# Renewable Energy Monitor

April 2017

## Policy/ Developments

- India adds record wind power capacity of 5,400 MW in 2016-17
- Renewables surpass other energy sources in capacity addition in FY17.
- New solution to harness bio-ethanol
- By 2027, more than half of India's energy will be from renewable sources.

## Solar

- ReNew Power doubles installed capacity from 1000 MW to 2000 MW
- Fortum India to add 250 MW solar power capacity every year
- Solar tariffs fall to record low at NTPC auction
- Solar panel registrations begin in Delhi but applying remains a challenge
- Metro to get solar power from Madhya Pradesh plant
- India could see 10 GW of solar installations in 2017, says report
- Power Grid Corp. of India girds up for solar challenge

## Wind

- Tata Power Renewable Energy commission's 100 MW wind farm in Andhra Pradesh
- Govt to auction wind projects of 4 GW capacity in FY18
- Removal of incentives to hit wind energy projects.

## Investment

- IREDA finances Rs 10,000 crore green projects during 2016-17
- Foreign investors giving M &A deals in India's renewable
- Indian Renewable Energy Agency raises $109 million In masala green bonds.

Policy/ Dev

**India adds record wind power capacity of 5,400 MW in 2016-17.** The addition was much more than the target of 4,000 MW it had set itself for the year, according to official data. The ministry of new and renewable energy said the previous best was 3,423 MW in 2015-16, and before that 3,197 MW in 2011-12. Of the new capacity, around 3,026 MW was added in March 2017 alone. With this, the country's total wind capacity stands at around 32,177 MW.

Only nine states in the country have winds strong enough to generate power. Of these, Andhra Pradesh added the maximum capacity of 2,190 MW, or over 40% of the total capacity added.

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|---|---|
| **Andhra Pradesh** | **2,190 MW** |
| **Gujarat** | **1,275 MW** |
| **Karnataka** | **882 MW** |
| **Madhya Pradesh** | **357 MW** |
| **Rajasthan** | **288 MW** |
| **Tamil Nadu** | **262 MW** |
| **Maharashtra** | **118 MW** |
| **Telangana** | **23 MW** |
| **Kerala** | **8 MW** |

*(Source: The Economic Times, 3 May 2017)*

India's renewable energy programme has accelerated rapidly in the past three years, starting with successful auctions of solar energy projects, which led to a sharp fall in tariffs. In the fiscal year that ended last week, the government has also launched several initiatives for the wind energy sector. These include introduction of bidding, steps to encourage wind-solar hybrid plants and new guidelines for the development of wind energy.

**Renewables surpass other energy sources in capacity addition in FY17.** Capacity addition from renewable energy sources surpassed conventional sources for the first time in financial year 2017 as India added 12.5 GW of renewable energy capacity compared to 10.2GW from conventional sources of fuel. Of the 10.2 GW of capacity addition from conventional energy, 74% came from thermal, while the rest came from hydro and nuclear power projects. In financial year 2016, capacity addition from renewable energy was about 6.9 GW, and from conventional sources about 23.3 GW.

The report is based on data from the Union power ministry and the MNRE. The analysis said it signals a clear shift to renewable energy.

**New solution to harness bio-ethanol.** India's aim to achieve the 10 per cent ethanol blending target may have got a fillip as scientists have identified an indigenous solution to meet the enzyme needs for harnessing the fuel from waste. According to an official statement from ICGEB, "The new fungal source Penicillium funiculosum could be a strong alternative in the industrial enzyme repertoire for biofuel production." The newly identified GH7 cellobiohydrolase (PfCBH1) produces 5 times more sugar as compared to currently popular Trichoderma reesei (TrCBH1). The higher sugar content is treated with a yeast solution to harness bio-ethanol. Mr Syed Shams Yazdani and his group from ICGEB's Microbial Engineering department have found that P. funiculosum effectively produces the enzyme GH7

cellobiohydrolases (CBH1) – vital for the breakdown of cellulose – just as its fungal cousin Trichoderma reesei, which is mostly used in the industrial enzyme cocktails.

