

Newsletter on the JICA-IREDA initiative to promote renewable energy development in India



Wind Energy Installation by ReNew Wind Energy, Bakhrani, Jaisalmer

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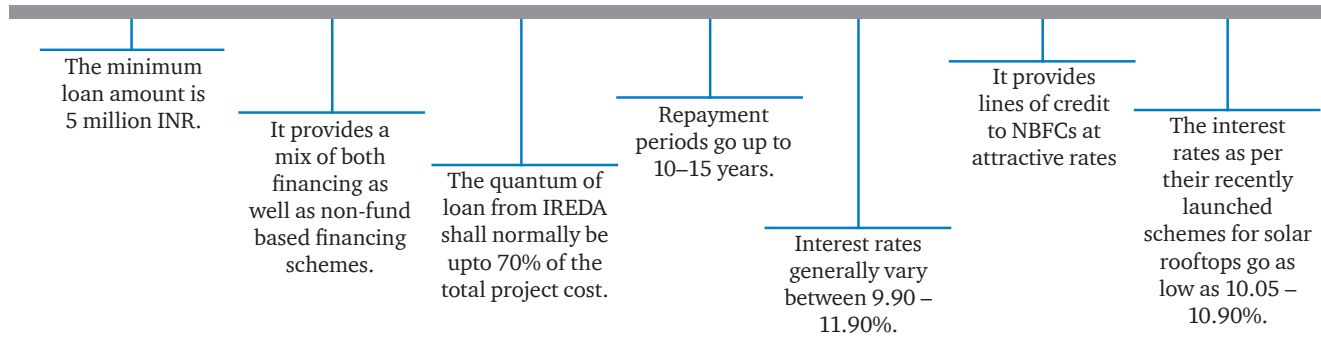
1. IREDA

The Indian Renewable Energy Development Agency (IREDA) Ltd. is a non-banking financial company under the administrative control of the Ministry of New and Renewable Energy (MNRE). It is a public limited government company that was granted 'Mini Ratna'

status by the Government of India.

The organisation has been active in promoting, developing and extending financial assistance for renewable energy through innovative financial mechanisms. Headquartered in Delhi, IREDA has branch

and camp offices in Chennai, Hyderabad and Ahmedabad. It caters to the wind, hydro, solar, biomass, waste to energy, energy efficiency, biofuel, new and emerging energy, and hybrid sectors.



**Data provided is for general cases. There are other exceptional cases apart from these as well.
Note: Prompt payment rebates are available for timely repayments.*

2. JICA

The Japan International Cooperation Agency (JICA) is the world's largest bilateral development organisation, operating in around 150 countries to help some of the globe's most vulnerable people. It coordinates official development assistance (ODA) for the Government of Japan, and is globally the largest provider of ODA. Its work spans a broad spectrum

of issues—education, ICT, healthcare, climate change, agriculture, energy, etc.

JICA has been supporting the development of India's renewable energy sector since 2011 by supplying two lines of credit of 30 billion JPY to IREDA to augment the growth of India's renewable energy portfolio. This concessional credit, coupled

with technical expertise, has supported the growth of India's renewable energy by almost 70% to around 40 GW in the last five years. The first line of credit was awarded for the years 2011–14 and the second line of credit (2014–2017) is now under implementation.



3. Project Progress

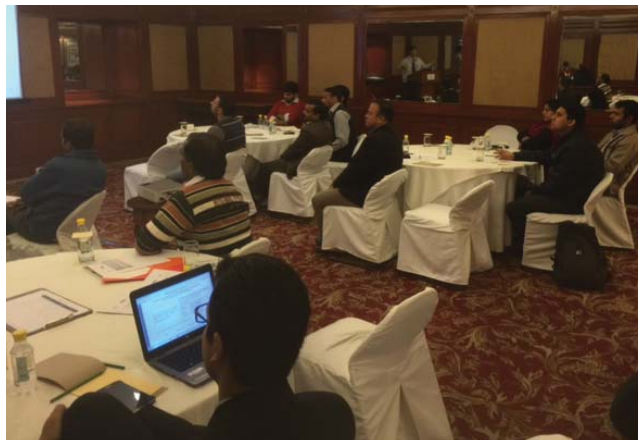
This is the second newsletter to be issued as part of the New and Renewable Energy Development Project, which was set up through an ODA agreement between JICA and IREDA to provide mid- and long-term financing for new and renewable energy at the end of 2014. The progress made by the project from July–December 2015 is outlined below.

