

GOVERNMENT OF INDIA
MINISTRY OF NEW AND RENEWABLE ENERGY
LOK SABHA
UNSTARRED QUESTION NO. 3803
TO BE ANSWERED ON 08.12.2016

GENERATION OF ELECTRICITY THROUGH RENEWABLE ENERGY SOURCES

3803. SHRI MD. BADARUDDOZA KHAN:
SHRI NISHIKANT DUBEY:
SHRI BHARAT SINGH:
SHRI MANSHANKAR NINAMA:
SHRI VISHNU DAYAL RAM:

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

- (a) the details of the targets set and achievements made in generating electricity through renewable energy sources in the country during the last three years and the current year, State-wise and source-wise;
- (b) whether the schemes/programmes being implemented in various States for developing the renewable energy sources are successful, if so, the details thereof and if not, the reasons therefor, State-wise;
- (c) the details of the incentives being provided by the Government to the State Governments for implementing these schemes;
- (d) whether the Government has set up any monitoring mechanism to ensure the proper implementation of these schemes and if so, the details thereof;
- (e) whether the Government proposes for exchange of technology with other countries for improving efficiency and reducing production cost of power generated through new and renewable resources, if so, the details thereof; and
- (f) the other measures taken/proposed to be taken by the Government to develop affordable new and renewable sources of energy in the country.

ANSWER

THE MINISTER OF STATE FOR POWER, COAL, NEW AND RENEWABLE ENERGY & MINES
(INDEPENDENT CHARGE) (SHRI PIYUSH GOYAL)

(a): The generation of power from various energy sources depends largely upon the capacity addition during the year. The macro level targets are therefore fixed by the Ministry of New & Renewable Energy (MNRE) only for the capacity addition under various sources of renewable energy at the beginning of the financial year. The Central Electricity Authority under the Ministry of Power collects and maintains the database for power generated from various sources of power including the RE sources. Source and state-wise details of power generated from various renewable energy sources during the current and the last three years are given in the statement at Annexure-I.

(b): Generally, implementation of various renewable energy programmes is satisfactory. However, some of the hurdles faced in the implementation of these programmes in states, inter-alia, include servicing and maintenance of renewable energy systems in remote areas; delay in submission of Utilization Certificates of grants released earlier; non-compliance of Renewable Purchase Obligations (RPO); and non-revision of tariffs regularly as per Central Electricity Regulatory Commission (CERC) guidelines.

(c): The details of incentives/ subsidy /central financial assistance presently being provided by the MNRE under various programmes is given at Annexure-II

(d): All the major programmes being promoted by MNRE have an established mechanism to monitor the implementation of the schemes. The provision include :

- Project developers provide generation data.
- 100 percent physical verification by State implementing agency.
- Periodic inspection by the officials of MNRE and Indian Renewable Energy Development Agency Limited.
- Third party monitoring of the implementation of the projects.

(e): Renewable Energy projects are mostly installed by private sector investments. The developers are free to use indigenous technology or technology imported from other countries for improving efficiency and reducing the cost of the power.

(f): Various policy measures have been initiated in addition to providing financial support to various schemes being implemented by the MNRE for achieving the target of renewable energy capacity to 175 GW by 2022. These include, suitable amendments to the Electricity Act and Tariff Policy for strong enforcement of Renewable Purchase Obligation (RPO) and for providing Renewable Generation Obligation (RGO); setting up of exclusive solar parks; development of power transmission network through Green Energy Corridor project; identification of large government complexes/ buildings for rooftop projects; provision of roof top solar and 10 percent renewable energy as mandatory under Mission Statement and Guidelines for development of smart cities; amendments in building bye-laws for mandatory provision of roof top solar for new construction or higher Floor Area Ratio; infrastructure status for solar projects; raising tax free solar bonds; providing long tenor loans; making roof top solar as a part of housing loan by banks/ NHB; incorporating measures in Integrated Power Development Scheme (IPDS) for encouraging distribution companies and making net-metering compulsory and raising funds from bilateral and international donors as also the Green Climate Fund to achieve the target.

