

SOLAR TODAY

India's First Magazine Dedicated to Emerging Solar Industry

Vol. 2 • No. 4 • May - June 2016 ₹150

THE BIG SOLAR FIGHT

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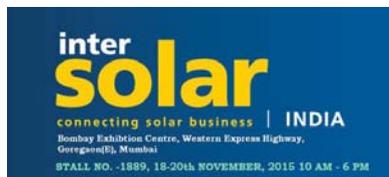
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SUNNY SIDE DOWN

India is moving remarkably fast in implementing solar power projects. We have not only set a challenging goal

of setting up an impressive array of 100 Giga Watts of solar power capacity by 2022, we are also implementing this in 'Mission Mode'. Progress achieved so far is quite promising, making the whole world sit up and take notice. Needless to say, India has become a very important market for global solar players—a very 'happening' destination for the whole gamut of developers, vendors and turnkey contractors.

But this story is not so much about our solar power capacity ambitions, as it is about our 'Make in India' aspirations in the field of indigenously manufacturing solar panels, where we seem to have fared rather poorly so far. Having set ourselves a lowly target of only 8 Giga Watts of domestic manufactured capacity in the total of 100 GW over the next 6 years, which means a paltry 8 per cent, we have made a bad start.

Nations that have truly visionary leadership work out a deeply thought through strategy for adding value through manufacturing, agriculture and services and grow its GDP faster. Such a strategy has to do with natural competitive advantages, access to raw materials and markets, skills available in the country and about how to develop differentiators in a chosen playing field (read: global market place).

I would think this is how nations excel, and leave competing countries behind, more so in manufacturing sectors. This is how Japan has done well in automotive sector, Malaysia/Thailand have led the way in white goods manufacturing, Taiwan has topped in electronic hardware, and Estonia and Ireland have succeeded in IT. This kind of a thought process, a coordinated effort between the government and the entrepreneurs by way of enabling and supportive policies and incentives on one hand, and judicious investment, risk-taking and

hard-nosed implementation on the other, is perhaps missing in India, missing from the movement called 'Make in India'. And, nowhere is this absence of strategy and coordination starker than in domestic manufacturing of solar panels/modules.

Let's look at a few facts – which may appear disjointed, but are actually interconnected and relevant. The government had stipulated some DCR (Domestic Content Requirement) in solar projects, which has been overruled by WTO's dispute resolution committee. Meanwhile, the developers and contractors are not particularly enamoured of the indigenous manufacturers because they are 25-30 per cent costlier than the Chinese. The bottom line is, in spite of having a friendly, captive domestic market, Indian solar manufacturers have so far been grossly unable to set up the scale and vertical integration needed in order to acquire competitiveness. We may well lodge 16 cases with WTO against the USA's renewable programmes, as an impressive retaliatory measure, but this is not going to help us in building a robust and competitive domestic industry any time soon.

Indian solar panel manufacturing industry could have done much better with better advice, better strategy, and on top of all that, better coordination between the manufacturers' bodies and the policy makers. But then, whatever happened to the venerated Indian entrepreneur, where did all the risk-taking ability, all the business acumen, all the 'jugaad' of our industrialists disappear? One doesn't know. We still eagerly await the manufacturing revolution in solar panels, with the possible emergence of a few 'desi' global leaders in solar manufacturing, by the year 2022.

