

(d) Small hydro and waste-to-energy power projects are implemented through public private partnership. Foreign collaborations are encouraged for induction of latest technology, wherever possible.

#### Renewable energy generation in Tamil Nadu

2901. SHRIMATI VASANTHI STANLEY: Will the Minister of NEW AND RENEWABLE ENERGY be pleased to state:

- (a) the quantum of renewable energy generated in Tamil Nadu;
- (b) whether there is still significant potential for States, especially Tamil Nadu, to increase their renewable energy and if so, the details thereof; and
- (c) what are the incentives given for States to take up renewable energy initiatives?

THE MINISTER OF NEW AND RENEWABLE ENERGY (DR. FAROOQ ABDULLAH): (a) A generation capacity of about 6,681 MW grid-interactive renewable power comprising 6,084 MW wind power, 97 MW small hydro power, 488 MW from biomass power, 5.65 MW urban/industrial wastes to power and 6 MW solar power has been installed in Tamil Nadu till 30.06.2011.

(b) Yes, Sir. A total potential for power generation of about 89000 MW from various renewable energy sources excluding solar has been estimated in the country including Tamil Nadu. State-wise details thereof are given in Statement-I (See below). The potential for solar power is estimated for most parts of the country at about 30-50 MW/sq. m. of open shadow free area covered with solar collectors.

(c) Central Financial Assistance in the form of capital subsidy/incentive is being provided for deployment of various types of renewable energy systems/devices in all States of the country, with higher levels of subsidy/incentive in Special Category States. Details thereof are given in Statement-II (See below). CFA is also provided to State level implementing agencies for various awareness creation and training activities under different renewable energy programmes based on specific proposals.

#### *Statement*

*State-wise details of estimated potential for renewable power generation in the country*

Sl. No.	States/UTs	Wind Power (MW)	SHP (MW)	Biomass Power (MW)	Bagasse Cogen. (MW)	Waste to Energy (MW)
1	2	3	4	5	6	7
1.	Andhra Pradesh	8968	560	578	300	123

1	2	3	4	5	6	7
2.	Arunachal Pradesh	0	1329	8	0	
3.	Assam	0	239	212	0	8
4.	Bihar	0	213	619	300	73
5.	Chhattisgarh	0	993	236	0	24
6.	Goa	0	7	26	0	
7.	Gujarat	10645	197	1221	350	112
8.	Haryana	0	110	1333	350	24
9.	Himachal Pradesh	0	2268	142	0	2
10.	Jammu and Kashmir	0	1418	43	0	
11.	Jharkhand	0	209	90	0	10
12.	Karnataka	11531	748	1131	450	151
13.	Kerala	1171	704	1044	0	36
14.	Madhya Pradesh	1019	804	1364	0	78
15.	Maharashtra	4584	733	1887	1250	287
16.	Manipur	0	109	13	0	2
17.	Meghalaya	0	229	11	0	2
18.	Mizoram	0	167	1	0	2
19.	Nagaland	0	189	10	0	
20.	Orissa	255	295	246	0	22
21.	Punjab	0	393	3172	300	45
22.	Rajasthan	4858	57	1039	0	62
23.	Sikkim	0	266	2	0	
24.	Tamil Nadu	5530	660	1070	450	151
25.	Tripura	0	47	3	0	2
26.	Uttar Pradesh	0	461	1617	1250	176
27.	Uttarakhand	0	1577	24	0	5

1	2	3	4	5	6	7
28.	West Bengal	0	396	396	0	148
29.	Andaman and Nicobar Islands	0	7	0	0	
30.	Chandigarh	0	0	0	0	6
31.	Dadra and Nagar Haveli	0	0	0	0	
32.	Daman and Diu	0	0	0	0	
33.	Delhi	0	0	0	0	131
34.	Lakshadweep	0	0	0	0	
35.	Pondicherry	0	0	0	0	3
	Others (industrial wastes)*				0	1022
TOTAL :		48561	15384	17536	5000	2705

\*State-wise potential not available.

**Statement-II**

*Central Financial Assistance (CFA) provided under various  
renewable energy programmes*

**A. CFA under Off-grid/Decentralized Programmes**

Sl. No.	Off-grid/Decentralized Systems	Central Financial Assistance
1	2	3
1.	Remote Village Electrification: Renewable energy systems for Electricity generation/lighting for households in remote unelectrified census villages/hamlets	90% of the cost of electricity generation systems subject to a pre-specified maximum amount for each technology and an overall ceiling of Rs. 18,000 per household.  100% cost of a single light Solar PV home lighting system for BPL house- holds.

