

## Ministry of New and Renewable Energy

### Green Power Capacity Increased

A total of 2,311.88 MW of grid-connected power generation capacity from renewable energy sources like solar and wind has been added so far this fiscal in the country. The government has set a target of 4,460 MW of power generation capacity addition this fiscal from renewable energy sources, including solar, wind and small-hydro. During the first seven months of the fiscal, 827.22 MW of solar power generation capacity was added, taking the cumulative electricity generation capacity from the source to 4,579.24 MW. The Centre is aiming to add 1,400 MW solar power generation capacity during this fiscal. Similarly, 1,234.11 MW wind power generation capacity was added during the period, taking cumulative electricity generation capacity from this renewable source to 24,677.72 MW. The government has set a target of adding 2,400 MW of wind power generation capacity in 2015-16. Under the small-hydro category, 106.55 MW generation capacity was added till October, taking the total generation capacity in this segment to 4161.90 MW. The Centre has set a target of adding 250 MW of small-hydro power generation capacity this fiscal. In the bio-power (biomass & gasification and biogases cogeneration) segment, 132 MW of generation capacity was added till October end this fiscal, taking the total capacity to 4550.55 MW in this segment. The government has set a target of adding 400 MW capacity from these sources. In waste-to-power segment, 12 MW capacity has been created till October compared to a target of 10 MW for the entire 2015-16. Now, India has 127.08 MW of power generation capacity under this category. The country's total grid-connected power generation capacity from all the above mentioned renewable sources was 3,8096.49 MW at the end of October. The physical progress of achieving these targets is as follows:

<b>Scheme wise Physical Progress in 2015-16 (During the month of October 2015)</b>			
<b>Sector</b>	<b>FY 2015-16</b>		<b>Cumulative Achievements (as on 31.10.2015)</b>
	<b>Target</b>	<b>Achievement</b>	
<b>I. Grid Interactive Power (Capacities in MW)</b>			
Wind Power	2400.00	1234.11	24677.72
Solar Power	1400.00	827.22	4579.24
Small Hydro Power	250.00	106.55	4161.90
Bio Power	400.00	132.00	4550.55
Waste to Power	10.00	12.00	127.08
<b>Total</b>	<b>4460.00</b>	<b>2311.88</b>	<b>38096.49</b>
<b>II. Off Grid Captive Power (Capacities in MW<sub>EQ</sub>)</b>			
Waste to Energy	10.00	0.50	146.51
Biomass Cogeneration	60.00	10.50	602.37
Biomass Gasifies	2.00	0.20	18.51
	6.00	8.67	160.72

-Rural			
-Industrial			
Aero-Generators/Hybrid System	0.50	46.50	280.85
Water Mills/Micro hydel	2.00	0.00	7.21
Total	130.50	66.50	1228.48
<b>III. Other Renewable Energy System</b>			
Family Biogas Plants (Numbers in lakhs)	1.10	0.15	48.28
Solar Water Heating- Coll. Areas	-	0.00	8.90

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### **First Renewable Energy Global Investment Promotion Meet & Expo (RE - INVEST)**

First Renewable Energy Global Investment Promotion Meet & Expo (RE - INVEST) was organised with the intent of providing a platform to the global investment community to connect with stakeholders in India. The Central Theme of REINVEST 2015 is to increase growth of renewable energy and energy efficiency in the country. The Meet showcased the Government's commitment in the development and scaling up of renewable energy in a socially, economically and ecologically sustainable manner to meet the national energy requirement. 118 exhibitors, 200 global investors and financiers 202 speakers and 2500 delegates from 32 countries have participated in the event. The objective of World's largest renewable energy financing meet is to showcase India as an investment destination for renewable energy and to encourage investors for setting up projects and manufacturing facilities of Renewable Energy equipment & products in India. The Ministry received total of 2,73,000 MW green commitments including 62,000 MW of renewable manufacturing in the event. On the occasion, 14 banks and financial institutions, 8 PSUs and private manufacturers, 15 private sector companies gave 70,000 MW of renewable finance Commitments.

