power that is consumed by the buildings and the remaining gets transmitted to the power grid that reduces the load on the thermal power plant and also brings down pollution levels.

Suzlon, Ostro Energy form JV for solar project in Telangana. Suzlon Group has joined hands with **Ostro Energy** for a 50 MW solar project in Wanaparthy, Telangana. As per the contract, Ostro will acquire 49 per cent stake in Prathamesh Solarfarms Ltd, a SPV set up by Suzlon for the project and have an option to acquire the balance 51 per cent in future. Suzlon will be responsible for the project commissioning and provide comprehensive operation and maintenance services for 25 years. The

project, the power from which will be purchased by Telangana Southern Power Distribution Company Ltd, is expected to be commissioned by this fiscal. The project is to be funded 75 per cent by debt and the rest through equity.

Rooftop solar firms look to raise equity investment. Dozens of rooftop solar energy start-ups in India are looking to raise equity funding at a time when the sector needs to speed up capacity expansion to achieve the target of 40 gigawatt (GW) of installed capacity by 2022. Several of these companies are looking for equity funding before they tie up loans from large financial investors such as **the World Bank** and the **Asian Development Bank**. The World Bank had in June said it would invest $625 million in India's rooftop solar sector, while the Asian Development Bank said it plans to provide $500 million in financing to the sector.

Over $2.2 billion worth of loans are likely to be available for the rooftop sector starting this year. But that would require developers to raise equity funding first. **Clean Max Enviro Energy Solutions Pvt. Ltd**, the largest rooftop solar projects developer by market share, is looking to raise its first equity funding early 2017, managing director Mr Kuldeep Jain said without disclosing details. **Amplus Energy Solutions Pvt. Ltd**, which is backed by private equity firm **I Squared Capital** is looking to tie up loans worth Rs200 crore from the World Bank to fund its rooftop projects, said chief executive Mr Sanjeev Aggarwal.

Mint, 19 October 2016|Business Standard, 23 October 2016|The Times of India, 23 October 2016|The Hindu, 26 October 2016|Mint, 27 October 2016

Global wind power scenario: China leads; India maintains top 5 ranking. The global wind industry had another record year in 2015, with annual installations topping 63 GW, says the **new report from Global Wind Energy Council (GWEC).** Overall, by the end of 2015, there were about 433 GW of wind power spinning around the globe, a 17 percent increase over the previous year; and wind power supplied more new power generation than any other technology.

China, the largest overall market for wind power since 2009, maintained its leadership position and installations in Asia led global markets again, with Europe in the second spot, and North America closing the gap with Europe, in third place. The majority of wind installations globally were outside the OECD once again and this trend is likely to continue. Global wind industry is present today in more than 80 countries, of which 28 countries have more than 1 GW installed.

India, Germany join hands for wind energy. India and Germany signed an MoU to further their cooperation in the wind energy sector. Germany, which is a pioneer in wind energy, both off shore and on shore, expressed its willingness to share technology to promote green energy to combat greenhouse gases. Mr Robert Habeck, a Green Party minister of energy, agriculture, environment and rural areas from the state of Schleswig Holstein announced that the country is ready to share expertise in renewable energy to assuage the ill effects of fossil fuel which Germany as well as other European countries promoted since 1970s. The MoU was signed between the Indian Wind Turbine Manufacturers Association and Messe Husum in Chennai on 17 October 2016.

Chinese wind turbine-maker Envision eyes India. Chinese wind-turbine manufacturer Envision Energy wants to enter the Indian market. The company has applied to the NIWE (National Institute of Wind Energy), the certifying body, for approval to sell its 2 MW machines. Envision is one of China's top-five wind-turbine manufacturers and often counts among the top 10 globally. The company was founded

in 2007 it has sold 7,500 MW worth of machines globally and manages 50 GW of machines. Envision is also one of the three members of a EU-funded consortium of companies that is developing a wind generator that uses superconducting technology that features extremely cooled coils, and are smaller, lighter and cheaper.

