

GOVERNMENT OF INDIA
MINISTRY OF NEW AND RENEWABLE ENERGY
LOK SABHA
UNSTARRED QUESTION NO. 3481
TO BE ANSWERED ON 23.03.2017

Exploration of Non-Conventional Energy Sources

3481. SHRI RAHUL KASWAN:

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

- (a) whether the Union Government proposes to explore non-conventional energy sources on large scale to address the energy crisis in various States including Rajasthan;
- (b) if so, the details thereof, State-wise;
- (c) whether the Union Government has prepared any scheme to increase the renewable energy generation including the solar energy generation to address energy crisis in the country;
- (d) if so, the details thereof, State-wise along with the time by which the said scheme is likely to be implemented;
- (e) the details of the potential locations and the areas identified for this purpose along with the Status of the said proposal; and
- (f) the quantum of energy likely to be generated as a result of the new initiatives?

ANSWER

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

(a) & (b): Yes Madam. The Ministry of New and Renewable Energy (MNRE) has set a target of 175 GW by 2022 to explore non-conventional energy on large scale from various renewable energy sources including the state of Rajasthan. So far, a total capacity of 50018 MW of Grid Interactive Renewable Power has been installed upto 31-12-2016 in the country from various renewable energy sources which include 9012.69 MW from Solar power, 28700.44 MW from Wind Power, 4333.85 MW from Small Hydro Power and 7971.02 MW from Biopower. The state-wise and source-wise achievement reported upto 31-12-2016 under various renewable energy sources is given in **Annexure-I**.

(c) & (d): The Government has initiated various schemes and programmes to increase the renewable energy in the country including solar energy. Brief details of the major schemes/programmes implemented by the Ministry of New and Renewable Energy are given in the **Annexure-II**.

The schemes / programmes are implemented all over the country depending upon the potential available in that area.

(e) & (f): The potential of renewable energy are available all over the country and resource specific renewable energy depends on the region and local conditions that vary widely. A potential of 1096 GW has been estimated from various renewable energy sources in the country.

The Source and state-wise detail of the potential available under various renewable energy sources i.e. Solar, Wind, Small Hydro Power and Biopower is given in **Annexure-III**.

ANNEXURE I

REFERRED TO IN REPLY TO LOK SABHA UNSTARRED QUESTION NO. 3481 FOR ANSWER
ON 23.03.2017

State-wise installed capacity of Grid Interactive Renewable Power as on 31.12.2016.							
S. No.	STATES / Uts	Small Hydro Power	Wind Power	Bio-Power		Solar Power	Total Capacity
				BM Power/Cogen.	Waste to Energy		
		(MW)	(MW)	(MW)	(MW)	(MW)	(MW)
1	Andhra Pradesh	241.98	2092.50	378.20	58.16	979.65	3750.49
2	Arunachal Pradesh	104.605				0.27	104.87
3	Assam	34.11				11.18	45.29
4	Bihar	70.70		92.50		95.91	259.11
5	Chhattisgarh	76.00		228.50		135.19	439.69
6	Goa	0.05				0.05	0.10
7	Gujarat	16.60	4441.57	65.30		1158.5	5681.97
8	Haryana	73.50		96.40		53.27	223.17
9	Himachal Pradesh	798.81				0.33	799.14
10	Jammu & Kashmir	158.03				1.00	159.03
11	Jharkhand	4.05				17.51	21.56
12	Karnataka	1220.73	3154.20	1401.08	1.00	327.53	6104.54
13	Kerala	205.02	43.50			15.86	264.38
14	Madhya Pradesh	86.16	2288.590	92.53	3.90	840.35	3311.53
15	Maharashtra	346.175	4666.03	1967.85	12.72	430.46	7423.24
16	Manipur	5.45				0.01	5.46
17	Meghalaya	31.03				0.01	31.04
18	Mizoram	41.47				0.10	41.57
19	Nagaland	30.67				0.50	31.17
20	Odisha	64.625				77.64	142.27
21	Punjab	170.90		62.00	9.25	545.43	787.58
22	Rajasthan	23.85	4216.72	119.25		1317.64	5677.46
23	Sikkim	52.11				0.01	52.12
24	Tamil Nadu	123.05	7694.33	889.40	8.05	1590.97	10305.80
25	Telangana		98.70	158.10		973.41	1230.21
26	Tripura	16.01				5.02	21.03
27	Uttar Pradesh	25.10		1933.11	5.00	239.26	2202.47
28	Uttarakhand	209.320		72.72		45.10	327.14
29	West Bengal	98.50		300.00		23.07	421.57
30	Andaman & Nicobar	5.25				5.40	10.65
31	Chandigarh					16.20	16.20
32	Dadra & Nagar Haveli					0.60	0.60
33	Daman & Diu					4	4.00
34	Delhi				16.00	38.78	54.78
35	Lakshadweep					0.75	0.75
36	Pondicherry					0.03	0.03
37	Others		4.30			61.70	66.00
	Total (MW)	4333.855	28700.440	7856.94	114.08	9012.69	50018.00