Sumit Banerjee
 Chairman, Editorial Advisory Board

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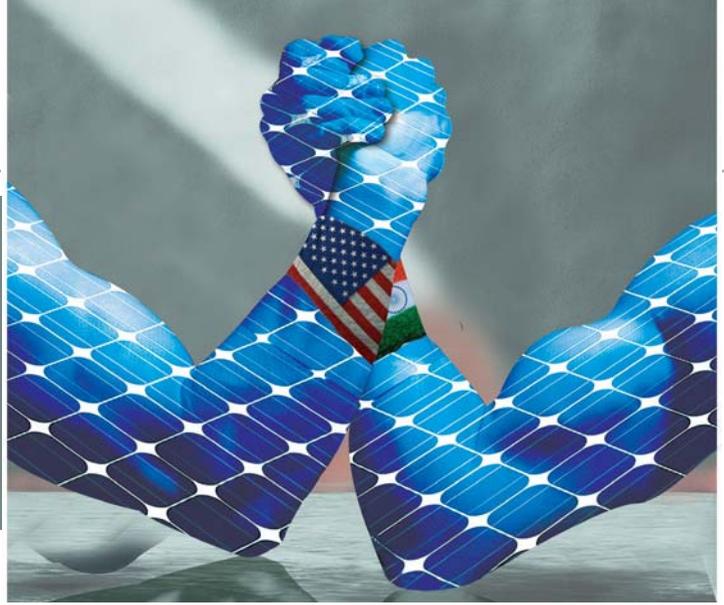
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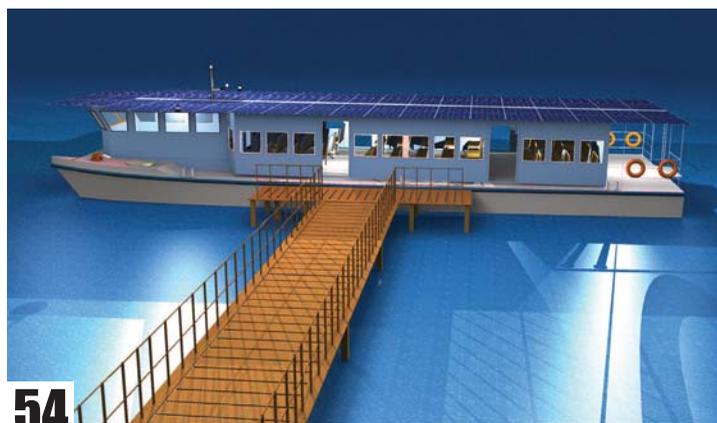
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REI Expo 2016
 India's Largest 3-day Exhibition & Conference on Solar Industry was held at the Bombay Exhibition Centre in Mumbai from November 18 to November 20, 2015.



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Clarification

Referring to the following comment in the cover story published in Solar Today Magazine's March-April issue, Mr Anuj Gupta, Officer on Special Duty to Minister of State (Independent Charge) for Power, Coal and New & Renewable Energy issued a clarification:

What was mentioned:

While achieving the target by 2022 is being debated, Power Minister Piyush Goyal went to the extent of announcing his intention to achieve the target by 2017. "We are looking at achieving the 100 GW target of installed capacity of solar energy by the end of 2017 itself," Goyal said recently.

Mr Anuj Gupta's clarification:

Nowhere has the Hon'ble Minister talked about achieving 100 GW by 2017. The target year remains 2022 and he was misquoted on a story where he said 20 GW; the old target will be achieved by 2017, as PTI admitted, "PTI had erroneously reported from Mumbai yesterday that the Centre would achieve its ambitious target of 100 GW of solar capacity generation by 2017."

Author's response:

Our comment was based on various newspaper clippings on the matter quoting PTI. We regret the inadvertent error.



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STATE PLANS SOLAR POWER POLICY FOR FARMERS

In a relief to Maharashtra farmers, the state government is planning a policy for distributed generation of solar power for agricultural consumers. It is also looking at generating solar energy through the use of innovative ideas. Of the 7,500MW of grid-connected solar power capacity to be added under the state's new and renewable energy policy, MahaGenco will generate 2,500 MW, with the rest to be provided by the Maharashtra Energy Development Agency (MEDA).