JICA has already committed over 12 billion JPY out of its second line of credit in less than a year.

Developing and strengthening an information database for project monitoring and evaluating performance

Progress: A working prototype of the central project data monitoring system (CPDMS) for wind projects has already been developed and showcased to the wind and IT teams of IREDA. The comments and suggestions obtained from these discussions have also been incorporated in the system. The CPDMS links directly with the supervisory control and data acquisition (SCADA) systems of wind power developers to automatically source data to IREDA's servers in the required format.

The project team has been able to demonstrate the utility of this system to three different manufacturers and now aims to encompass all wind power manufacturers that have provided equipment to IREDA-funded wind power projects. Successful implementation of this system in the coming months will ensure that IREDA has ready access to live generation data of individual projects. Based on the success of the prototype developed thus far, we aim to replicate the same system for solar projects in the coming year.



Capacity building of IREDA staff/concerned stakeholders on new and proven technologies as well as financial mechanisms for commercialisation

In order to enhance the capacity of IREDA employees and support their project appraisal tasks, three workshops were organised on topics that were finalised through discussions with the employees and after weighing their needs.

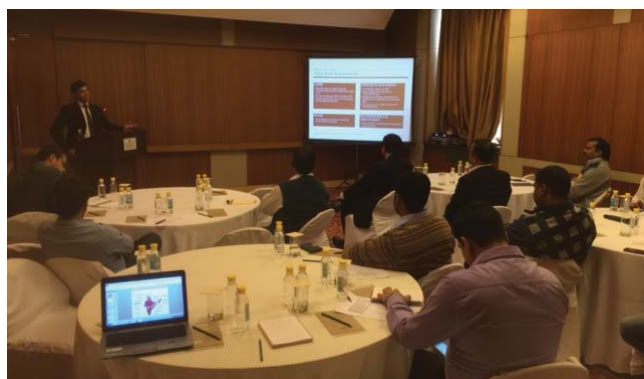


Workshop on solar rooftops

Explaining the methods of implementation of solar rooftops and various business models adopted globally; visit to a rooftop solar installation.

Workshop on solar parks

Detailing the entire solar park implementation and project allocation framework along with a case study of the Karnataka Solar Park



Workshop on concentrated solar thermal technologies

Explaining the principle, working and types of CSTs, process mapping their usage in industries, financial returns and savings made from such systems



Enhancing market outreach of IREDA

A workshop to familiarise stakeholders with the current status of solar energy in Andhra Pradesh and highlighting the state's policy structure, upcoming opportunities, developer experiences, etc., was organised in July in Hyderabad. This workshop was held in association with the New and Renewable Energy Development Corporation of Andhra Pradesh and the State Energy Department. Mr Ajay Jain, State Secretary, Energy, Infrastructure and Investments, inaugurated the event. The workshop was very well received and saw the participation of over 60 important

stakeholders. Several constructive discussions were held during the event.

Two additional workshops are being planned for external stakeholders in the month of April 2016. The first of these is on promoting investments in the small hydropower sector of Arunachal Pradesh. It will be held in Itanagar in association with the Arunachal State Hydro Department. The second workshop is on promoting investments in renewable energy in India. It will be organised in Mumbai in association with the National Council for Photovoltaic Research and Education.

India emerges as the top FDI destination in 2015

With 31 billion USD in foreign direct investment (FDI) in the first half of 2015, India emerged as the most favoured destination. India is followed by China (28 billion USD) and the US (27 billion USD). The country's top position highlights the success of its efforts, enablers and supportive policy framework. In comparison, the first half of last year saw investments of only 12 billion USD. India was also the top destination for greenfield investments in the same period.

Winds of Change - A Documentary on Wind Energy

As part of this project, a documentary on wind energy has been produced, in order to promote investments in this sector. It provides a comprehensive view of the overall wind energy sector in India and highlights the first-hand experiences of important stakeholders from all steps of the asset chain, including financiers, asset managers and investors. Please get in touch with the contacts provided at the end of the newsletter to request for a copy.