Suzlon opens rotor blade manufacturing unit in Madhya Pradesh for wind energy sector. Renewable energy solutions provider Suzlon Group has opened an aerodynamic technology rotor blade manufacturing facility at Badnawar in Dhar, Madhya Pradesh. The facility has an annual production capacity of 400 MW and will manufacture rotor blades for its latest S111 2.1 MW turbine. The latest in its 2.1 MW fleet, the S111 has a blade length of 54.8 meters, making it one of the largest rotor diameter WTGs (wind turbine generator system) in India. Especially designed to enhance wind generation at low wind sites, the S111 reduces the cost of energy, increases return on investment for customers and makes low wind sites viable. The facility at Badnawar is Suzlon's 14th manufacturing facility in India and has been brought into operation in less than one year.

Renewable energy: India's green push needs wind. The wind industry, which had been spearheading India's renewable energy push since the end of 1990s, now fears just that. While the sector would not mind the attention that solar has been getting in the last few years, but has been seeking some policy consideration for it as well. The National Institute of Wind Energy (NIWE) in Chennai revised the estimate of wind power potential in the country. It was earlier estimated to be just over 102 GW, if tapped at a height of 80 metres from the ground.

CUMULATIVE INSTALLED CAPACITY OF WIND POWER IN INDIA (IN MW)

State	March 16	March 15	March 14	March 13	March 12	March 11	March 10
Tamil Nadu	7,615.78	7,456.98	7275.68	7,162.18	6,987.60	5904.4	4,907
Karnataka	2,870.35	2,639.45	2323.85	2,135.15	1,933.50	1730	1,473
Maharashtra	4,645.75	4,437.9	4,064.95	3,021.85	2,733.30	2,310.8	2,078
Rajasthan	3,993.65	3,308.15	2,783.45	2,684.65	2,070.70	1,524.8	1,088
Andhra Pradesh	1,438.25	1,038.15	783.35	447.65	245.5	200.2	236
Madhya Pradesh	2138.1	876.7	423.4	386	376.4	275.5	229
Kerala	43.5	35.1	35.1	35.1	35.1	32.8	28
Gujarat	4,034.93	3,642.53	3,447.28	3,174.58	2,966.30	2,175.5	1,864
Telangana	77.70						
Others	0	4.3	4.3	4.3	3.2	0	4
Total	26,862.76	23,439.26	21,141.4	19,051.46	17,365	14,158	11,807

(The Indian Express, 26 October 2016)

Thanks to availability of better technology, the NIWE said it is now possible for Indian companies to install taller wind mills that go up till a height of 100 metres. In that case, the potential for wind energy in India shoots up almost three times, reaching 302 GW. What's remarkable is that more than half of this potential, 153 GW, is located on wastelands, according to NIWE estimates. Viewed from this context, India has currently utilised just about eight per cent of its wind energy potential. It can easily grow at a fast rate, possibly even outpacing the growth in the solar energy sector. India's wind capacity has grown from nearly 12 GW in 2009-10 to more than 27 GW now.

However, according to Mr Manish Kumar Singh, secretary of the Indian Wind Energy Association, the industry is looking forward to a new renewable law that would bring in policy clarity and remove uncertainties in the sector. Investors need long-term predictability to invest big money. Currently, that is missing in the wind energy sector. The Ministry of New and Renewable Energy issues guidelines from time to time, but many times these are not adhered to. States have their own separate policies. The wind energy sector is waiting for the right kind of attention from the government in order to achieve its true potential.

Kerala's largest wind farm getting ready at Kanjikode. The largest wind energy farm with initial production capacity of 22MW is getting ready at the KINFRA (Kerala Industrial Infrastructure Development Corporation) industrial park at Kanjikode. Implemented by private-sector energy major Noida-based Indox Wind, the farm is coming up on 27.5 acres of land leased out by the State government. The works were fast progressing and the farm would be ready by March 2017.

The KSEB (Kerala State Electricity Board) will buy the power generated as per the tariff fixed by the electricity regulatory commission. Eleven windmills will be installed in the initial phase at a cost of Rs.15 crore each. More windmills will be installed later. It is the first project initiated in the State by Indox Wind, which generates 1,600 MW power at present across the nation. It is the first major power sector initiative in Kerala in which the State government was joining hands with a national major in the wind energy sector. The KINFRA industrial park is also becoming the first industrial park in the country to host a wind-energy farm.

