GOVERNMENT OF INDIA
MINISTRY OF NEW AND RENEWABLE ENERGY
LOK SABHA
UNSTARRED QUESTION NO. 2965
TO BE ANSWERED ON 04.01.2018

PROMOTION OF RENEWABLE ENERGY RESOURCES

2965. SHRI BALABHADRA MAJHI:
SHRIMATI MEENAKASHI LEKHI:
SHRI RABINDRA KUMAR JENA:
Dr. A. SAMPATH:

Will the Minister of NEW AND RENEWABLE ENERGY be pleased to state:

(a): whether the Government has taken /proposes to take any steps for promoting scientific research and development in various fields of renewable energy sector including design and innovation in renewable energy practices and if so, the details thereof and the results achieved thereon;

(b): the funds allocated and utilized for this purpose during the last three years and the current year;

(c): the steps proposed to be taken to increase the usage of renewable energy resources for infrastructure development projects;

(d): whether incentive is provided for renewable energy sectors particularly rooftop technologies, new technologies in the sectors and small businesses of the renewable energy industry and if so, the details thereof including quantum of incentives provided to above sectors;

(e): whether the government is aware of the poor ratings given to country's renewable energy companies by the international rating agencies and if so, the details thereof;

(f): the quantum of power being generated through the renewable sources of energy and the share of rooftop solar energy in it; and

(g): whether there are companies which are manufacturing solar panels in the country and if so, the details thereof;

ANSWER

THE MINISTER OF STATE FOR POWER AND NEW & RENEWABLE ENERGY (I/C)
(SHRI R.K. SINGH)

(a): The Ministry of New & Renewable Energy (MNRE) has been supporting Research, Design, Development and Demonstration (RDD&D) projects undertaken by various R&D/academic institutions, NGOs, industries etc.in the field of solar, wind, biogas, hydrogen, fuel cells, geothermal etc. for technology development and demonstrations leading to commercialization. A comprehensive policy and guidelines for Research, Development and Demonstration (RD&D) for New and Renewable Energy sector is in place. It has a provision for providing financial assistance up to 50% of the project cost for the projects that involve partnership with industry. However, for proposals from academic institutions, Government / non-profit research organizations and NGOs, MNRE provides upto 100% funding. In addition, MNRE has established three institutes, namely, National Institute of Solar Energy (NISE), National

Institute of Wind Energy (NIWE) and National Institute of Bioenergy (NIBE) for R&D, testing and evaluation in solar, wind and bioenergy sectors, respectively.

The RD&D projects undertaken have strengthened R&D/ academic institutes, industries for furthering RD&D for technology development for commercialization. In solar photovoltaics, the focus is on indigenous development of solar cells with improved efficiency at par with international level, with cost reduction. Crystalline silicon solar cell of 18% efficiency has been developed at lab scale. R&D efforts are continuing for improvement of efficiency with cost reduction. R&D in solar thermal power has provided feedback on operational aspects of the technology for further development. A one MW capacity solar thermal power project utilizing concentrating collectors with 16-hour thermal storage has been set up at Mount Abu, Rajasthan. R&D in hybridization of solar and wind is being pursued for ensuring improved energy supply from renewables. In addition, R&D efforts are going on for design, development and demonstration of hydrogen and fuel cells for stationary and transport applications.

The R&D efforts have led to design and development of solar water heating system, solar cookers, solar photovoltaic systems, biogas plants, bio-CNG systems, improved biomass cookstoves, gasifiers, biomass cogeneration, etc.

(b): MNRE has spent Rs. 390.34 crore on RD&D in solar energy, bioenergy, small hydro power, wind energy, hydrogen and fuel cells during the last three years and the current year, which includes Rs.178.24 crore on its three institutes

(c): Various steps being under taken to increase development and usage of renewable energy, interalia, include the following:

- An enhanced target of installing 175 GW of Renewable Energy capacity by 2022.
- Incentives in the form of accelerated depreciation, Goods and Service Tax (GST) at low rates, concessional custom duty, income tax holiday for 10 years and viability gap funding;
- Enforcement of Renewable Purchase Obligation (RPO) and for providing Renewable Generation Obligation (RGO);
- setting up of solar parks
- development of Green Energy Corridors;
- repowering policy in order to optimally utilize the wind energy resources;
- identification of large government complexes/buildings for roof top projects;
- making roof top solar a part of housing loan by banks/NHB;
- raising funds from bilateral and multilateral finance and development institutions;
- development of mechanism for scheduling and forecasting in case of inter-state transmission of solar and wind power;
- approval & notification of National Offshore Wind Energy Policy for the development of offshore wind energy in the Indian Exclusive Economic Zone (EEZ).

