

GOVERNMENT OF INDIA  
MINISTRY OF NEW AND RENEWABLE ENERGY  
**LOK SABHA**  
**UNSTARRED QUESTION NO. 1984**  
TO BE ANSWERED ON 28.07.2016  
**Generation of Solar Energy**

1984. **SHRI BHARTRUHARI MAHTAB:**  
**SHRI SANJAY DHOTRE:**  
**SHRI RAHUL SHEWALE:**  
**SHRI RAKESH SINGH:**  
**SHRI BHAIRON PRASAD MISHRA:**

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

- (a) the details of the solar energy potential and its actual generation in the country during each of the last three years and the current year, State-wise;
- (b) whether the Government has fixed any targets for the generation of solar energy, if so, the details thereof;
- (c) the details of solar power plants established since implementation of the National Solar Mission in the country, State/UT-wise;
- (d) the details of the schemes/ programmes being implemented by the Government to promote use of solar energy in the country including increase in the subsidy;
- (e) whether the Government has provided adequate funds under the said schemes/programmes during each of the last three years and the current year;
- (f) if so, the details thereof, State/UTwise and Scheme/Programme-wise and if not, the reasons therefor; and
- (g) the steps taken/being taken by the Government to enhance the capacity of solar power plants, optimum utilisation of their existing capacity and to encourage people to use solar energy in the country?

**ANSWER**

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

- (a): State-wise solar energy potential is given at Annexure-I and generation in the country during each of the last three years and the current year is given at Annexure-II.
- (b): Government has set a target of 1,00,000 MW for generation of solar energy by 2022.
- (c): State/UT-wise details of installed capacity of solar power plants as on 30.6.2016 is given at Annexure-III.
- (d): The details of the schemes/ programmes being implemented by the Government to promote use of solar energy in the country including the subsidy are given at Annexure-IV.
- (e) and (f): Government has provided adequate funds for solar programmes in the country. Details of funds released for solar power programmes are as under:-

Year	total funds released Rs. Crore)
2013-14	692.28
2014-15	1158.19
2015-16	3146.24
2016-17 30.6.2016)	779.96

In few programmes, state-wise funds are released. Details are given at Annexure-V.

(g): Government has taken the step to enhance the capacity addition, optimum utilization of existing capacity and for development of solar power through fiscal and promotional incentives e.g. capital and/or interest subsidy, tax holiday on the earnings for 10 years, generation based incentive, accelerated depreciation, viability gap funding (VGF), financing solar rooftop systems as part of home loan, concessional excise and custom duties, preferential tariff for power generation from renewables, and Foreign direct investment up to 100 per cent under the automatic route.

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**ANNEXURE-I REFERRED TO IN REPLY TO PART (a) OF LOK SABHA UNSTARRED  
QUESTION NO. 1984 FOR 28.7.2016**

**State-wise estimated Solar Energy Potential and its generation in the Country.**

<b>Sr. No.</b>	<b>State/UT</b>	<b>Solar Potential (GWp) # (Feb. 2015)</b>
1	Andhra Pradesh	38
2	Arunachal Pradesh	9
3	Assam	14
4	Bihar	11
5	Chhattisgarh	18
6	Goa	1
7	Gujarat	36
8	Haryana	5
9	Himachal Pradesh	34
10	Jammu & Kashmir	111
11	Jharkhand	18
12	Karnataka	25
13	Kerala	6
14	Madhya Pradesh	62
15	Maharashtra	64
16	Manipur	11
17	Meghalaya	6
18	Mizoram	9
19	Nagaland	7
20	Odisha	26
21	Punjab	3
22	Rajasthan	142
23	Sikkim	5
24	Tamil Nadu	18
25	Telangana	20
26	Tripura	2
27	Uttar Pradesh	23
28	Uttarakhand	17
29	West Bengal	6
30	Delhi	2
31	UT*	1
<b>TOTAL</b>		<b>750</b>

# As assessed by National Institute of Solar Energy

( \* includes A&N, Lakshadweep, Puducherry, Chandigarh, Daman & Diu  
and Others)

**ANNEXURE-II REFERRED TO IN REPLY TO PART (a) OF LOK SABHA UNSTARRED  
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**Year-wise generation of Solar Energy**