MW = Megawatt

REFERRED TO IN REPLY TO LOK SABHA UNSTARRED QUESTION NO. 3481 FOR ANSWER
ON 23.03.2017

Details of the Renewable Energy Schemes / Programmes

1. Grid Interactive and Distributed Renewable Energy Power:

- **Wind Power:** MW-scale Wind Farms.
- **Bio-power:** Biomass power/ Cogeneration.
- **Small Hydro Power:** Small hydro power plants up to 25 MW capacity.
- **Solar Power:** Grid-interactive -Solar Thermal and SPV power generation plants, Solar Roof Top programme.
- **Energy Storage:** for proper scheduling and forecasting of Power generation and stabilization of the Grid.
- **Green Energy Corridors:** transmission Infrastructure for evacuation of Power from Renewable Energy Sources..
- **Support to Solar Energy Corporation of India.**
- **Demonstration of Renewable Energy Application.**

2. Off-Grid/ Distributed and Decentralized Renewable Power:

- **Solar Power** (To promote the solar devices such as Solar Lighting Systems, Solar Pumps, Solar Power Packs and Concentrated Solar Technology systems.
- **Small wind and Hybrid Systems:**
- **Water Mills and Water Hydrants**
- **Energy Storage** for Energy Security and energy access in remote areas.
- **Biomass(non-bagasse) cogeneration/ U&I Waste to Energy**
- **Remote Village Electrification Programme :** provision of lighting/ electricity in the un-electrified remote villages/ hamlets
- **Biomass Gasifier for Rural Energy / Industrial Energy.**
- **Biogas Programme:** setting up of Family Type biogas plants for cooking/ lighting/ manure/ small scale power generation
- **Solar Thermal Systems:** deployment of decentralized solar thermal systems/ devices (mainly solar cookers / driers for cooking, drying farm produce) under National Solar Mission.
- **Green Buildings** - incorporating active renewable energy systems and passive designs
- **Solar Cities** – Planning for reducing their conventional energy consumption through energy conservation and use of renewable energy devices/ systems

3. Research, Development and International Cooperation:

- Supporting research and development projects at premier institutions and industries on different aspects of new and renewable energy technologies.
- Human Resource Development and Training Programme
- International relations international cooperation including Investment Promotion
- New and Innovative Projects

4. Support to Autonomous Bodies: Support to Institutions under the aegis of MNRE

ANNEXURE III

REFERRED TO IN REPLY TO LOK SABHA UNSTARRED QUESTION NO. 3481 FOR ANSWER
ON 23.03.2017

State-wise & source-wise estimated potential of Renewable Energy.

Sl. No.	STATES / Uts	Wind Power (MW) @ 100m	Small Hydro Power (MW)	Bio-Energy			Solar (MW)	Total (MW)
				Biomass Power (MW)	Bagase Cogeneration (MW)	Waste To Energy (MW)		
1	Andhra Pradesh	44229	978	578	300	123	38440	84648
2	Arunachal Pradesh		1341	8			8650	10000
3	Assam		239	212		8	13760	14218
4	Bihar		223	619	300	73	11200	12415
5	Chhattisgarh	77	1107	236		24	18270	19714
6	Goa	1	7	26			880	913
7	Gujarat	84431	202	1221	350	112	35770	122086
8	Haryana		110	1333	350	24	4560	6377
9	Himachal Pradesh		2398	142		2	33840	36382
10	Jammu & Kashmir		1431	43			111050	112523
11	Jharkhand		209	90		10	18180	18489
12	Karnataka	55857	4141	1131	450		24700	86279
13	Kerala	1700	704	1044		36	6110	9595
14	Madhya Pradesh	10484	820	1364		78	61660	74406
15	Maharashtra	45394	794	1887	1250	287	64320	113933
16	Manipur		109	13		2	10630	10755
17	Meghalaya		230	11		2	5860	6103
18	Mizoram		169	1		2	9090	9261
19	Nagaland		197	10			7290	7497
20	Orissa	3093	295	246		22	25780	29437
21	Punjab		441	3172	300	45	2810	6768
22	Rajasthan	18770	57	1039		62	142310	162238
23	Sikkim		267	2			4940	5209
24	Tamil Nadu	33800	660	1070	450	151	17670	53800
25	Telangana	4244					20410	24654
26	Tripura		47	3		2	2080	2131
27	Uttar Pradesh		461	1617	1250	176	22830	26333
28	Uttarakhand		1708	24		5	16800	18537
29	West Bengal	2	396	396		148	6260	7202
30	Andaman & Nicobar	8	8				0	16
31	Chandigarh					6	0	6
32	Dadra & Nagar Haveli						0	0
33	Daman & Diu						0	0
34	Delhi					131	2050	2181
35	Lakshadweep	8					0	8
36	Pondicherry	153				3	0	156
37	Others					1022	790	1812
	Total	302251	19749	17536	5000	2554	748990	1096081