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### **International Solar Alliance**

Prime Minister Shri Narendra Modi launched an International Solar Alliance (ISA) at the CoP21 Climate Conference in Paris on 30th November as a special platform for mutual cooperation among 121 solar resource rich countries lying fully or partially between Tropic of Cancer and Tropic of Capricorn. The alliance is dedicated to address special energy needs of ISA member countries. The new body of Secretariat will be hosted by Government of India. The Centre will provide land and \$30 million to form a secretariat for the Alliance, and also support it for five years. The participants, mostly in Latin America and Africa but also including the US, China, and France, would work together to increase solar capacity across emerging markets.

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### **Lowest Solar Tariffs**

In an e-reverse auction conducted by NTPC on 03.11.2015 for 500 MW (10 projects of 50 MW each) to be set up at Ghani Solar Park in Andhra Pradesh under National Solar Mission, Phase-II, Batch-II, Tranche-I of Ministry of New & Renewable Energy, Govt. of India, NTPC received the lowest tariff of Rs. 4.63 per unit of electricity. Total 30 bids were received totaling to 5500 MW capacity.

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### **Intra State Transmission System**

In July 2015, the Cabinet has approved the creation of an intra state transmission system in the States of Andhra Pradesh, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra and Rajasthan at an estimated cost of Rs 8548.68 crore with Government of India contribution from National Clean Energy Fund (NCEF) of Rs 3419.47 crore (40 percent of the total estimated cost of project). The activities envisaged under the project includes establishment of 48 new Grid sub-stations of different voltage levels with total transformation capacity around 17100 MVA (Mega Volt Ampere) by installing over 7800 ckt-kms (Circuit Kilometers) of transmission lines in these seven states. The project is proposed to be completed within a period of three to five years. The cost on creating intra-state transmission system is proposed to be met through KfW loan (40 percent of the total cost), NCEF grant (40 percent of the total cost) and the remaining 20 percent as State contribution. These States are rich in renewable resource potential and large capacity renewable power projects are planned there. Creation of an intra state transmission system will facilitate evacuation of renewable power from generation stations to load centres.

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### **Solar Cities**

The Ministry has approved 56 solar cities projects against the target of 60 solar cities under the Development of Solar Cities Programme. The Government has also approved a Scheme for setting up of 25 Solar Parks, each with the capacity of 500 MW and above and Ultra Mega Solar Power Projects to be developed in next 5 years in various States and will require Central Government financial support of Rs 4050 crore. These parks will be able to accommodate over 20,000 MW of solar power projects. As on date, 27 parks with capacity of about 18000 MW in 21 states have been sanctioned.

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## **Solar Projects under National Solar Mission**

The Union Cabinet gave its approval for the implementation of the scheme for setting up of 15,000 MW of Grid-connected Solar PV Power projects under the National Solar Mission through NTPC/ NTPC Vidyut Vyapar Nigam Limited (NVVN) in three tranches namely, 3000 MW under Tranche-I under mechanism of Bundling with Unallocated Coal based Thermal Power and fixed levelled tariffs, 5,000 MW under Tranche-II with some support from Government to be decided after getting some experience while implementing Tranche-I and balance 7,000 MW under Tranche-III without any financial support from the Government. Successful completion of additional 15,000 MW capacity of Grid-connected solar PV power generation projects, mainly in the private sector, with largely private investment, under the National Solar Mission would accelerate the process of achieving grid tariff parity for solar power and also help reduce consumption of kerosene and diesel, which is presently in use to meet the unmet demand.

The Government approved Solar Energy Corporation of India (SECI) to apply to the Registrar of Companies for converting it into a Section 3 company and renaming it as the Renewable Energy Corporation of India (RECI). After this, SECI will become a self-sustaining and self-generating organization. It will engage itself in owning solar power plants generating and selling power and in other segments of solar sector activities, including manufacturing of solar products and materials. RECI will take up development of all segments of renewable energy namely, geo-thermal, off-shore wind, tidal etc. apart from solar energy.