CONTACT: MAHAGENCO
WEBSITE: WWW.MAHAGENCO.IN

Spate in solar panel thefts leave farmers worried

SECI prompts a rooftop solar revolution with 500 MW tender

Mangalore MLC wants to give solar power to 50 schools

India will achieve solar energy target: Goyal

FIRMS FAILING DOES NOT IMPACT INDIA'S PLANS: GOYAL

Brushing aside worries over any spillover effect of SunEdison's debt woes on India's solar plans, Renewable Energy Minister Piyush Goyal said that some firms not doing well will not impact the programme's success. "There are always certain cases of firms failing. It doesn't mean that the whole sector collapses," he said.

CONTACT: MINISTRY OF POWER
WEBSITE: POWERMIN.NIC.IN

India appeals against WTO solar ruling

India has appealed against the WTO panel's ruling that its power purchase agreements with solar firms were "inconsistent" with international norms. India filed a notice of appeal in the dispute with the United States concerning certain measures relating to solar cells and solar modules. The

AP pilots solar energy storage project

Andhra Pradesh will set an example to other states in integration of solar energy with the power grid when the proposed 100 MW storage capacity is created in the green energy corridor coming up in Anantapur and Kadapa districts. It is a pilot project being supported by MNRE. "No other state is

MANUFACTURERS TO GAIN FROM NITI AAYOG-COORDINATED SOLAR POWER POLICY PUSH

India is readying a major solar push to build on recent successes with a brand new policy to aid manufacturing of equipment that's going to be in great demand if the government's plans fructify. Backed by Prime Minister Narendra Modi, the Niti Aayog-coordinated policy is



expected to go to cabinet shortly. "The new framework is almost ready. It is expected to be taken up by the cabinet soon," a senior government official said. The proposed policy aims to create enabling conditions for solar generation capacity and could include off-take guarantees, 100% payment guarantees, an institutional hedging mechanism for foreign currency funds and a stringent offset.

CONTACT: NITI AAYOG. WEBSITE: NITI.GOV.IN

appeal follows the WTO's February ruling in the US' favour. Rulings of the dispute settlement panel can be challenged at the WTO's Appellate Body which has up to three months to conclude its report.

CONTACT: WORLD TRADE ORGANIZATION
WEBSITE: WWW.WTO.ORG

India's bright idea can make solar power returns shine

Indian power minister Piyush Goyal said the government is open to the idea of pricing solar power tariffs in dollars, yen and euro. Goyal's comments suggest that hard-currency pricing plans are coming closer to fruition. This is just what the Indian solar industry needs to get over jitters caused by the looming bankruptcy of SunEdison Inc.

CONTACT: MINISTRY OF POWER
WEBSITE: POWERMIN.NIC.IN

creating solar energy storage, which is an emerging concept in the entire world," said M. Kamalakar Babu, Vice-Chairman and Managing Director, NREDCAP.

CONTACT: AP GOVERNMENT PORTAL
WEBSITE: WWW.AP.GOV.IN

India's green programme comes as an article of faith: Piyush Goyal

India's renewable energy programme is not dictated by any external pressure but comes as an article of faith, Power Minister Piyush Goyal said. The Minister said the solar alliance is an opportunity to serve humanity and those who still have no access to power. "Our effort for cleaner environment and greener environment comes as an article of faith. It is not something we are doing out of international pressure. We are looking

to set right what went wrong in the past, to correct the imbalance in the atmosphere, the way development has taken place over several years," he said. The ISA which comprises 121 countries that lie partially or fully between the Tropics of Cancer and Capricorn is intended to create a platform for larger collaboration for technology, research and development and capacity building.

CONTACT: MINISTRY OF POWER

WEBSITE: POWERMIN.NIC.IN

India-France talks of \$1 trillion investment

India and France announced ambitious plans under their solar alliance initiative to ensure affordable financing and help facilitate investment of more than a trillion dollars in solar assets besides scaling up solar applications for agricultural use. Power, Coal and Renewable Energy Minister Piyush Goyal and French Minister of Environment, Energy and the Sea, in charge of International Relations on Climate and President of COP21 Segolene Royal co-chaired a ministerial side event on International Solar Alliance (ISA) here on Friday. The ministers launched the 'Affordable finance at scale' and 'Scaling solar applications for agricultural use' programmes during the event held as 175 nations were signing the Paris climate change agreement in the UN General Assembly hall at a ceremony hosted by Secretary General Ban Ki-moon.