**( All figures in MU)**

<b>S.No</b>	<b>Name of State/UT</b>	<b>Solar 2013-14</b>	<b>Solar 2014-15</b>	<b>Solar 2015-16</b>	<b>Solar 2016-17 (Till May 2016)</b>
1	Chandigarh	0.00	2.23	3.40	0.71
2	Delhi	3.29	3.18	4.11	0.63
3	Haryana	0.00	10.36	114.96	29.03
4	HP	0.00	0.00	0.00	0.00
5	J & K	0.00	0.00	0.00	0.00
6	Punjab	51.69	129.89	380.57	122.16
7	Rajasthan	1052.23	1259.19	1766.10	396.70
8	Uttar Pradesh	14.96	20.13	89.75	29.87
9	Uttarakhand	5.55	11.63	5.87	3.44
10	NTPC Dadri+FBD+Unchahar+Singrauli	6.10	22.90	42.41	9.38
11	Oil India Ltd	0.00	9.14	9.90	4.54
12	Chhattisgarh	11.42	13.54	52.70	22.57
13	Goa/NTPC Rajgarh	0.00	62.94	81.00	16.49
14	Gujarat	1369.39	1474.56	1497.60	336.60
15	Madhya Pradesh	247.05	562.29	1105.28	248.73
16	Maharashtra	257.42	349.32	638.76	110.28
17	Dadra and Nagar Haveli	0.00	0.03	0.50	0.58
18	Daman & Diu	0.00	0.15	4.25	1.07
19	Andhra Pradesh	207.11	159.77	282.67	175.30
20	Telangana	0.00	138.12	402.51	145.31
21	Karnataka	38.25	100.39	187.69	45.81
22	Kerala	0.00	0.00	7.38	3.78
23	Puducherry/NTPS Ramagundam/Anantapuram	2.45	15.62	16.02	19.34
24	Tamil Nadu	38.87	158.75	507.18	260.45
25	Lakshadweep	0.00	5.13	1.02	0.13
26	Andaman Nicobar	0.00	0.00	6.26	1.29
27	Bihar	0.00	0.00	6.39	4.05
28	Jharkhand	0.00	8.32	19.77	5.34
29	Orissa	34.28	44.94	150.73	31.23
30	Sikkim	0.00	0.00	0.00	0.00
31	West Bengal	0.00	7.07	6.28	1.24
32	DVC	0.00	0.00	0.00	0.00
33	NTPC Andman+Talchar	6.51	18.79	18.91	3.94
34	Arunachal Pradesh	0.00	0.00	0.22	0.01
35	Assam	0.00	9.65	31.60	49.32
36	Manipur	0.00	0.00	0.00	0.00
37	Meghalaya	0.00	0.00	0.00	0.00
38	Mizoram	0.00	0.00	0.00	0.00

39	Nagaland	0.00	0.00	0.00	0.00
40	Tripura	0.00	0.00	0.00	0.00
41	Neepco	0.00	0.98	6.15	1.05
	<b>Total</b>	<b>3346.57</b>	<b>4599.02</b>	<b>7447.92</b>	<b>2080.42</b>

*Source: CEA*

**ANNEXURE-III REFERRED TO IN PART (c) OF LOK SABHA UNSTARRED QUESTION  
NO. 1984 FOR 28.7.2016**

**STATE-WISE CUMULATIVE INSTALLED CAPACITY FOR GRID CONNECTED SOLAR  
POWER PROJECTS**

<b>Sr. No.</b>	<b>State/UT</b>	<b>Total commissioned capacity till 30-06-16 (MW)</b>
1	Andhra Pradesh	878.97
2	Arunachal Pradesh	0.27
3	Bihar	45.10
4	Chhattisgarh	93.78
5	Gujarat	1,123.36
6	Haryana	15.39
7	Jharkhand	16.19
8	Karnataka	153.32
9	Kerala	13.05
10	Madhya Pradesh	790.37
11	Maharashtra	385.76
12	Odisha	66.92
13	Punjab	520.70
14	Rajasthan	1,294.60
15	Tamil Nadu	1,267.41
16	Telangana	795.84
17	Tripura	5.00
18	Uttar Pradesh	143.50
19	Uttarakhand	41.15
20	West Bengal	11.77
21	Andaman & Nicobar	5.10
22	Delhi	23.87
23	Lakshadweep	0.75
24	Puducherry	0.03
25	Chandigarh	6.81
26	Daman & Diu	4.00
27	J&K	1.00
28	Himachal Pradesh	0.20
29	Mizoram	0.10
30	Others(PSU/channel partner )under Rooftop	100.92
<b>TOTAL</b>		<b>7805.21</b>