India to get electricity from offshore wind energy in 5 years. India will get electricity generated by wind-propelled plants installed in Gujarat and Tamil Nadu in about five years as part of the country's green energy development programmes. Mr Mathias Steck, Executive Vice President and Regional Manager at DNV GL, an international renewable energy group said **DNV GL is preparing** India for offshore wind and providing MNRE a road map for offshore wind for Gujarat and Tamil Nadu. A 100-megawatt pilot project will likely be installed in ocean off Gujarat in about three years, It is to kick start a new power generating sector under the FOWIND **(Facilitating Offshore Wind in Industry)** programme funded by the **European Union.** A FOWIND consortium has done a series of report on wind conditions for wind-generated electricity and its integration into a grid along the coastlines of Gujarat and Tamil Nadu. FOWIND is supported by Euro 4 million grant from the Indo-European Cooperation on Renewable Energy programme and Euro 500,000 contribution through the GPCL **(Gujarat Power Corp Ltd).**

greentechlead.com, 18 October 2016|ETEnergy World, 18 October 2016| The Hindu Business Line, 19 October 2016|Business Standard, 21 October 2016 |The Indian Express, 26 October 2016| The Hindu, 28 October 2016| The Economic Times, 31 October 2016

Bioenergy

OMCs are buying biodiesel to blend with regular diesel. OMCs (Oil marketing companies) are purchasing biodiesel from vegetable oil producers for blending with regular diesel after failing to produce it themselves. Biodiesel is extracted from plants such as jatropha, vegetable or animal fat, and mixed with regular diesel to reduce the carbon emissions and cut import dependency.

Indian Oil, Bharat Petroleum Corp. Ltd and Hindustan Petroleum Corp. Ltd plan to buy a total of 20 million litres of biodiesel from local manufacturers. Introducing more biodiesel will help India, which imports 80% of its crude oil, to reduce its oil import bill. The country is targeting a more than seven-fold expansion in its biofuel market in the next six years. Blending 5% of biodiesel with diesel and 10%

ethanol with petrol can expand the biofuel market to Rs50,000 crore by 2022 from about Rs6,500 crore currently.

Advait to convert KFC's used cooking oil into bio-diesel. Leading restaurant chain, KFC India, has joined hands with Hyderabad-based Advait Biofuel Ltd to recycle used cooking oil into bio-diesel. Advait will collect used cooking oil from KFC restaurants in Andhra Pradesh and Telangana to convert it into bio-diesel. With this collaboration, KFC India has become the first restaurant brand in the country to attempt something of this nature and scale, strengthening its commitment of working towards a sustainable future. Advait is one of the biggest suppliers of used cooking oil-based bio-fuel and the only ISCC-certified used cooking oil collector in the country.

Total and Bill Gates invest $14 million in biomass conversion technology for biofuels. French multinational energy company, Total (NYSE: TOT) and Bill Gates recently invested $14 million in a new biomass conversion technology from clean tech start up Renmatix.

Renmatix is focused on the economical production of biochemicals and biofuels as an alternative to petro-driven fuels. Their Plantrose technology uses super critical water to reduce the costs associated in the conversion of biomass (wood or agricultural waste) to cellulosic sugars for biofuels. Biofuels and bioenergy are now a critical part of the world's renewable energy mix.

This new investment from Total and Gates will help Renmatix commercialize the Plantrose technology that can be used in a new biorefineries. The company says the new biorefineries will be targeted in diverse markets such as the US, India, Malaysia and Canada.

HAL, IISc to set up skill development centre in Chitradurga district, about 230 km from Bangalore. According to Prof Kumar, the goal is tocreate a model facility that would provide skill development programmes for various beneficiaries from local community to high-end engineering professionals. It said construction of the HAL-IISc (Hindustan Aeronautics Limited- Indian Institute of Science) Skill Development Centre is expected to be completed in 24 months.
Training activities are expected to begin by March 2019. Stating that the concept of a SDC (Skill Development Centre) has been in the pipeline for nearly eight years at IISc, the release said HAL came forward to support the infrastructure for the Centre under their CSR (Corporate Social Responsibility) initiatives. It said many activities have already been initiated at the new IISc Campus in Challakere on 1500 acres of land. This includes the establishment of a climate research laboratory,solar power research field and a Centre for bio-energy-basedlow-carbon technologies.

Mint, 14 October 2016|Business Standard, 20 October 2016| Forbes, 24 October 2016 | Business Standard, 28 October 2016