4. Recent Developments

Launch of the International Solar Alliance

COP21 saw the launch of the International Solar Alliance (ISA), which is a coalition that aims to address the special energy needs of solar resource rich countries. Launched by India's Prime Minister, Mr Modi, and the French President, Francois Hollande, the alliance involves over 120 countries and serves as a collaborative platform for addressing the gaps these

nations face through a common approach. No body existed to address the specific solar technology deployment needs of the solar resource rich countries located between the Tropic of Cancer and the Tropic of Capricorn; therefore, this alliance fills an important gap. The countries in this region receive a huge amount of sunlight all year round (with

high insolation of almost 300 sunny days in a year), which can be used to develop cost-effective solar power and for other end uses. Many countries in this zone are faced with challenges in the potential solar energy manufacturing ecosystem and those related to universal energy access, energy equity and affordability.

WTO rules against India's protection to its solar cells

In September, 2015 the World Trade Organization (WTO) passed its ruling against India in its 'India – Solar Cells' dispute (DS456). The dispute revolved around India's attempts to become a solar manufacturing hub through favourable regulatory and policy conditions.

In order to promote the production of solar modules and their components in India, the nation had released various tenders

under the domestic content requirement (DCR) category. This essentially mandates project developers to procure solar modules that are manufactured in India for DCR tenders, thus resulting in the sale of modules manufactured in India, which generally find it difficult to compete against imported modules. This also resulted in the procurement of electricity at higher rates by DISCOMs from developers using the more expensive

DCR modules.

The DCR provision had attracted allegations of prohibited subsidies and violation of the national treatment principle under the General Agreement on Tariffs and Trade (GATT), Trade-Related Investment Measures (TRIMS) and Agreement on Subsidies and Countervailing Measures (ASCM) of the WTO.

India sees record low tariff of 4.63/kWh INR in two separate bids

India recently initiated the e-auctions in solar project development tenders. First-level qualified bidders selected on the basis of closed-envelope bidding are allowed to participate in an e-auction. This is an online event in which the lowest winning tariff can be viewed by all bidders at any point in time. The bidding round closes when no bidders change their bid for an interval of 8 minutes.

The 500-MW bid in Andhra Pradesh (AP) was the first e-auction held for solar projects. This was followed by another 350-MW bid in AP which saw similar

results, with the lowest tariff for the open category projects as low as 4.63 INR/kWh and single companies taking the entire allocation capacity. SunEdison won the first phase of 500 MW, while Softbank launched SBG Cleantech won the second phase of AP bids of 350 MW. In another bid held for a project in Haryana, Aditya Birla scored the entire 150 MW at a tariff of 5.08 INR/kWh.

The lowest tariff for 150-MW capacity under the DCR category was 5.12 INR/kWh, which was won by Azure Power India Private Limited. In other DCR bids, Vikram