**ANNEXURE-IV REFERRED TO IN REPLY TO PART (d) OF LOK SABHA UNSTARRED  
QUESTION NO. 1984 FOR 28.7.2016**

## Details of Schemes and Incentives for promotion of Solar Energy

Sr. No.	Scheme	Central Financial Assistance/Subsidy
	<b>Solar Energy</b>	
1.	Scheme for Setting up of 750 MW Grid-connected Solar PV Power Projects under Batch-1 of Phase-II of JNNSM with Viability Gap Funding Support from NCEF	The selection of the bidders has been based on the VGF required for the project in an ascending order upto the full capacity. Viability Gap Funding (VGF) is limited to 30% of the project cost or 2.5 crore per MW, whichever is lower. Solar Energy Corporation of India (SECI) has signed PPA (Power Purchase Agreement) with such project developers for purchasing entire power from the project for 25 years at RS. 5.45 . per unit (4.75 Rs. per unit for projects availing accelerated depreciation).
2.	Grid Connected Rooftop	CFA is 30% of the benchmark for general and 70% CFA for NE and Special Category States for Govt. projects.
3.	Pilot-cum-demonstration project for development of grid connected solar PV power plants on canal banks and canal tops	<ul style="list-style-type: none"> <li>Rs.3 crore/MW or 30% of the project cost, whichever is lower, for Canal Top SPV projects and Rs. 1.5 crore/MW or 30% of the project cost, whichever is lower, for Canal Bank SPV projects.</li> <li>CFA of upto Rs.225 crore for <i>100 MW (50 MW on Canal Tops and 50 MW on Canal Banks)</i> to be disbursed over a period of maximum 2 years post sanctioning of the plants are as under: <ul style="list-style-type: none"> <li>upto 40% on sanctioning of the projects.</li> <li>60% on successful commissioning of the projects.</li> </ul> </li> <li>Service charge to SECI @1% of project cost.</li> </ul>
4.	Development of Solar Cities Programme	Financial support up to of Rs. 50 lakh for each city for preparation of the Master Plan alongwith few DPR (up to Rs. 10 lakh), oversight of its implementation (up to Rs. 10 lakh), setting up and functioning of Solar City Cell in the city (up to Rs. 10 lakh) and organizing promotional activities (up to Rs. 20 lakh).
5.	Scheme for Development of Solar Parks and Ultra Mega Solar Power Projects	<ul style="list-style-type: none"> <li>Rs.20 lakhs/MW or 30% of the project cost including Grid-connectivity cost, whichever is lower</li> <li>CFA @ Rs 25.00 lakh per park for DPR preparation of solar parks, conducting</li> </ul>

Sr. No.	Scheme	Central Financial Assistance/Subsidy
		surveys, etc.
6.	Scheme for setting up of 1000 MW of Grid-Connected Solar PV Power projects by Central Public Sector Undertakings (CPSUs) under Batch- V of Phase II of JNNSM	<ul style="list-style-type: none"> <li>• VGF provided through SECI at a fixed rate of Rs. 1 Cr/ MW for projects where domestically produced cells and modules are used and Rs. 50 lakh/ MW in cases where domestically produced modules are used.</li> <li>• VGF released in two tranches as follows:               <ol style="list-style-type: none"> <li>(i) 50% on successful commissioning of the full capacity of project (COD).</li> <li>(ii) Balance 50% after one year of successful operation of the project.</li> </ol> </li> </ul>
7.	Operationalization of 300 MW Solar PV Projects by defence establishment and para military forces	<ul style="list-style-type: none"> <li>• The bidders selected on the basis of bids for minimum VGF requirement for the project with commitment to supply solar power at Rs. 5.50/KWh for 25 years.</li> <li>• The upper limits of the VGF are as follows:               <ol style="list-style-type: none"> <li>(i) Category-I: Rs.2.5 crore/MW for project capacity up to 5 MW or 30% of the project cost whichever is lower;</li> <li>(ii) Category-II: Rs. 2 crore/MW for project capacity greater than 5 MW up to 25 MW or 30% of the project cost whichever is lower; and</li> <li>(iii) Category-III: Rs. 1.5 crore /MW for project capacity greater than 25 MW or 30% of the project cost whichever is lower.</li> </ol> </li> </ul>