<p>2. Family Type Biogas Plants</p> <p>NE Region States including Sikkim (except plain areas of Assam) Plain areas of Assam, Jammu and Kashmir, Himachal Pradesh, Uttarakhand (excluding Terai region), Nilgiris of Tamil Nadu, Sadar, Kurseong and Kalimpong sub-divisions of Darjeeling, Sunderbans, Andaman and Nicobar Islands</p> <p><b>All Others</b></p>	<p>Rs. 11,700 to Rs. 14,700 per plant depending on capacity of plant and CDM benefits availed.</p> <p>Rs. 9,000 to Rs. 10,000 per plant depending on capacity of plant and CDM benefits availed.</p> <p>Rs. 3,000 to Rs. 10,000 per plant depending on capacity of plant and CDM benefits availed.</p> <p>Rs. 2,100 to Rs. 8,000 per plant depending on capacity of plant and CDM benefits availed.</p>
<p>3. Biomass Gasifiers</p>	<p>For Rural applications: Rs. 15.00 lakh/100 kW for village level electricity generation with 100% producer gas engine. 20% higher subsidy for Special Category States and Islands.</p> <p>For Industrial applications: Rs. 2.00 lakh/300 kWe for thermal applications Rs. 2.50 lakh/100 kWe with dual fuel engine Rs. 10.00 lakh/100 kWe with 100% producer gas engine For Institutional applications: Rs. 15.00 lakh/100 kWe with 100% producer gas engine</p>
<p>4. Biomass Co-generation (non-bagasse) for captive use in industry</p>	<p>Rs. 20.00 lakhs per MW subject to a maximum of Rs. 1 crore/project. (20% higher subsidy for Special Category States)</p>

5. Urban Waste to Energy	Rs. 1.0 to 3.0 crore/MWe, depending on technology. (20% higher subsidy for Special Category States)
6. Industrial Waste-to-Energy Plants	Rs. 20.00 lakh to Rs. 1.00 crore/MWe, depending on technology. (20% higher subsidy for Special Category States)
7. Solar Energy Systems (Photovoltaic/Thermal)	Subsidy of 30% of project cost and/or 5% interest bearing loans.
8. Small Aero-Generators and Hybrid Systems	Rs. 1.00 lakh and Rs. 1.50 lakh per kW for commercial and non-commercial beneficiaries respectively. Higher support of Rs. 2.25 lakh per kW for projects in NE Region States Sikkim and Jammu and Kashmir.
9. Micro-hydel plants/Water mills	Rs. 0.35 lakh per watermill for mechanical application Rs. 1.10 lakh per watermill for electrical application.

**B. CFA under Grid-Interactive Renewable Power Programmes:**

**1. Small Hydro Power**

**SHP Projects in State Sector:**

Category	Above 100 kW and upto 1000 kW	Above 1 MW – 25 MW
Special category	Rs. 50,000/kW and NE States	Rs. 5.00 crore for first MW + Rs. 50 lakh/MW for each additional MW
Other States	Rs. 25,000/kW	Rs. 2.50 crore for first MW + Rs. 40 lakh/MW for each additional MW

**SHP Project in Private/Co-operative/Joint Sector:**

Category	Upto 1000 kW	Above 1 MW – 25 MW
Special category	Rs. 20,000/kW and NE States	Rs. 2.00 crore for first MW + Rs. 30 lakh/MW for each additional MW
Other States	Rs. 12,000/kW	Rs. 1.20 crore for first MW + Rs. 20 lakh/MW for each additional MW

2. Biomass Power Project and Bagasse Cogeneration Projects:

A. Private/Joint/Cooperative/Public Sector Sugar Mills

	Special Category States (NE Region, Sikkim, Jammu and Kashmir, Himachal Pradesh and Uttaranchal)	Other States
Project Type	Capital Subsidy	Capital Subsidy
Biomass Power projects	Rs. 25 lakh × (C MW) <sup>0.646</sup>	Rs. 20 lakh × (C MW) <sup>0.646</sup>
Bagasse Co-generation by Private sugar mills	Rs. 18 lakh × (C MW) <sup>0.646</sup>	Rs. 15 lakh × (C MW) <sup>0.646</sup>
Bagasse Co-generation projects by cooperative/ public sector sugar mills		
40 bar and above	Rs. 40 lakh *	Rs. 40 lakh *
60 bar and above	Rs. 50 lakh *	Rs. 50 lakh *
80 bar and above	Rs. 60 lakh *	Rs. 60 lakh *
	Per MW of surplus power@ (maximum support Rs. 8.0 crore per project)	Per MW of surplus power@ (maximum support Rs. 8.0 crore per project)

\*For new sugar mills, which are yet to start production and existing sugar mills employing backpressure route/seasonal/incidental cogeneration, which exports surplus power to the grid, subsidies shall be one-half of the level mentioned above.