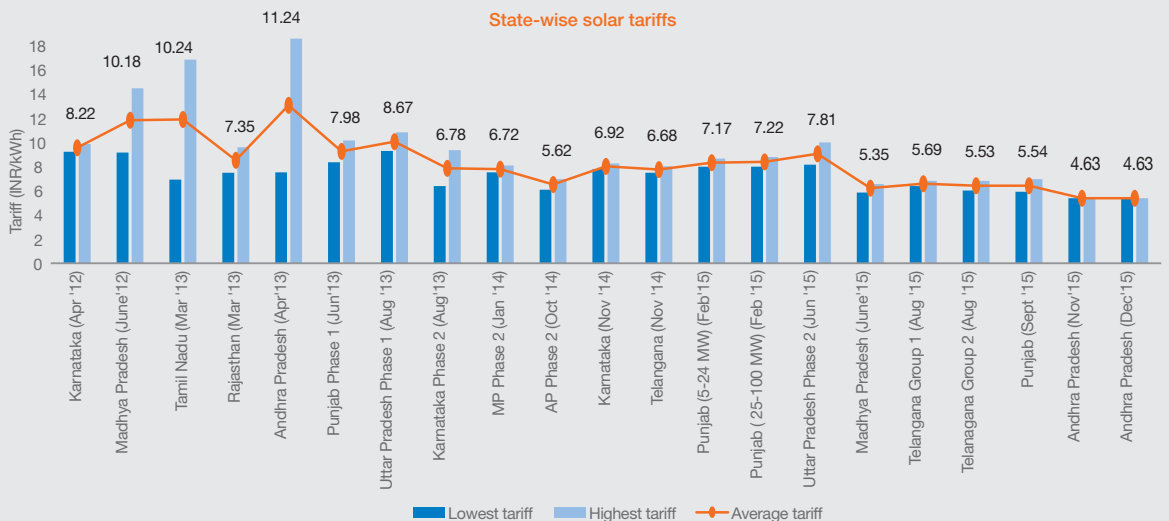
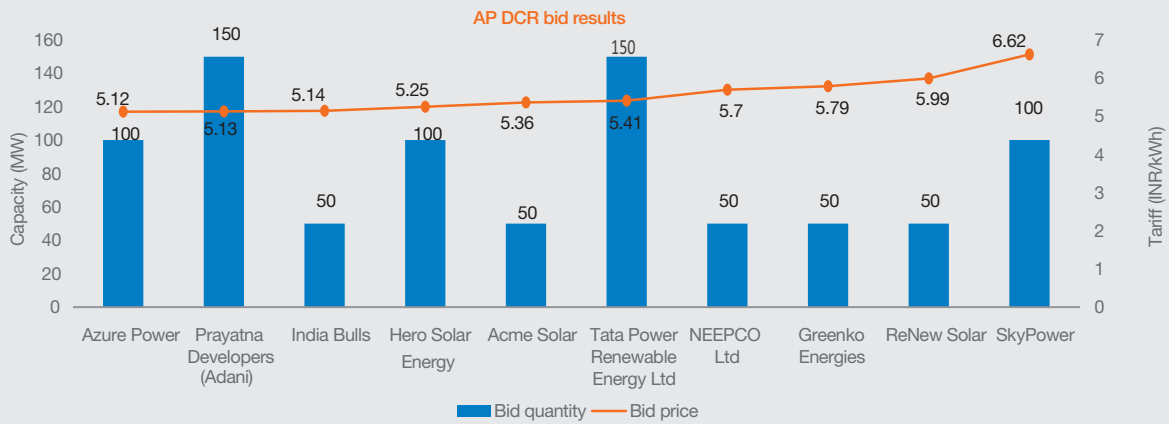
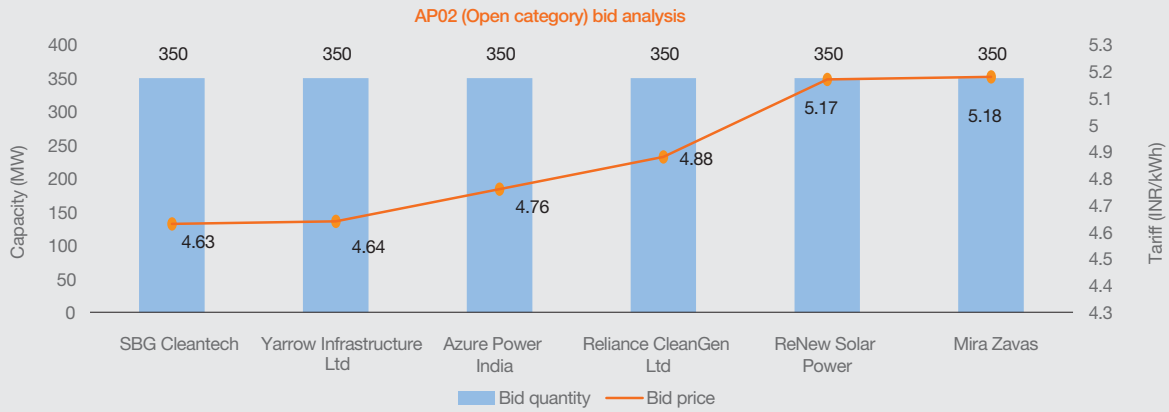
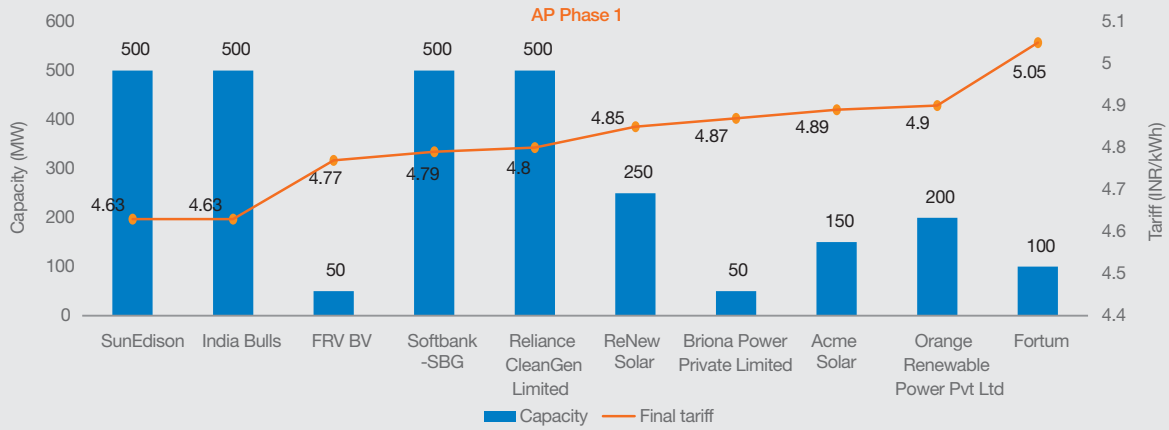
Solar won two out of four projects of 65 MW each for engineering, procurement and construction (EPC) contracts by the National Thermal Power Corporation (NTPC) at a rate of 5.628 crore INR per MW, and was followed by Jakson and Tata who won one project each at 5.634 and 5.64 crore INR per MW.