• Strengthening/expanding test labs for testing, standardisation and certification for quality assurance in renewable energy sector.

(d): The MNRE provides incentives/subsidy/ Central Financial Assistance(CFA) for promotion of renewable energy through various schemes/programmes. For Rooftop and Small Solar Power Plants, financial support upto 30% of the benchmark cost is provided in general category states/UTs and upto 70% of the benchmark cost in special category states/UTs for installation of Grid Connected rooftop solar plants in residential, social and institutional sectors. For Government sector projects, achievement linked incentives upto 25% of the benchmark cost in general category states/UTs and upto 60% of the benchmark cost in special category states/UTs are being provided. Subsidy is not given for private establishments in industrial and commercial sectors. A total of Rs.1118 crore has been released by MNRE for projects corresponding to 887.64MW installed grid connected roof top systems commissioned as on 31/12/2017.

Towards new technologies, a grant of around Rs.22 crore has been provided for RD&D in hydrogen and fuel cells during the last three years and the current year.

For business development in Renewable Energy Sector, the MNRE has also supported a Centre of Excellence at Centre for Innovation, Incubation and Entrepreneurship (CIIE), IIM, Ahmedabad for promoting entrepreneurship in RE sector. Under this project, a total grant of Rs.24 crore has been sanctioned with the condition that a matching investment would be mobilised by CIIE from private sector investors. So far Rs.19.70 crore has been released to CIIE, IIM, Ahmedabad for the project. The CIIE, IIM Ahmedabad has mobilised more than Rs.25 crore from the private investors for the project. The project has generated 40 start ups in renewable sector, includes 15 which have been scaled up.

(e): In a news item that appeared in "The Hindu" newspaper on 20th November 2017, it was reported that as per Fitch' s 2018 Outlook on Asia Pacific Utilities the Indian renewable energy companies are among the poorly rated investment grade companies in the Asia-pacific region. However, the observations contained in Fitch Outlook 2018 are not backed by detailed analysis and hence cannot be considered as representative of the Indian renewable energy companies. The the Ernst and Young in its Renewable Energy Country Attractiveness Index (RECAI) report of October 2017 has ranked India as second on RECAI.

(f): Total power generated from grid connected renewable sources of energy accounts for 61.99 GW, which includes 16.56 GW from solar, out of which 0.876 GW is generated form rooftop systems.

(g): Yes, Madam. The list is given in **annexure.**

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Annexure

Ministry of New & Renewable Energy
National Solar Mission Division
Solar Cell and Module Capacities

Solar Cells		
S.No	**Name of Companies**	**Installed capacities (in MW) As on 31-05-2017**
1	Indosolar Ltd	240
2	Moser Baer Solar Limited	250
3	Tata Power Solar Systems Limited	300
4	Websol Energy System Limited	200
5	Jupiter Solar Pvt. Ltd	133
6	Jupiter International Ltd	260
7	Surana Solar	120
8	Renewsys India Private Limited (RIPL)	130
9	Udhaya Energy Photovoltaics Pvt Ltd	10
10	Maharishi Solar Technology	10
11	Bharat Heavy Electricals Limited	115
12	Central Electronics Limited	10
13	Premier Solar Systems Ltd	60
14	Mundra Solar PV Limited (Adani Group)	1200
15	Euro Multivision Limited	40
16	Dev Solar	3
17	Bharat Electronic Ltd	10
18	XL Energy Ltd.	60
19	IYSERT Energy Research Pvt. Ltd.	1
20	Kl Solar Company Pvt Ltd.,	12
Total (MW)		**3164**