CONTACT: MINISTRY OF POWER

WEBSITE: POWERMIN.NIC.IN

Cabinet approves 200 MW solar project at Jetsar

The Cabinet approved a proposal to provide 400 hectares of barren land at Central State Farm (CSF), Jetsar in Rajasthan for setting up of more than 200 MW solar power plant, an official statement said. The land is in the possession of National Seeds Corporation (NSC), a CPSE under the administrative control of the Ministry of Agriculture and Farmers Welfare, the statement added. The solar power

plant will be set up by a CPSE, which would be selected through negotiation. The project, by utilising un-cultivable land for a solar power project, will yield revenue for NSC and will also generate clean energy for the nation, it added.

CONTACT: GOVERNMENT OF INDIA

WEBSITE: WWW.INDIA.GOV.IN

Panels formed to improve quality control of solar

MNRE has set up three committees to improve quality control of solar modules and products. One panel will prepare a policy for testing laboratories, another will set technology and product standards and the third will look into regulations governing solar products. "We want to have a regulatory mechanism for solar products," said Varsha Joshi, joint secretary in the ministry who heads the committee looking into regulations. "We will also hold a stakeholders' meeting soon to decide which products should be included."

CONTACT: MNRE

WEBSITE: MNRE.GOV.IN

Southern Railway to set up solar panels in 38 locations

In order to procure power at cheaper rates and to help reduce greenhouse gases, Southern Railway will be setting up solar panels across 38 locations in the southern zone, according to officials. At present, Indian Railways is focusing on installing solar panels for provision of 50MW energy, of which 4MW will be for the southern zone. Railways will be providing rooftop areas for setting up solar panels to Solar Power Developers and purchase power from them. The power purchase agreement will be for 25 years, post that the onus of maintenance will be on the Railways. Depending on the power needs of a location, the panel designs and capacity will be decided. The plan of railways is to reduce the greenhouse emissions by using solar and wind energy.

CONTACT: SOUTHERN RAILWAY

WEBSITE: WWW.SR.INDIANRAILWAYS.GOV.IN



GUJARAT GOVT MULLS CONNECTING FARMERS USING SOLAR POWERED PUMPS TO GRID

In what could help farmers using solar powered water pumps for irrigation in Gujarat to earn some extra money, the state government is considering the possibility of connecting them to the grid. According to sources close to the development, the idea is under primary stage of consideration and could be implemented soon, if found viable. As on date nearly 4,000 solar water pumps have been distributed.

CONTACT: GUJARAT STATE PORTAL

WEBSITE: WWW.GUJARATINDIA.COM

AFFORDABILITY, ACCESS DRIVING INDIA'S ENERGY POLICIES: PIYUSH GOYAL

Expressing confidence that India is set to become the biggest energy market, Power Minister Piyush Goyal has said that affordability, access and inclusiveness are driving India's energy policies. "India, which is projected to see demand quadruple in the coming years will also lead in scaling up energy efficiency in line with commitments towards combating climate change," Goyal, said. He also added that India is among the few nations that has imposed a carbon tax.

CONTACT: MINISTRY OF POWER

WEBSITE: POWERMIN.NIC.IN



FORTUM WINS 100 MW PROJECT IN PAVAGADA SOLAR PARK

Finnish utility firm Fortum said it has secured a 100 MW solar power project from NTPC under an auction for 500 MW grid, which will connect solar PV projects in district Tumkur of Karnataka. Fortum has won a bid in reverse auction process conducted by NTPC on April 12, 2016, under Batch II Tranche I of JNNSM Phase II. The solar power plant will be built in Pavagada Solar Park with a fixed tariff of ₹4.79 per unit for 25 years. Fortum is looking to expand its renewable stakes in India in the recent years.