Statement referred to in reply to part (a) of Lok Sabha Unstarred Question No. 3803 for Answer on 8/12/2016 regarding 'Generation of Electricity through Renewable Energy Sources'

State-wise and Source-wise power generation from various renewable energy sources during the last three years (2013-14 to 2015-16) and the current year (April – September 2016)

(Million Units)						
S. No	State	Wind	Solar	Small Hydel	Bio-Power	Total
2013-14						
1.	DELHI	0	3.285	0	100.426	103.711
2.	HARYANA	0	9.39	238.6	131.39	379.38
3.	HP	0	0	1181.01	0	1181.01
4.	PUNJAB	0	51.689	227.776	615.635	895.101
5.	RAJASTHAN	3695.666	1052.044	8.268	248.099	5004.076
6.	UTTAR PRADESH	0	14.962	25.918	2822.518	2863.398
7.	UTTARAKHAND	0	5.548	263.448	89.617	358.613
8.	NTPC DADRI	0	6.088	0	0	6.088
9.	NTPC FARIDABAD	0	0.006	0	0	0.006
10.	NTPC UNCHAHAR	0	0.002	0	0	0.002
11.	CHHATTISGARH	0	11.417	10.392	1207.362	1229.171
12.	GUJARAT	5288.557	1369.415	31.599	24.148	6713.719
13.	MADHYA PRADESH	477.4	247.05	290.3	36.73	1051.48
14.	MAHARASHTRA	5727.352	257.424	662.592	2121.57	8768.938
15.	NTPC RAJGARH	0	0.004	0	0	0.004
16.	ANDHRA PRADESH	817.85	207.11	161.98	595.92	1782.86
17.	KARNATAKA	4547.916	38.253	1808.975	2667.506	9062.65
18.	KERALA	68.071	0	554.609	34.886	657.566
19.	TAMIL NADU	10641.985	38.873	119.188	1843.426	12643.472
20.	NTPC RAMAGUNDAM	0	2.451	0	0	2.451
21.	ANDAMAN NICOBAR	0	0	0	0	0
22.	BIHAR	0	0	0	0	0
23.	JHARKHAND	0	0	0	0	0
24.	ODISHA	0	34.273	336.559	0	370.832
25.	DVC	0	0	101.985	0	101.985
26.	NTPC ANDAMAN & NICOBAR	0	6.504	0	0	6.504
27.	NTPC TALCHER	0	0.001	0	0	0.001
28.	ARUNACHAL PRADESH	0	0	0	0	0
29.	MEGHALAYA	0	0	0	0	0
30.	MIZORAM	0	0	41.477	0	41.477
	Total	31264.797	3353.335	6064.676	12539.233	53224.496
2014-15						
1.	CHANDIGARH	0	2.23	0	0	2.23
2.	DELHI	0	3.18	0	113.44	116.63
3.	HARYANA	0	10.36	280.96	179.36	470.69
4.	HP	0	0	1685.08	0	1685.08

(Million Units)