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## **Solar Energy Targets**

1. Off-grid Rooftop: It is proposed to set up 40 GW solar rooftop programmes where grid connectivity is already exist. 15% Government subsidy for non-commercial and non-industrial categories for using domestic solar panels would be provided.
2. Solar Parks: The Government has approved on 10th December, 2014 a Scheme for setting up of 25 Solar Parks, each with the capacity of 500 MW and above and Ultra Mega Solar Power Projects to be developed in next 5 years in various States and will require Central Government financial support of Rs 4050 crore. These parks will be able to accommodate over 20,000 MW of solar power projects. As on date, 27 parks with capacity of about 18000 MW in 21 states have been sanctioned.
3. Setting up of over 300 MW of Grid-Connected Solar PV Power Projects by Defence establishments and Para Military Forces with viability gap funding. More than 150 MW projects have been sanctioned under the scheme.
4. Implementation of Scheme for setting up 1000 MW of Grid Connected Solar PV Power projects by CPSUs and GOI organization's with Viability Gap Funding in three years period from 2015-16 to 2017-18. About 100 MW have been allocated to various CPSUs under the scheme.
5. Scheme for Development of Grid Connected Solar PV Power Plants on Canal Banks and Canal Tops: MNRE launched a Scheme for Development of Grid Connected Solar PV Power Plants on Canal Banks and Canal Tops in the country during the 12th Plan period at

an estimated cost of Rs. 975 crore and with Central Financial Assistance (CFA) of Rs. 228 crore. The Solar PV Power Plants on Canal Banks and Canal Tops with 50 MW capacities under each category have been approved to 8 States (Gujarat, Andhra Pradesh, Karnataka, Kerala, Uttar Pradesh, Punjab, Uttarakhand and West Bengal).

6. Scheme for Decentralized Generation of Solar Energy Projects by Unemployed Youths & Farmers. It is expected that about 10 GW solar projects would be setup. Innovative Financing of such projects could be possible as equity is being put up by the state, local bodies and entrepreneurs.
7. New loan scheme to promote rooftop solar power projects announced by IREDA. The scheme will provide loans at interest rates between 9.9 and 10.75 percent to system aggregators and developers.
8. Surya Mitra Scheme launched for creating 50,000 trained personnel within a period of 5 years (2015-16 to 2019-20). The course content has been approved by the National Council of Vocational Training as per the National Skill, Qualification Framework. As on 30.9.2015, a total of 27 programmes involving Rs 17 crore have been sanctioned to SNAs by NISE. In 2015-16, 70 programmes will be conducted against which 27 programmes have started. As on 30.9.2015, about 360 Surya Mitras were trained under the scheme

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### **National Offshore Wind Energy Policy, 2015**

National Offshore Wind Energy Policy, 2015 : Under this Policy, the Ministry of New & Renewable Energy (MNRE) has been authorized as the Nodal Ministry for use of offshore areas within the Exclusive Economic Zone (EEZ) of the country and the National Institute of Wind Energy (NIWE) has been authorized as the Nodal Agency for development of offshore wind energy in the country and to carry out allocation of offshore wind energy blocks, coordination and allied functions with related ministries and agencies. It would pave the way for offshore wind energy development including, setting up of offshore wind power projects and research and development activities, in waters, in or adjacent to the country, up to the seaward distance of 200 Nautical Miles (EEZ of the country) from the base line. The policy will provide a level playing field to all investors/beneficiaries, domestic and international. It is planned to set up the first offshore wind power project off the Gujarat coast soon.

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### **A Memorandum of Understanding (MoU) between India and France**

A Memorandum of Understanding (MoU) between India and France on 10th April, 2015 to establish the basis for a cooperative institutional relationship to encourage and promote technical bilateral cooperation on the new and renewable energy issues, on the basis of mutual benefit, equality and reciprocity. Another Memorandum of Understanding (MoU) on Renewable Energy Cooperation was signed between India and Seychelles in March, 2015, to strengthen, promote and develop renewable energy cooperation between the two countries on the basis of equality and mutual benefit. The MoU will also help in strengthening bilateral cooperation between the two countries in the field of renewable energy. U.S. and India have signed a MoU to establish

PACE Setter Funds with a contribution of US\$ 4 million (INR 25 crores) from each side for providing grants for seed capital for innovative clean energy projects. The PACE Setter Funds has been formally launched on 19th August, 2015 in New Delhi.

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## **National Offshore Wind Energy Policy**

The Union Cabinet chaired by the Prime Minister Shri Narendra Modi, has given its approval to the National Offshore Wind Energy Policy.

With this approval, the Ministry of New & Renewable Energy (MNRE) has been authorized as the Nodal Ministry for use of offshore areas within the Exclusive Economic Zone (EEZ) of the country and the National Institute of Wind Energy (NIWE) has been authorized as the Nodal Agency for development of offshore wind energy in the country and to carry out allocation of offshore wind energy blocks, coordination and allied functions with related ministries and agencies. The approval paves way for offshore wind energy development including, setting up of offshore wind power projects and research and development activities, in waters, in or adjacent to the country, up to the seaward distance of 200 Nautical Miles (EEZ of the country) from the base line.