CONTACT: FORTUM
WEBSITE: WWW.FORTUM.COM

Kerala company builds country's largest solar ferry

Solar firm SkyPower looking for local partners in India

Solar park to come up at Kanigiri

SECR's wagon shop to have solar power plant

HARTEK POWER CONNECTS SOLAR TO AP GRID

Chandigarh-based EPC company Hartek Power said it has successfully connected a 50 MW solar project to the grid in Anantapur district of Andhra Pradesh. The scope of work of the 132/11 KV sub-station project involved complete turnkey solutions and post-inverter works for the power plant.

CONTACT: HARTEK POWER
WEBSITE: HARTEK.IN

Rays Power bags 10 MW solar project in Karnataka

Rays Power Experts said it has bagged a 10 MW project of Karnataka Renewable Energy Development (KREDL) under state's solar scheme. The project will be set up employing Poly Crystalline Technology at Chikkabalapura district of the state at a tariff of ₹5 per unit under power purchase agreement, the company said in a press release. Rays Power Experts will execute the PPA with Hubli Electricity Supply Company (HESCOM).

between railways and MNRE, finalisation of model bid documents for rooftop solar power plants with the financial support of MNRE.

India adds 3,000 MW solar capacity in FY16

India added close to 3,019 MW of grid-connected solar power generation capacity in 2015-16, which is well above its target of 2,000 MW for the fiscal. India's total solar power generation capacity touched 6,763 MW as on March 31, 2016, according to the latest update on progress on clean

ORANGE RENEW, SECI IN PACT FOR 100 MW SOLAR POWER

Orange Renewable, has signed PPA with SECI for a 100 MW solar power project in Maharashtra under Jawaharlal Nehru National Solar Mission Phase-II, Batch-III Scheme. SECI has been designated as the nodal agency for implementing projects for grid-connected solar power capacity. Orange Renewable won this contract through a competitive bidding process followed by online live reverse auction conducted by SECI, the company said. Orange Renewable will receive an average power tariff of ₹4.43 per unit for the next 25 years from the commercial operation date of this project scheduled in 2017.

CONTACT: ORANGE. WEBSITE: WWW.ORANGERENEWABLE.NET



IR to harness 1,000 MW solar power by 2020

The Indian Railways proposes to harness 1,000 MW solar and 150 MW wind energy by 2020, Lok Sabha was informed. A total of about 50 MW renewable energy capacity has been installed till date, including approximately 11 MW solar power and 37 MW wind power, minister of state for railways Manoj Sinha said in a written reply. "In addition, installation of 6.5MW is in progress and for about 50MW solar capacities, request for qualification (RFQ) has been issued by zonal railways," he added. For harnessing renewable energy sources for its requirements, Sinha said the mechanism put in place include signing of memorandum of understanding

energy initiatives. The tendering of over 21,000 MW of solar power generation capacity has already been completed during the last fiscal, with the aim of about 20,000 MW of installed production capacity from this renewable source by this fiscal end.

Adani gets Gujarat govt nod to build solar power equipment unit

Adani Enterprises Ltd has secured approval from the Gujarat government to begin work on building a solar power equipment plant on its own after earlier unsuccessful attempts to build the plant in partnership with technology providers such as clean-power developer SunEdison. Work on the first phase of the project has started

and is expected to be commissioned this year, said two government officials familiar with the plan. The Adani Group plans to invest \$2 billion in the project to make solar panels and solar photovoltaic cells.