S. No	State	Wind	Solar	Small Hydel	Bio-Power	Total
5.	J & K	0	0	313.23	0	313.23
6.	PUNJAB	0	129.89	543.53	485.87	1159.29
7.	RAJASTHAN	4053.85	1259.19	5.3	278.24	5596.57
8.	UTTAR PRADESH	0	20.13	30.3	3090.27	3140.7
9.	UTTARAKHAND	0	11.63	565.25	87.5	664.38
10.	NTPC	0	22.9	0	0	22.9
11.	OIL INDIA LTD	117.78	9.14	0	0	126.93
12.	CHHATTISGARH	0	13.54	8.4	1044.35	1066.29
13.	GOA/NTPC RAJGARH	0	62.94	0	0	62.94
14.	GUJARAT	5660.09	1474.56	47.13	40.48	7222.27
15.	MADHYA PRADESH	592.25	562.29	196.71	76.26	1427.51
16.	MAHARASHTRA	6804.8	349.32	275.82	2853.99	10283.93
17.	DADRA AND NAGAR HAVELI	0	0.03	0	0	0.03
18.	DAMAN & DIU	0	0.15	0	0	0.15
19.	ANDHRA PRADESH	1675.82	159.77	274.61	600.85	2711.06
20.	TELANGANA	0	138.12	60.43	604.31	802.86
21.	KARNATAKA	4658.1	100.39	1845.75	3090.66	9694.9
22.	KERALA	58.4	0	570.53	0.71	629.64
23.	PUDUCHERRY/NTPS RAMA	0	15.62	0	0	15.62
24.	TAMIL NADU	10147.06	158.75	226.81	1369.79	11902.39
25.	LAKSHADWEEP	0	5.13	0	40.96	46.09
26.	ANDAMAN NICOBAR	0	0	0.47	0	0.47
27.	BIHAR	0	0	29.01	180.11	209.13
28.	JHARKHAND	0	8.32	0	0	8.32
29.	ODISHA	0	44.94	284.88	0	329.82
30.	SIKKIM	0	0	20.88	0	20.88
31.	WEST BENGAL	0.16	7.07	325.43	1220.97	1553.63
32.	DAMODAR VALLEY CORPORATION	0	0	146.86	0	146.86
33.	NTPC ANDMAN+TALCHAR	0	18.79	0	0	18.79
34.	ARUNACHAL PRADESH	0	0	51.94	0	51.94
35.	ASSAM	0	9.65	54.87	0	64.52
36.	MANIPUR	0	0	0	0	
37.	MEGHALAYA	0	0	66.94	0	66.94
38.	MIZORAM	0	0	34.86	0	34.86
39.	NAGALAND	0	0	84.14	0	84.14
40.	TRIPURA	0	0	29.37	0	29.37
41.	NEEPCO	0	0.98	0	0	0.98
	TOTAL	33768.3	4599.02	8059.5	15358.11	61784.93

2015-16

1	CHANDIGARH	0	3.4	0	0	3.4
2	DELHI	0	4.11	0	124.87	128.97
3	HARYANA	0	114.96	992.65	235.55	1343.15

(Million Units)

S. No	State	Wind	Solar	Small Hydel	Bio-Power	Total
4	HP	0	0	1921.77	0	1921.77
5	J & K	0	0	304.79	0	304.79
6	PUNJAB	0	380.57	490.08	603.54	1474.2
7	RAJASTHAN	4583.59	1766.1	5.06	245.49	6600.24
8	UTTAR PRADESH	0	89.75	29.73	3082.01	3201.49
9	UTTARAKHAND	0	5.87	605.69	91.86	703.42
10	NTPC (DADRI/FARIDABAD/U NCHAHAR)	0	42.41	0	0	42.41
11	OIL INDIA LTD	183.77	9.9	0	0	193.67
12	CHHATTISGARH	0	52.7	30.41	1119.32	1202.42
13	NTPC RAJGARH	0	81	0	0	81
14	GUJARAT	6446.58	1497.6	36.27	23.28	8003.73
15	MADHYA PRADESH	1558.43	1105.28	118.54	128.17	2910.42
16	MAHARASHTRA	6121.34	638.76	562.77	3433.71	10756.58
17	DADRA & NAGAR HAVELI	0	0.5	0	0	0.5
18	DAMAN & DIU	0	4.25	0	0	4.25
19	ANDHRA PRADESH	2013.04	282.67	103.1	707.8	3106.61
20	TELANGANA	0	402.51	48.69	576.7	1027.9
21	KARNATAKA	4797.95	187.69	1483.48	3591.92	10061.03
22	KERALA	51.45	7.38	486.99	72.96	618.78
23	PUDUCHERRY/ NTPC (RAMAGUNDEM)	0	16.02	0	0	16.02
24	TAMIL NADU	7273.23	507.18	214.02	1337.05	9331.47
25	LAKSHADWEEP	0	1.02	0	0	1.02
26	ANDAMAN & NICOBAR	0	6.26	12.46	0	18.72
27	BIHAR	0	6.39	48.69	110.02	165.11
28	JHARKHAND	0	19.77	0	0	19.77
29	ODISHA	0	150.73	263.24	20.48	434.45
30	SIKKIM	0	0	41.93	0	41.93
31	WEST BENGAL	0	6.28	157.57	1444.3	1608.15
32	DVC	0	0	118.26	0	118.26
33	NTPC ANDMAN/ TALCHER	0	18.91	0	0	18.91
34	ARUNACHAL PRADESH	0	0.22	18.22	0	18.44
35	ASSAM	0	31.6	59.34	0	90.94
36	MANIPUR	0	0	0	0	0
37	MEGHALAYA	0	0	65.96	0	65.96
38	MIZORAM	0	0	27.62	0	27.62
39	NAGALAND	0	0	88.73	0	88.73
40	TRIPURA	0	0	18.47	0	18.47
41	NEEPCO	0	6.15	0	0	6.15
	Total	33029.4	7447.92	8354.51	16949.03	65780.9