Bid analysis for the AP projects is illustrated below. These results demonstrate the immense reduction in costs India's solar sector has seen with the establishment of the nation's solar scale-up targets.

Other News Headlines

- Indian government approves 5,000 crore INR for the promotion of grid connected solar rooftops by 2022.
- Government bats for revising RPO targets to 10% by 2022.
- India to launch \$1-b equity fund for renewable energy
- MNRE approves the development of 56 solar city projects across 28 states
- Indian Railways brings out policy on solar capacity panels at stations





5. India's INDCs and COP21

India's INDCs

INDCs are voluntary national targets that identify the actions a national government intends to take under the future United Nations Framework Convention on Climate Change (UNFCCC) climate deal. In their INDCs, countries outline the steps they are taking/will take to achieve these targets. An analysis of the major INDC targets declared by India in 2015 is presented below.

To reduce the emission intensity of its GDP by 33–35% from the 2005 level by 2030

Analysis of India's past emissions, GDP forecasts and the emission intensity pledge suggests that its emissions can reach around 6.5 billion tonnes of CO₂ equivalent (GtCO₂e) in 2030, up from 3.5 GtCO₂e today.

To achieve about 40% cumulative electric power installed capacity from non-fossil fuel based energy resources by 2030 with the help of transfer of technology and low-cost international finance, including from the Green Climate Fund (GCF)

According to the Planning Commission, the power generation capacity of all captive plants will increase to around 9,00,000 MW by the year 2031–32. Therefore, India needs to have more than 370 GW of installed non-fossil fuel based capacity.

To create an additional carbon sink of 2.5–3 billion tonnes of CO₂ equivalent through additional forest and tree cover by 2030

Currently, the total forest and tree cover amounts to around 24% of India's total area and is increasing at the rate of around 150 million tonnes of CO₂ equivalent.

COP21

The COP21 summit, which was held in Paris, saw 195 countries agree on a comprehensive climate change deal that will give an immense boost to the clean energy business without compromising on developmental imperatives. Its key features have been summarised below.

The Paris Agreement on climate change mentions a goal of below 2°C for temperature rise by the end of the century. It also states that nations are to pursue efforts aimed at pegging temperature rise at less than 1.5°C.

The agreement is scheduled to come into effect in 2020, and is based on a system of voluntary pledges or nationally determined contributions made by individual countries to control their greenhouse gas emissions that are warming the atmosphere and impacting the climate.

It requires developed countries to raise finances worth 100 billion USD every year from 2020, to help developing nations in both mitigation and adaptation activities, while other nations are encouraged to provide funding voluntarily.

It encompasses a monitoring and evaluation framework. The first global evaluation of the implementation of the Paris Agreement is due to take place in 2023 and, subsequently, after every five years to help all countries.