**ANNEXURE-V REFERRED TO IN REPLY TO PARTS (e) &(f) OF LOK SABHA UNSTARRED QUESTION NO. 1984 FOR  
28.7.2016**

**DETAILS OF FUNDS RELEASED UNDER NATIONAL SOLAR MISSION**

Sl. No.	States/UTs	Scheme For Development Of Solar Parks And Ultra Mega Solar Power Projects			Canal Top & Canal Bank Solar PV Scheme		Off-Grid SPV Scheme			
		2014-15	2015-16	2016-17 (as on 30.6.16)	2015-16	2016-17 (as on 30.6.16)	2013-14	2014-15	2015-16	2016-17 (as on 30.6.16)
1	Andhra Pradesh	123.09	102.42	0.50	2.08	1.82	0.29	32.05	103.68	0.21
2	Andaman & Nicobar Islands	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Arunachal Pradesh	0.00	0.25	0.00	0.00	0.00	4.28	2.61	0.57	0.00
4	Assam	0.00	0.00	0.00	0.00	0.00	3.04	0.57	4.39	1.89
5	Bihar	0.00	0.00	0.00	0.00	0.00	3.50	6.48	15.41	0.00
6	Chhattisgarh	0.00	0.25	0.00	0.00	0.00	11.15	30.14	33.27	5.71
7	Delhi	0.00	0.00	0.00	0.00	0.00	0.00	1.02	1.24	0.00
8	Goa	0.00	0.00	0.00	0.00	0.00	0.07	16.89	0.00	0.00
9	Gujarat	2.75	30.36	0.00	10.50	10.32	0.07	16.89	17.96	0.00
10	Haryana	0.00	0.25	0.00	0.00	0.00	0.00	6.24	19.22	0.00
11	Himachal Pradesh	0.00	0.25	0.00	0.00	0.00	20.98	16.28	41.00	14.53
12	Jammu & Kashmir	0.00	0.00	0.25	0.00	0.00	36.97	19.15	43.94	8.21
13	Jharkhand	0.00	0.00	0.00	0.00	0.00	0.00	6.51	15.51	0.00



14	Karnataka	0.25	100.00	80.00	4.82	3.39	8.40	8.34	0.66	0.00
15	Kerala	0.00	2.25	0.00	1.50	1.21	0.00	23.70	9.65	0.00
16	Lakshadweep	0.00	0.00	0.00	0.00	0.00	6.45	0.00	3.75	0.00
17	Madhya Pradesh	3.00	36.25	30.00	0.00	0.00	0.00	15.70	0.41	0.00
18	Maharashtra	0.00	0.75	5.00	0.00	0.00	0.00	34.31	24.42	0.00
19	Manipur	0.00	0.00	0.00	0.00	0.00	3.69	1.47	11.60	0.00
20	Meghalaya	0.00	0.25	0.00	0.00	0.00	5.02	5.73	3.12	5.20
21	Mizoram	0.00	0.00	0.00	0.00	0.00	3.94	7.02	7.53	2.90
22	Nagaland	0.00	0.25	0.00	0.00	0.00	4.25	3.50	5.55	5.79
23	Odisha	0.00	0.00	0.25	0.00	0.00	0.00	12.94	1.95	0.00
24	Puducherry	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.00	0.00
25	Punjab	3.00	0.00	0.00	12.00	3.00	2.03	10.24	8.24	0.00
26	Rajasthan	33.44	74.91	0.00	0.00	0.00	12.48	114.89	200.63	0.00
27	Sikkim	0.00	0.00	0.00	0.00	0.00	8.20	1.41	0.28	1.46
28	Tamil Nadu	0.00	0.00	0.00	0.00	0.00	20.29	29.39	82.62	0.00
29	Telangana	2.75	0.00	0.00	0.00	0.00	0.00	22.32	15.02	0.00
30	Tripura	0.00	0.00	0.00	0.00	0.00	0.00	1.13	3.47	0.00
31	Uttarakhand	0.00	0.25	0.00	6.30	6.30	40.57	1.15	25.10	1.18
32	Uttar Pradesh	2.75	18.23	0.00	2.83	0.00	0.17	44.81	38.51	0.00
33	West Bengal	0.00	0.25	0.00	3.00	4.80	0.00	1.67	0.34	0.00
34	Chandigarh	0.00	0.00	0.00			0.00	2.76	0.00	0.00
35	others	1.73	2.88	1.15	0.43	0.31	0.00	0.00	204.40	3.79
35	Channel Partner	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.75	0.00
	<b>Total</b>	<b>172.75</b>	<b>370.29</b>	<b>117.15</b>	<b>43.46</b>	<b>31.14</b>	<b>195.84</b>	<b>497.56</b>	<b>1004.19</b>	<b>50.86</b>