(Million Units)

S. No	State	Wind	Solar	Small Hydel	Bio-Power	Total
2016-17 (April to September)						
1	CHANDIGARH	0.00	2.11	0.00	0	2.11
2	DELHI	0.00	1.52	0.00	69.11	70.63
3	HARYANA	0.00	34.17	193.28	87.96	315.41
4	HP	0.00	0.00	1620.11	0	1620.11
5	J & K	0.00	0.39	232.35	0	232.73
6	PUNJAB	0.00	411.34	257.66	325.89	994.89
7	RAJASTHAN	3801.39	1084.86	0.37	145.03	5031.64
8	UTTAR PRADESH	0.00	72.24	14.48	490.33	577.05
9	UTTARAKHAND	0.00	14.92	576.80	7.27	598.98
10	NTPC DADRI+FBD+ UNCHAHAAR+SINGRULI	0.00	23.91	0.00	0	23.91
11	OIL INDIA LTD	139.30	13.31	0.00	0	152.61
12	CHHATTISGARH	9.97	44.93	27.43	591.43	673.77
13	NTPC RAJGARH	0.00	39.33	0.00	0	39.33
14	GUJARAT	5098.45	814.57	6.01	0.33	5919.36
15	MADHYA PRADESH	2456.14	606.10	83.20	53.36	3198.80
16	MAHARASHTRA	5858.51	258.68	229.28	759.07	7105.53
17	DADRA AND NAGAR HAVELI	0.00	0.72	0.00	0	0.72
18	DAMAN & DIU	0.00	4.86	0.00	0	4.86
19	ANDHRA PRADESH	2035.23	626.79	64.19	234.88	2961.09
20	TELANGANA	120.31	458.76	20.61	160.75	760.43
21	KARNATAKA	4083.41	142.52	980.53	488.17	5694.63
22	KERALA	51.71	12.08	285.82	44.43	394.03
23	NTPC RAMAGUNDAM+ ANANTAPURAM	0.00	120.00	0.00	0	120.00
24	TAMIL NADU	7955.47	785.29	71.48	782.09	9594.32
25	LAKSHADWEEP	0.00	0.41	0.00	0	0.41
26	ANDAMAN & NICOBAR	0.00	3.30	6.12	0	9.42
27	BIHAR	0.00	17.42	7.24	15.27	39.93
28	JHARKHAND	0.00	20.42	0.00	0	20.42
29	ODISHA	0.00	92.28	161.39	35.65	289.31
30	SIKKIM	0.00	0.00	20.90	0	20.90
31	WEST BENGAL	0.00	4.83	68.90	710.1	783.83
32	DVC	0.00	0.00	74.44	0	74.44
33	NTPC ANDAMAN+TALCHER	0.00	9.74	0.00	0	9.74
34	ARUNACHAL PRADESH	0.00	0.08	11.19	0	11.28
35	ASSAM	0.00	66.64	66.12	0	132.77
36	MANIPUR	0.00	0.00	0.00	0	0.00
37	MEGHALAYA	0.00	0.00	41.72	0	41.72
38	MIZORAM	0.00	0.00	29.81	0	29.81
39	NAGALAND	0.00	0.00	55.92	0	55.92
40	TRIPURA	0.00	0.00	17.41	0	17.41