**By 2027, more than half of India's energy will be from renewable sources.** Non-fossil fuels — renewables, nuclear and large hydroelectric power plants — will account for more than half (56.5%) of India's installed power capacity by 2027, according to a draft of the third NEP3 (National Electricity Plan). The draft notes that if India achieves its target to install 175 GW of renewable energy capacity by 2022 — as committed under the 2015 Paris Agreement — it will not need to install, at least until 2027, any more coal-fired capacity than the 50 GW currently under construction. The ministry of power produces a National Electricity Plan every five years in which it reviews the progress made over the previous five years, and sets out a detailed action plan for the next 10 with the overarching aim of achieving universal access to electricity and ensuring that power is supplied efficiently and at reasonable prices.

The Economic Times, 3 April 2017| Mint, 7 April 2017|The Hindu Business Line, 19 April 2017|The Hindustan Times, 20 April 2017


**ReNew Power doubles installed capacity from 1000 MW to 2000 MW.** Leading renewable energy developer ReNew Power Ventures has more than doubled its installed capacity in a single year from 1000 MW to 2000 MW, with an investment of Rs. 6,700 crore, or about $1billion. The company, in which Goldman Sachs, Global Environment Fund in the US, Abu Dhabi Investment Authority and Asian Development Bank have invested significantly, said it has added 430 MW of solar and 626 MW of wind capacity in 2016-17.

**Fortum India to add 250MW solar power capacity every year**. Finnish state-run utility Fortum Oyj's India unit, which last year drove down solar power tariff to a new low, will set up at least 250 MW of solar capacity in the country every year, managing director Mr Sanjay Aggarwal said. Exactly a year ago, Fortum said it would invest €200-400 million (Rs1,500-3,000 crore) in India's solar energy sector to set up some large-scale greenfield projects. The company will have about 200MW of solar energy capacity operational by August. It has a target of achieving 1GW of solar capacity in the next few years. The company plans to set up its solar projects across utility plants, business-to-business, and rooftop projects, Mr Aggarwal said. The company's bid for a solar project in a Rajasthan auction in 2016 drove tariffs to a low of Rs4.34 per kilowatt-hour.

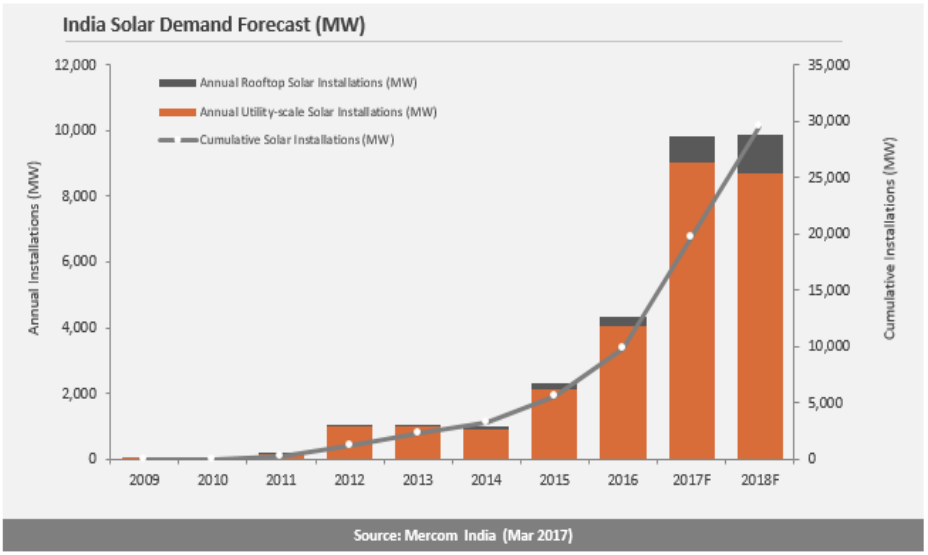
**Solar tariffs fall to record low at NTPC auction**. Solar tariffs in India fell to yet another record low at the NTPC conducted auction of 250 MW at the Kadapa Solar Park in Andhra Pradesh on 11 April 2017. The winning bid was Rs 3.15 per kwH, made by Solaire direct Energy India, a subsidiary of the French power giant Engie, which acquired it in 2015. The lowest tariff achieved until this auction had been in the Madhya Pradesh state auction at the Rewa Solar Park in February this year for 750 MW. This was a tariff of Rs 2.97 per kwH, which will remain constant throughout the life of the plant, is thus substantially lower.