@Power generated in a sugar mill (-) power used for captive purpose *i.e.* net power fed to the grid during season by a sugar mill.

B. Bagasse Cogeneration projects in cooperative/public sector sugar mills implemented by IPPs/State Government Undertakings or State Government Joint Venture Company/Special Purpose Vehicle (Urja Ankur Trust) through BOOT/BOLT model

Project type	Minimum configuration	Capital subsidy
1	2	3
Single cooperative, mill through BOOT/BOLT Model	60 bar and above	Rs. 40 L/MW of surplus power*

1	2	3
	80 bar and above	Rs. 50 L/MW of surplus power* (maximum support Rs. 8.0 crore/sugar mill)

\*Power generated in a sugar mill (-) power used for captive purpose *i.e.* Net power fed to the grid during season by a sugar mill.

**C. Bagasse Cogeneration Project in existing cooperative sector sugar mills employing boiler modifications**

Project type	Minimum configuration	Capital subsidy
Existing Cooperative Sugar Mill	40 bar and above	Rs. 20 L/MW of surplus power*
	60 bar and above	Rs. 25 L/MW of surplus power*
	80 bar and above	Rs. 30 L/MW of surplus power*

\*Power generated in a sugar mill (-) power used for captive purpose *i.e.* Net power fed to the grid during season by a sugar mill. CFA will be provided to the sugar mills who have not received CFA earlier from MNRE under any of its scheme.

**3. Wind Power:**

	Special Category States (NE Region, Sikkim, Jammu and Kashmir, Himachal Pradesh and Uttarakhand)	Other States
For Demo. Projects	Rs. 3.00 crore $\times C^{0.646}$	Rs. 2.50 crore $\times C^{0.646}$
Commercial Wind Power	Generation Based Incentive (GBI) for Commercial Wind Power projects @ Rs. 050 per kwh subject to a maximum of Rs. 62.50 lakh/MW, which do not avail Accelerated Depreciation benefit.	

C : Capacity of the project in MW; ^: raised to the power

**4. Biomass Gasifier**

	Special Category States (NE Region, Sikkim, Jammu and Kashmir, Himachal Pradesh and Uttarakhand)	Other States
	20% higher CFA	Rs. 15,000/kW

5. **Solar Power:**

- (i) Generation based incentive linked to CERC announced tariff guidelines for projects connected at 11kV and below.
- (ii) For projects connected at 33kV and above — National Vidyut Vyapar Nigam (NVN) to purchase power at a rate fixed by CERC

**KPMG Report on solar energy**

2902. SHRIMATI VASANTHI STANLEY: Will the Minister of NEW AND RENEWABLE ENERGY be pleased to state:

- (a) whether Government has taken cognizance of a KPMG Report on solar energy;
- (b) what quantum of energy would be generated through solar sources during the next ten years; and
- (c) what financial support would be provided by the Central Government to State Governments to boost solar energy generation?

THE MINISTER OF NEW AND RENEWABLE ENERGY (DR. FAROOQ ABDULLAH): (a) Yes, Sir. KPMG has released a report on solar energy, which has projected significant growth in next ten years.

(b) Under the Jawaharlal Nehru National Solar Mission, Government has set a target to set up 20,000 MW of grid connected solar power plants and 2,000 MW of off-grid solar projects by 2022.

(c) Government has announced a scheme to provide generation based incentive to the State utilities/distribution companies to purchase solar power from the project developers. In addition, Government has announced another scheme on bundling of solar power by NTPC Vidyut Vyapar Nigam (NVN), with thermal power available from the unallocated quota of NTPC stations and sell the bundled power to the States at the bundled price.

**Private investment in solar energy sector**

2903. SHRI N.K. SINGH:

SHRIMATI SHOBHANA BHARTIA:

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

- (a) the details of private equity investment in the solar energy sector, as on date;
- (b) the details of the average time taken in clearing investment plans and actual capacity addition done;