(Million Units)						
S. No	State	Wind	Solar	Small Hydel	Bio-Power	Total
41	NEEPCO	0.00	3.04	0.00	0	3.04
	Total	31609.89	5791.54	5224.76	5001.1	47627.29

Source: Central Electricity Authority (CEA)

Note: Data as received from State Load Dispatch Centre (SLDC) of the respective states of the electricity department.

Statement referred to in reply to Part (c) of Lok Sabha Unstarred Question No. 3803 for Answer on 8/12/2016 regarding 'Generation of Electricity through Renewable Energy Sources'

Incentives/Subsidy/Central Financial Assistance (CFA) available under various schemes/programmes for power generation from wind, solar and other renewable energy systems.

A. GRID-INTERACTIVE RENEWABLE POWER PROGRAMMES:

1. Wind Power Projects:

Generation Based Incentive (GBI)	Rs.0.50 per unit subject to max of Rs.1.00 crore/MW for producers.
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2. Solar Power Projects:

Solar PV Power projects under Jawaharlal Nehru National Solar Mission (JNNSM) Phase-II, Batch-I of total 750 MW with Viability Gap Funding (VGF) support from National Clean Energy Fund (NCEF).	Minimum Project Capacity 10 MW Maximum Project Capacity 50 MW	VGF support up to 30% of Project Cost limited to Rs.2.50 Cr/MW based on reverse bidding process for power producers.
Grid Connected Rooftop Solar PV Power Projects in residential, institutional and social sector.	Benchmark support cost Rs.75,000/- per kWp.	Central Financial Assistance (CFA) up to 30% of benchmark cost for the General Category States/UTs and up to 70% of benchmark cost for Special Category States/UTs, i.e. North Eastern States including Sikkim, Uttarakhand, Himachal Pradesh, Jammu & Kashmir and Lakshadweep, Andaman & Nicobar Islands is provided to consumers for installation of grid connected solar rooftop projects. Incentives are also provided for promotion of roof top SPV power in Government sector. No subsidy is provided for commercial and industrial establishments in private sector.
Grid connected Solar PV Power Projects by Central Public Sector Undertakings (CPSUs).	Total size of the scheme 1000MW.	VGF support to the CPSUs/Govt. Organisations (producers) at a fixed rate of Rs.1 crore/MW for projects where domestically produced cells and modules are used and Rs. 0.50 crores/MW in cases where domestically produced modules are used.
Grid-connected Solar PV Power plants on Canal Banks and Canal Tops	1 MW to 10 MW	Rs 3 crore / MW or 30% of the project cost
Solar Park Scheme	---	25 lakh per Solar park for preparation of Detailed Project Report(DPRs) 20 Lkah per MW or 30% of the project cost including Grid-connectivity cost, whichever is lower.

Solar PV scheme for Defence Establishments	Category-I: Rs.2.5 Cr./MW for project capacity upto 5 MW; Category-II: Rs. 2 Cr./MW for project capacity greater than 5 MW upto 25 MW; and Category-III: Rs. 1.5 Cr./MW for project capacity greater than 25 MW.
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3. Small Hydro Power (SHP) Projects

Support to new SHP projects (producers) in State sector:

Category	Above 100 KW and up to 1000 KW	Above 1 MW – 25 MW
Special category and NE States	75,000 per KW.	7.5 Crores / MW limited to `20 crore per project.
Other States	35,000 per KW.	3.5 Crores / MW limited to `20 crore per project.