Renewable energy management centres planned in districts

As part of its efforts to tap the full potential of solar and wind energy, NREDCAP has proposed to set up Renewable Energy Management Centres (REMC) in all Andhra Pradesh districts in the years ahead. The first such facility will be coming up in the Green Energy Corridor being established in Anantapur and Kadapa districts. According to top officials in the NREDCAP, a nodal REMC will be set up at the State Load Despatch Centre being constructed on the AP-Transco Circle Office premises at Gunadala in Vijayawada before the district-level centres take shape in a phased manner.

Delhi Metro likely to get green power from solar plant in MP

Delhi, which is ranked among the most polluted cities, is expected to get green power from Madhya Pradesh starting next year to run its Metro trains. "We are charting out the power purchase agreement to be signed



between Delhi Metro Rail Corporation (DMRC) and developers of the world's largest solar power plant of 750 MW coming up in the state's Rewa district," Madhya Pradesh New and Renewable Energy Department Principal Secretary Manu Shrivastava said. "We issued

tenders for setting up the power project last month," he said, adding that a meeting of bidders has already taken place on April 1 in Delhi.

Smart city Tumakuru to have rooftop solar panels

The Tumakuru Mahanagara Palike is gearing up to submit proposals of various intended projects along with Detailed Project Reports (DPR) with the hope of making it to the second phase of the list of smart cities. The palike had failed to make it to the list of the first stage of the smart cities project as it had not submitted a comprehensive project report. The civic body has now made the necessary preparations to draw up DPRs for various intended projects. One of the projects is the installation of rooftop solar panels to achieve independence in the power sector. The project is based on the Public-Private Partnership (PPP) model. Solar panels will be installed on the roofs of 72 government buildings under the Corporation limits. The aim is to generate 20 MW electricity which can help in putting an end to the uncertainty surrounding the power sector.

SPDCL to distribute 700 solar pump sets by month-end

Stepping up their efforts in distributing solar pump sets to the farming community, spread across the eight districts under its purview, Andhra Pradesh Southern Power Distribution Company Limited (APSPDCL) has announced to deliver another 700 units by this month-end. APSPDCL Chairman and Managing Director HY Dora, while inspecting the ongoing rural electrification works, under the Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY), in BN Kandriga and Thottambedu mandals near Srikalahasthi, here recently, opined that the solar pump sets would enable members of the farming community to operate the units in a seamless and uninterrupted manner, also eliminating the option of releasing water (for the crops) in the night time.



INDIA MAY FALL SHORT OF ITS SOLAR TARGET

India is likely to fall short of its target of adding 12 GW of solar power in 2016-17 and may keep missing the still more ambitious targets of subsequent years, says solar consultancy BRIDGE TO INDIA. "The most buzzing topic for the sector right now is the intense competition with tariffs coming down sharply to ₹4.34-5.00 per unit. With many developers struggling to raise capital and banks seemingly reluctant to lend to projects at such tariffs, progress in 2017 and 2018 is also not likely to be as fast as expected," it said.

CONTACT: BRIDGE TO INDIA

WEBSITE: WWW.BRIDGETOINDIA.COM

ACME GROUP WINS 100 MW SOLAR PROJECT IN KARNATAKA

ACME Group, announced that it has expanded its current portfolio to around 1,329 MW after winning a 100 MW project at Pavagada Solar Park in Karnataka at ₹4.79 per unit. This was part of the tender for setting up for 500 MW Solar Park in the state. "The project entails an estimated investment of ₹750 crore. Project work will commence by July 2016 and the project will be commissioned by 2017," Manoj Kumar Upadhyay, founder & chairman, ACME Group said.

CONTACT: ACME

WEBSITE: WWW.ACME.IN



HINDUJA GROUP CLOSING IN ON ACQUISITION IN SOLAR ENERGY SPACE

The Hinduja Group is in the final stage of sealing a deal to acquire a solar power company. Ashok Hinduja, Chairman of Hinduja Group of companies in India, said the group is bullish on green power potential in India and has already identified an asset for acquisition. Sources in the know said the company may be eyeing US-based SunEdison Inc's 450-MW solar plant in India. ReNew Power and Finland's Fortum Oyj are considered to be contenders for this asset.