Preliminary assessments along the 7600 km long Indian coastline have indicated prospects of development of offshore wind power. With the introduction of the National Offshore Wind Energy Policy, the Government is attempting to replicate the success of the onshore wind power development in the offshore wind power development. The policy will provide a level playing field to all investors/beneficiaries, domestic and international. All the processes would be carried out in a transparent manner by NIWE.

The development would help the country in moving forward towards attaining energy security and achievement of the NAPCC targets.

The scheme would be applicable throughout the country depending upon offshore wind potential availability.

### **Background:**

Worldwide, wind energy is accepted as one of the most developed, cost-effective and proven renewable energy technologies to meet increasing electricity demands in a sustainable manner. While onshore wind energy technologies have reached a stage of large scale deployment and have become competitive with fossil fuel based electricity generation, with supportive policy regimes across the world, exploitation of offshore wind energy is yet to reach a comparable scale. India has achieved significant success in the onshore wind power development, with over 23 GW of wind energy capacity already installed and generating power.

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## National Solar Mission

The Government has already revised the National Solar Mission target of Grid Connected Solar Power projects from 20,000 MW to 100,000 MW by 2022. This was stated by Sh. Piyush Goyal, Minister of State (IC) for Power, Coal & New and Renewable Energy in a written reply to a question in the Lok Sabha today.

The Ministry has chalked out year wise target to achieve 100000 MW by 2022 which is as under :

Year	Rooftop	Ground Mounted Solar Power Projects	Total (in MW)
2015-16	200	1,800	2,000
2016-17	4,800	7,200	12,000
2017-18	5,000	10,000	15,000
2018-19	6,000	10,000	16,000
2019-20	7,000	10,000	17,000
2020-21	8,000	9,500	17,500
2021-22	9,000	8,500	17,500
Total	40,000	57,000	97,000 *

\*3,743 MW commissioned upto 31.03.2015

The Minister further stated that Tariff Policy has been amended by the Government to require State Electricity Regulators to fix a percentage of energy purchase from solar power under the RPOs. As per amendment, the solar RPO has to begin with 0.25% of the energy procured in the State reaching to 3% by 2022.

The Minister also stated that in order to achieve the proposed capacity of 100 GW target by 2022, the investment required would be around Rs. 6,00,000 crores (@ Rs.6 crores per MW at present rate) out of which about Rs 420,000 Crores is proposed to be debt sourced from both domestic and international financial institutions including multilateral and bilateral organisations.

As on 30th June 2015, the cumulative installed grid-interactive solar power generation capacity in the country is 4061.64 MW. The States/UTs have to set up solar power projects or procure solar power to fulfil the Renewable purchase obligation declared by the respective Regulatory Commission.

The Government has approved a plan to set up 2000 MW grid connected solar power capacity under phase II of JNNSM. One MW of Solar PV project generates 1.66 million units of electricity. The power thus generated will be fed to the grid which can be drawn by any consumer including households.

The Minister further stated that the Government has launched a scheme for setting up 25 solar parks in the country wherein land, evacuation arrangement and common infrastructure will be made available for setting up solar power projects.

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### **Renewable Electricity Roadmap 2030**

The “Report India’s Renewable Electricity Roadmap 2030—Toward Accelerated Renewable Electricity Deployment” was released at the Renewable Energy Global Investors Meet & Expo (RE-INVEST 2015) here today. The report was brought out by NITI Aayog with support of CII, Shakti Sustainable Energy Foundation and RAP (Regulatory Assistance Project), a global non-profit group, talks about the current scenario of renewable energy in India and what needs to be done for its accelerated deployment to address energy security concerns.

Shri Piyush Goyal, Union Minister of State (IC) for Coal, Power and New & Renewable Energy, lauded NITI Aayog for the report and said that it has instilled a lot of hope for following more ambitious targets. “We need to create an enabling environment with respect to clearance, land acquisition and other regulatory support.” .

The Minister suggested that the land owners, who provide their land for setting up renewable energy projects, could be given a stake in the projects as an incentive. He urged NITI Aayog to help in creating some innovative model for the RE sector. He addressed the panelists while sitting in the audience. .