Support to new SHP projects (producers) in private / co-operative / joint sector:

Areas	Upto 25 MW
N E Region, J & K, H.P. & Uttarakhand (Special Category States)	1.5 crore/ MW limited to `5.00 crore per project
Other States	1.0 crore/ MW limited to `5.00 crore per

4. Biomass Power and Bagasse Cogeneration Projects (producers):

Private / Joint / Cooperative / Public Sector Sugar Mills:

Type of Projects	Special Category and NE States	Other States
Biomass Power projects	Rs.25 lakh per MW*	Rs.20 lakh per MW*
Bagasse Co-generation	Rs.18 lakh per MW*	Rs.15 lakh per MW*
Co-generation projects by cooperative/public sector sugar mills 40 bar & above 60 bar & above 80 bar & above	Rs.40 lakh Rs.50 lakh Rs.60 lakh Per MW of surplus power (maximum support Rs. 6.0 cr / project)	Rs.40 lakh Rs.50 lakh Rs.60 lakh Per MW of surplus power (maximum support of Rs. 6.0 crore per project)

*Maximum support of Rs. 1.50 crore per project.

5. Waste to Energy Projects:

Type of Waste	Central Financial Assistance to Producers
Municipal Solid Waste	Rs.2.00cr./MW, Max. Support 10 Cr. /project.
Urban Waste	Rs.2.00cr./MW, Max. Support 5 Cr. /project.
Industrial waste	Rs. 0.20cr to Rs. 1.00cr/MW, Max. Support Rs.5.00cr/project.

B. OFF-GRID / DECENTRALIZED RENEWABLE ENERGY PROGRAMMES

S.No	Programme	CFA/Subsidy to consumers (limited to following ceiling or 40% of the cost of the system, whichever is less)
1.	<p>Family Type Biogas Plants</p> <p>NE Region States including Sikkim (except plain areas of Assam)</p> <p>Plain areas of Assam</p> <p>J&K, Himachal Pradesh, Uttarakhand (excluding Terai region), Nilgiris of Tamil Nadu, Sadar, Kurseong and Kalimpong sub-divisions of Darjeeling, Sunderbans, Andaman & Nicobar Islands and SC & ST (not included in above areas)</p> <p>All Others</p>	<p>Rs.15,000 to Rs.17,000 per plant</p> <p>Rs.10,000 to Rs.11,000 per plant</p> <p>Rs.7,000 to Rs.11,000 per plant</p> <p>Rs.5,500 to Rs.9,000 per plant</p>
2.	<p>Solar Photovoltaic Systems including Solar Pumps</p>	<p>CFA/subsidy to consumers:</p> <ul style="list-style-type: none"> ➤ Subsidy of 30% of project cost. ➤ For solar light through NABARD, Regional Rural Banks (RRB) and other commercial bank 40% subsidy is available.
3.	<p>Concentrating Solar Thermal Technology</p>	<p>30% of the project cost.</p>
4.	<p>Small Aero-Generators and Hybrid Systems</p>	<p>CFA/Subsidy: Rs.1.00 lakh per kW to consumers</p>
5.	<p>Micro-hydel plants/ Water mills</p>	<p>Subsidy/CFA to producers:</p> <ul style="list-style-type: none"> ➤ Rs. 1.25 lakh/kW for Micro-hydel upto 100 kW. ➤ Rs.0.50 lakh per watermill for mechanical application ➤ Rs.1.50 lakh per watermill for electrical application
6.	<p>Biomass Gasifier</p>	<p>CFA/Subsidy to consumers:</p> <ul style="list-style-type: none"> ➤ Rs. 15,000 /kW (with 100% producer gas engine) ➤ Rs. 2,500/kW for dual fuel engine ➤ Rs. 2.0 lakh per 300 kW for Thermal Applications ➤ 20% higher CFA for special category states