CONTACT: HINDUJA GROUP
WEBSITE: WWW.HINDUJAGROUP.COM

Tripura seeks Japan funding for solar project

NTPC okays ₹3,104 cr solar projects in MP, Rajasthan

IREDA, Tata Cleantech Capital ink pact on financing RE projects

Tariff-based Bidding to award Green Corridor for Solar Parks

SUNEDISON SAYS IN TALKS FOR POTENTIAL DIP FINANCING

Flailing solar energy company SunEdison Inc. said it was in talks for potential debtor-in-possession (DIP) financing with some of its first and second-lien lenders, to help its situation. SunEdison said it needed about \$310 million to stay in business, estimating a cash shortfall of \$260 million by mid-June.

CONTACT: SUNEDISON
WEBSITE: WWW.SUNEDISON.IN

Keep generation costs under control: ICRA

ICRA believes some 5.7 GW of solar generation capacity will be added this year. The actual addition, however, would hinge on timeliness in awarding projects under state and central policies and subsequent signing of power purchase agreements. It estimates, assuming a 7% annual energy demand growth, an additional 78 GW in solar energy capacity would be required over

State for Power, Coal and New and Renewable Energy.

CONTACT: MINISTRY OF POWER, COAL AND NEW AND RENEWABLE ENERGY
WEBSITE: POWERMIN.NIC.IN AND MNRE.GOV.IN

City yet to benefit from solar power subsidy

The existing subsidy of 30 per cent, offered by MNRE, for installing solar PV systems on rooftops has been out of bounds for the Capital's

SOLAR POWER TARIFF STAYS BELOW ₹5/UNIT AT NTPC AUCTION

Solar power tariff remained below ₹5 per unit in the latest auction conducted by state-run NTPC Ltd for 500 MW capacity at Pavagada Solar Park in Tumkur, Karnataka. However, the tariffs bid were above the record low of ₹4.34/unit seen in January.

RattanIndia arm Yarrow Infrastructure Ltd quoted the lowest price of ₹4.78 per unit and bagged 50 MW project. Adani, Fortum India, ACME and Tata Power Renewable quoted the price of ₹4.79 per unit and bagged 100 MW each. Renew Power gave the price of ₹4.80 per unit and got 50 MW. NTPC has planned a capacity addition of about 1,000 MW through renewable resources by 2017.

CONTACT: NTPC LIMITED. WEBSITE: WWW.NTPC.CO.IN



the seven-year period from FY2016 to FY2022 to hit the revised solar obligation target of 8% by FY2022.

CONTACT: ICRA
WEBSITE: WWW.ICRA.IN

PSUs to launch \$1 bn Masala Bonds for renew projects

Energy sector PSUs are planning to launch Masala Bonds worth \$1 billion in the UK to fund renewable energy projects in India, as the country explores international mechanisms of funding and evaluates new and innovative tools to finance the renewables sector. Issuance of these Masala Bonds is one such step in this direction. "Companies including NTPC, Neyveli Lignite Corporation, PFC, PTC and REC are likely to launch these Masala Bonds totalling \$1 billion in the next three or four months in the UK to gauge the investor appetite," said Piyush Goyal, Minister of

households ever since it was notified in November last year. So far, only about 110 domestic consumers in Delhi have installed solar power systems. As per data with the Delhi government, of these 110 households, BSES Rajdhani Power Limited (BRPL) has 79 households, BSES Yamuna Power Limited (BYPL) has 23 and Tata Power (TPDDL) has seven. Delhi's total solar power generation is only about 8 MW, of which 3 MW is generated from households. The solar policy for the city, which will give an additional generation-based incentive to consumers, is likely going to be released next week.

CONTACT: MNRE
WEBSITE: MNRE.GOV.IN

Investment of ₹90,841 cr made in renewable energy

An investment of ₹90,841.16 crore