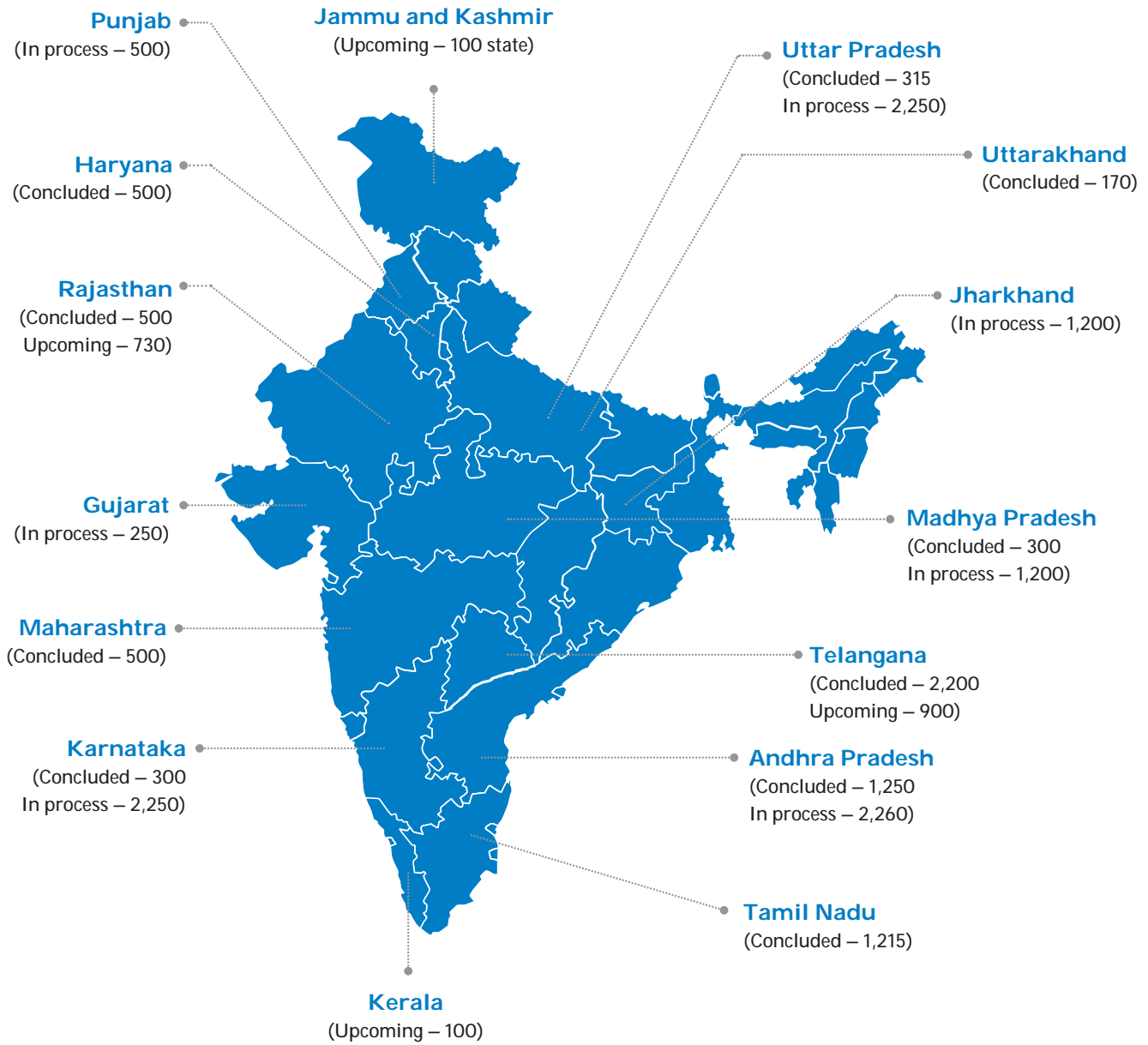
The pledges made by countries with an end date of 2025 or 2030 will need to be updated by 2020 and enhanced action has to be undertaken after every five years.

The agreement sets up a framework wherein a facilitative dialogue of the countries is to be held in 2018 to enable a review of the collective efforts taken to counter climate change. It also promises to create a framework of technology transfer for developing countries.



Wind Energy Installations by Multiple Developers, Jaisalmer

Opportunities in 2016



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