Commenting on the launch of the report, Smt Sindhushree Khullar, CEO, NITI Aayog- Govt of India stated that this is the first initiative of the Aayog. “Energy and renewable energy is a core area in India. We need to see actual movement on whatever the report suggests about,” said Smt Khullar. .

Mr Deepak Gupta, Senior Programme Manager- Power, Shakti Sustainable Energy Foundation, said that the report suggests possible roadmap to achieve ambitious targets in the renewable sector after assessing several best practices around the world. .

The panelists were of the opinion that India needs to keep renewable energy as a matter of national importance. They suggested that the need of the hour is to move away from the



current practice and make RE as an integral part of the power sector. For this a comprehensive national policy framework would be required for smoother renewable projects development in the country. .

Mr Mackay Miller, Technology Innovation Analyst, NREL, congratulated the Indian government for its ambitious RE targets and intent to attain that goal. He suggested that there is need to think about policy and financing mechanism so that investments take place. .

Smt Varsha Joshi, Joint Secretary, Ministry of New and Renewable Energy, lauded the report terming it as a good effort by the compilers. “It’s time that India has to look at RE as a resource across the states. There are a lot of things to be learned and a lot to be done,” she said. .

Shri Sumant Sinha talked about thinking ‘out of the box’ to operationalise the issues highlighted in the report. “Why can’t we make renewable energy as the backbone of India’s electricity generation? We have to re-think our entire reliability on coal. Discoms are reluctant on buying renewable power against highly subsidised conventional power,” Shri Sinha noted. .

Getting fund is seen as one of the major challenges. However, Shri Rajat Misra, VP, SBI Capital Markets Ltd is of the opinion that funding is not a constraint if there is good policy in place. .

Shri SK Soonee, CEO, POSOCO, raised the issue of grid as one of the major hurdles in increasing renewable potential. The experts stressed that renewable energy could be the backbone of Indian power scenario provided existing issues are addressed. They objected to having coal as the preferred power choice just because it is available beneath the earth. .

Smt Khullar stated that there is misconception in India that renewable energy is for rich. She asked everyone to be a part of this movement in renewable energy. “We are starting this journey with great hope and we should walk together to make it happen,” Smt Khullar concluded.

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## **Renewable Energy Sector**

The government plans to accelerate the deployment of renewable energy to more than 160 GW by 2022 including 100 GW solar energy and 60 GW wind energy. Increased focus is being given on small hydro, bio energy, new and emerging technologies. The government also aims setting up RE manufacturing bases in the country and establishment of RE University and creating multiple job opportunities.

Giving a fillip to the country's renewable energy programme, the government has taken a slew of decisions in the last few months to boost "Clean Energy" in the country. In order to facilitate the speedy growth of Renewable energy Power generation in the country, the Ministry of New and Renewable Energy (MNRE) is preparing a Renewable Energy Bill. There are several schemes in pipeline which include providing support of Rs 1000 crore to Central Public Sector units to set up over 1,000 MW grid connected solar photovoltaic power projects, setting up of over 300 MW of Grid-Connected Solar PV Power Projects by Defence, Ultra Mega Solar Power projects in Rajasthan, Gujarat, Tamil Nadu and Ladakh, 25 solar energy projects with 20,000 MW capacity to be developed by 2019 and setting up of over 300 MW of solar power projects by Defence and Para military establishments. The Government has also approved the Scheme for setting up of 1000 MW of Grid-Connected Solar PV Power Projects with VGF (Viability Gap Fund) support of Rs.1000 crore, in three years period from 2015-16 to 2017-18.

The Union Government had restored Accelerated Depreciation benefit in the Union Budget 2014 to give the much-needed relief to wind power developers and to ensure ramp-up of production. The Government approved continuation of: (i) National Biogas and Manure Management Programme (NBMMP), (ii) Scheme to Support Promotion of Grid-Interactive Biomass Power and Bagasse Co-generation in Sugar Mills, (iii) Programme for the Development of Small Hydro Power, and (iv) Off-grid and Decentralized Solar Applications under JNNSM, during the 12th Plan period. The Government amicably resolved the anti-dumping duty dispute. A whole host of measures have been undertaken to make India a "Solar manufacturing hub" with priority for domestic players in line with "Make in India" programme.

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