Solar Modules		
S.No	**Name of Companies**	**Installed capacities (in MW) as on 31-05-2017**
1	Moser Baer Solar Limited	230
2	Tata Power Solar Systems Limited	400
3	Websol Energy System Limited	90
4	Surana Solar	120
5	Udhaya Energy Photovoltaics Pvt Ltd	7
6	Maharishi Solar Technology	15
7	Bharat Heavy Electricals Limited	226
8	Central Electronics Limited	42
9	Premier Solar Systems Ltd	100
10	Waaree Energies Pvt Ltd	500
11	Vikram Solar Pvt Ltd	500
12	Emmvee Photovoltics Pvt Ltd	500
13	Titan Energy Systems Ltd	100
14	Lanco Solar Pvt Ltd	175
15	Alpex Exports Pvt Ltd	300
16	Shan Solar Pvt Limited	30
17	Jain Irrigation Systems Ltd	55
18	Sova Power Limited	200
19	Hhv Solar Tehnologies Pvt Ltd	100
20	Photon Energy Systems Ltd	50
21	Green Brilliance Energyy Pvt Ltd	50
22	Andromeda Energy Technologies Pvt Ltd	30
23	Topsun Energy Limited	100
24	Kotak Urja Pvt Ltd	75
25	Gautam Solar Pvt Ltd	65
26	Modern Solar Pvt Ltd	40
27	Rajasthan Electronics & Instruments Limited	20
28	Ajit Solar Pvt Ltd	35
29	Evergreen Solar Systems	20
30	Enfield Solar	20
31	Photonix Solar Pvt Ltd	40
32	Pv Power Technologies	50
33	Microsol Power P Ltd.	60
34	Icon Solar-En Power Technologies Pvt.Ltd	75
35	Navitas Green Solutions Pvt. Ltd.	75
36	Rolta Power Pvt Ltd	60
37	Jakson Solar	60
38	Goldi Green Technoligies Pvt Ltd	125

39	Ritika Systems Pvt Ltd	40
40	Integrated Solar	25
41	Radiant Solar	80
42	Microsun Solar	60
43	Saatvik Green Energy	175
44	Jyotitech Solar Llp	35
45	Blue Brid	20
46	Genus Solar	20
47	Synergy Solar	50
48	Solex	30
49	Arion Solar	5
50	Sunshine Power Products Pvt. Ltd.	10
51	Deity Fuel Pv	20
52	Greentek	25
53	Andslite	20
54	Mx Power	10
55	Prosun	5
56	Avi	15
57	Solarmaxx	15
58	Mas Solar	20
59	Nucifera Renewable Energy Systems	15
60	Alectrona/Zynergy	
61	Kohima Solar	55
62	Empire Photovoltaic	36
63	Rhine Solar	40
64	Vinova Energy Systems Pvt.Ltd.	10
65	H. R. Solar Solution Pvt. Ltd.	15
66	Sonali Energees Pvt. Ltd.	100
67	Dev Solar	3
68	Neety Euro Asia Solar Energy	15
69	Seemac Pvt. Ltd.	40
70	Enkay Solar	15
71	Renewsys India	180
72	Raajratan Ventures	35
73	Jupiter Solar Pvt. Ltd	0
74	Bel	10
75	Sunfuel	15
76	Novergy Energy Solutions P. Ltd.	45
77	Amv Energy Systems Private Limited	4
78	Sun Solar Techno Limited	30
79	Sahaj Solar Pvt. Ltd.	25
80	Iti Ltd.	8
81	Aditi Solar Private Ltd.	25

82	Kcp Solar Industry.	12
83	Akshaya Solar Power Pvt. Ltd.	25
84	Tamilnadu Energy Solutionss Pvt. Ltd.	10
85	Omsun Power Private Limited.	25
86	Jj Pv Solar Pvt. Ltd.	24
87	Mainframe Energy Solutions Pvt Ltd	25
88	Sunrise Solar Solutions	8
89	Vimal Electronics	3
90	Xl Energy Ltd.	210
91	Access Solar Limited	80
92	Usl Photovoltaics Pvt Ltd	7
93	Plaza Power & Infrastructure Co.	30
94	Reliance Industries Ltd - Solar	30
95	Krishma Solar	15
96	Hbl Power	20
97	Slg Solar Systems	8
98	Savitri Solar	80
99	Jp Solar	20
100	Stellar Solar	20
101	Agrawal Solar	40
102	Shukra Solar	5
103	Vrv Solar	25
104	Vipul Solar	25
105	Brawn Battery	25
106	Junna Solar Systems Pvt. Ltd.	20
107	Deshmukh Solar Energy Pvt. Ltd.	25
108	Himalayan Solar Pvt. Ltd	100
109	Sunbless Green Enertech Pvt Ltd	25
110	Iysert Energy Research Pvt. Ltd.	10
111	Electromac Solar System Pvt. Ltd.	20
112	Sungrace Energy Solutions Pvt. Ltd	10
113	Satyam Enterprises	15
114	Mas Solar Systems Pvt. Ltd.	20
115	Powertrac Solar Limited	20
116	Innovative Solar Solutions	20
117	Mundra Solar Pv Limited (Adani Group)	1200
Total (MW)		**8398**