**Solar panel registrations begin in Delhi but applying remains a challenge.** The Delhi government has started accepting applications from domestic consumers and institutions in the social sector for registration of solar panels. According to an official a resident can visit EE&REM (Energy Efficiency & Renewable Energy Management) Centre page in the Delhi government website for registration. Scanned copies of the filled forms should be sent by email or in person. The move will help households avail 30% subsidy offered by the MNRE and also prevent dubious vendors from hawking substandard

solar panels in the capital. Under the scheme, people who wish to install solar panels of 1-5 KW will have to invest only between Rs 70,000 and Rs 2 lakh. The price would go down once they start generating power, with consumers getting an additional generation-based incentive of R 2 per KW of solar power for a period of three years.

**Metro to get solar power from Madhya Pradesh plant.** The DMRC (Delhi Metro Rail Corporation) has become the first Metro system in the country to procure solar power on RESCO (Renewable Energy Service Company) basis as an interstate open access consumer. The DMRC on 17 April 2017 signed three power purchase agreements and a coordination scheduling agreement for a 25-year period with RUMSL (Rewa Ultra Mega Solar Limited) a joint venture of SECI (Solar Energy Corporation of India) and Government of Madhya Pradesh -Solar Power Developers (Mahindra, ACME Solar and Solenergi) and MPPMCL. With this agreement, the DMRC will now get green energy at just Rs 3.30 per unit from RUMSL. This 750 MW solar project being set up at Rewa, Madhya Pradesh, will be one of the largest solar plants in the world and is likely to be operational from June 2018.

**India could see 10GW of solar installations in 2017, says report.** This year could be a record one for the Indian solar energy market, with new solar power installations in 2017 to reach around 10 gigawatts (GW) this year, said a **new report** . In a quarterly update, Mercom Communications India, a subsidiary of Mercom Capital Group (a global clean energy consulting firm), said the Indian solar sector is witnessing strong growth with cumulative installations reaching around 12.8GW at the end of the first quarter.




"Utility-scale projects account for about 12GW while rooftop installations accounted for almost 850MW (megawatts) of the installed capacity," said the report.

*(Source: Mercom India March 2017)*

The forecast 10 GW increase in 2017 would mean a 130% increase year-on-year compared to the 4.3 GW installed in 2016, as India becomes one of the top solar markets in the world after China and the US. "The pipeline of Indian utility-scale projects is currently 12.6 GW and there are approximately 6.1 GW of tenders pending auction," it emphasized.

**Power Grid Corp. of India girds up for solar challenge**. As India pursues its ambitious solar energy plans, the national grid is girding up for a smooth transition to a low carbon economy. It's a transition that is changing the face of the transmission business at every step, from the drawing board to costs and technology. State-owned Power Grid Corp. of India Ltd, which is working to improve the capacity and efficiency of inter-state transmission networks, is setting up transmission corridors to supply

power from solar parks to the national grid. It is also establishing 11 renewable energy management centres, each at a cost of around Rs 40 crore, in clean energy-rich states such as Tamil Nadu, Karnataka and Andhra Pradesh.

The Economic Times, 6 April 2017| Mint, 10 April 2017|The Economic Times, 14 April 2017| The Hindustan Times, 16 April 2017| The Hindu, 18 April 2017| Mint, 28 April 2017| Mint, 28 April 2017

## Wind

**Tata Power Renewable Energy commissions 100 MW wind farm in Andhra Pradesh.** Tata Power Company's renewable energy subsidiary, Tata Power Renewable Energy, has commissioned its 100 MW wind farm project at Nimbagallu in Andhra Pradesh, the company said. The company had commissioned 36 MW at the wind farm in December 2016, and has now started generation from the rest 64 MW. With this commissioning, Tata Power operational renewable energy portfolio stands at 1,959 MW, which includes wins (907 MW), solar power (932 MW) and waste heat recovery capacity (120 MW).

**Govt to auction wind projects of 4 GW capacity in FY18.** The government plans to auction wind power projects of about 4 GW capacity in tranches in 2017. The SECI is the nodal agency for holding the auctions this fiscal, part of government's plan to set up wind power capacity of 60 GW by 2022. The government has decided to go the bidding route as the first ever auction of wind power projects in February 2017 had seen power tariffs falling to all-time low of Rs 3.46 per unit.

**Removal of incentives to hit wind energy projects.** With incentives offered for wind energy investments having come down this financial year, installations by small investors — those who have less than 10 MW — is expected to drop drastically. Of the 32 GW of installed wind energy capacity in the country, 60% are by small investors. According to Mr K. Kasthurirangaian, chairman of Indian Wind Power Association, the accelerated depreciation has gone down from 80% to 40%, after generation-based incentive and 10-year tax-free benefit for profits from investments in wind energy were withdrawn.

The Hindu Business Line, 5 April 2017| The Economic Times, 22 April 2017|The Hindu, 22 April 2017

## Investments

**IREDA finances Rs 10,000 crore green projects during 2016-17.** The Indian Renewable Energy Development Agency increased its financing of green energy projects considerably in 2016-17, crossing the milestone of Rs 10,000 crore in a single year for the first time. IREDA provided loans of Rs 10,200 crore through 2016-17 for 112 clean energy projects across solar, wind, small hydro and biogas.

It nearly doubled its support for solar projects to Rs 4785.87 crore in 2016-17 from Rs 2684.68 crore in 2015-16, but its financing of wind projects dropped slightly to Rs 2511.69 crore from Rs 2735.51 crore. The company, currently an NBFC under the Ministry of New and Renewable Energy, with mini navratna status, also hopes to come out with an initial public offering later this year for which cabinet approval has been sought.

**Foreign investors giving M&A deals in India's renewable energy sector a miss.** Foreign strategic investors have largely stayed away from the flurry of deal-making in India's renewable energy sector, preferring instead to build from the ground up. Out of the $2.32 billion worth of mergers and acquisitions (M&As) in India's renewable energy sector in the last 15 months, foreign companies have bought assets worth just $290.6 million, while Indian companies have acquired $2.03 billion worth of assets, according to data from Thomson Reuters.


Among the larger deals in this period are Tata Power Co Ltd's acquisition of 1.1 GW assets from the Welspun Group, Greenko Group's' acquisition of SunEdison's India portfolio, and the merger of Orient Green Power Co. Ltd and IL&FS Wind Energy.

*(Source: Mint 21 April 2017)*

**Indian Renewable Energy Agency raises $109 million in masala green bonds.** The IREDA ( Indian Renewable Energy Development Agency) recently raised $109 million through green bonds and is planning to raise even more through this route in the coming months. The non-banking financial agency of the Ministry of New & Renewable Energy is out to raise funds through green bonds and has already raised Rs 700 crore ($109 million) in 2017. The agency managed to raise funds from Indian investors by offering rupee-denominated instruments. The IREDA (Indian Renewable Energy Development Agency (IREDA) has also announced that it will raise $350 million through two separate issues. The funds shall be raised through the Singapore Stock Exchange, where the bonds will be listed as well. IREDA plans to list the bonds at the London Stock Exchange as well. IREDA is likely to sanction debt finance worth Rs 13,000 crore ($2 billion) for renewable energy projects across the country in financial year 2017-18, i.e. between 1 April 2017 and 31 March 2018.

The Economic Times, 10 April 2017| Mint, 21 April 2017| Clean Technica, 21 April 2017