GOVERNMENT OF INDIA
MINISTRY OF POWER

RAJYA SABHA
STARRED QUESTION NO.5
ANSWERED ON 03.02.2025

STATE-WISE POWER GENERATION CAPACITY

5. SHRI MANAS RANJAN MANGARAJ:

Will the Minister of **Power** be pleased to state:

(a) the details of the total power generation capacity, specifying sources such as coal, gas, hydro, solar and wind, State-wise;

(b) the progress made under various initiatives to increase renewable energy adoption across States;

(c) the measures being taken to ensure the integration of renewable energy with the existing power grid; and

(d) the challenges being faced in reducing transmission and distribution losses and the steps taken to address them?

A N S W E R

THE MINISTER OF POWER

(SHRI MANOHAR LAL)

(a) to (d) : A Statement is laid on the Table of the House.

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STATEMENT

STATEMENT REFERRED TO IN REPLY TO PARTS (a) TO (d) IN RESPECT OF RAJYA SABHA STARRED QUESTION NO.5 FOR REPLY ON 03.02.2025 REGARDING STATE-WISE POWER GENERATION CAPACITY ASKED BY SHRI MANAS RANJAN MANGARAJ

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(a) : The details of State/ UT-wise and source-wise power generation capacity as on 31.12.2024 are given at **Annexure-I**.

(b) : The Government of India has committed to augment non-fossil based installed electricity generation capacity to 500 GW by the year 2030. As on 31.12.2024, a total of 209.44 GW renewable energy capacity has been installed in the country. The details of State/UT-wise installed Renewable capacity (as on 31.12.2024) are given at **Annexure-II**.

The Government of India has taken several steps and initiatives to promote and accelerate renewable energy capacity in the country. These, inter-alia, include the following:

i. Ministry of New & Renewable Energy (MNRE) has issued Bidding Trajectory for issuance of RE power procurement bids of 50 GW/annum by Renewable Energy Implementing Agencies from FY 2023-24 to FY 2027-28.

ii. Foreign Direct Investment (FDI) has been permitted up to 100 percent under the automatic route.

iii. Inter State Transmission System (ISTS) charges have been waived for inter-state sale of solar and wind power for projects to be commissioned by 30th June 2025, for Green Hydrogen Projects till December 2030 and for offshore wind projects till December 2032.

iv. To boost RE consumption, Renewable Purchase Obligation (RPO) followed by Renewable Consumption Obligation (RCO) trajectory has been notified till 2029-30. The RCO which is applicable to all designated consumers under the Energy Conservation Act 2001 will attract penalties for non-compliance.

v. Standard Bidding Guidelines for tariff based competitive bidding process for procurement of Power from Grid Connected Solar, Wind, Wind-Solar Hybrid and Firm & Dispatchable RE (FDRE) projects have been issued.

vi. Schemes such as Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM), PM Surya Ghar Muft Bijli Yojana, National Programme on High Efficiency Solar PV Modules, National Green Hydrogen Mission, Viability Gap Funding (VGF) Scheme for Offshore Wind Energy Projects have been launched.

vii. Scheme for setting up of Ultra Mega Renewable Energy Parks is being implemented to provide land and transmission to RE developers for installation of RE projects at large scale.

viii. Laying of new transmission lines and creating new sub-station capacity has been funded under the Green Energy Corridor Scheme for evacuation of renewable power.

ix. "Strategy for Establishment of Offshore Wind Energy Projects" has been issued indicating a bidding trajectory of 37 GW by 2030 and various business models for project development.

x. The Offshore Wind Energy Lease Rules, 2023 have been notified vide Ministry of External Affairs notification dated 19th December 2023, to regulate the grant of lease of offshore areas for development of offshore wind energy projects.

xi. To augment transmission infrastructure needed for steep RE trajectory, transmission plan has been prepared till 2030.

xii. Electricity (Promoting Renewable Energy Through Green Energy Open Access) Rules, 2022, has been notified on 06th June 2022 with objective of ensuring access to affordable, reliable, and sustainable green energy for all. Green Energy Open Access is allowed to any consumer with contract demand of 100 kW or above through single or multiple single connection aggregating Hundred kW or more located in same electricity division of a distribution licensee.

xiii. Green Term Ahead Market (GTAM) has been launched to facilitate sale of Renewable Energy Power through exchanges.

xiv. To achieve the objective of increased domestic production of Solar PV Modules, the Govt. of India is implementing the Production Linked Incentive (PLI) scheme for High Efficiency Solar PV Modules with an outlay of Rs. 24,000 crore. This will enable manufacturing capacity of Giga Watt (GW) scale in High Efficiency Solar PV Module.

(c): A robust national grid has been established to facilitate the transfer of power from power surplus regions to power deficit regions. The inter-regional transmission capacity has been increased from 75,050 MW during 2016-17 to 1,18,740 MW as on 31.12.2024. The capacity of National Grid is being expanded on a continuous basis commensurate with the growth in electricity generation and electricity demand. The Government has taken various measures for integration of RE sources into the National Grid to ensure reliability and stability: -

i. Development of intra-state transmission network is being planned to keep pace with RE capacity addition. Strong inter connection of ISTS RE schemes with the intra-state network to ensure better reliability in terms of anchoring voltage stability, angular stability, losses reduction etc. is being done.

ii. Central Financial Assistance (CFA) is being provided to the States for setting up Transmission infrastructure for RE integration within their State under the Green Energy Corridor Scheme.

iii. Encouraging setting up of RE projects with storage facilities for optimal utilisation of transmission facilities.

iv. Flexibilisation of thermal generation is mandated to address the variability of RE generation.

v. CEA (Technical Standards for Connectivity to the Grid) Regulations lay down the minimum technical requirements for the RE generating plants to ensure the safe, secure and reliable operation of the grid. The compliances to the said regulations by RE plants are verified jointly by Central Transmission Utility (CTUIL) and Grid-India/RLDCs before granting connectivity/interconnection to the national grid. Robust compliances verification is done before interconnection of any new plant to the grid.

vi. Indian Electricity Grid Code mandates that RE plants participate in the primary and secondary frequency control in case of contingencies. Hybrid RE power plants, Energy Storage Systems such as BESS (Battery Energy Storage System) and PSP (Pump Storage Project) are being promoted for mitigating variability in RE generation and provide adequate frequency support to the grid.

vii. Establishment of dedicated 13 No. of Renewable Energy Management Centres (REMC) in RE rich States and Regions for dedicated, monitoring, forecasting and scheduling of Solar and Wind plants.

(d): Distribution Utilities viz. DISCOMs/Power Departments of State/UT Government concerned are responsible for reduction of transmission and distribution losses in their area of operation. Government of India has been supplementing the efforts of the States through various schemes from time to time.

The challenges faced in reducing the distribution losses relate to infrastructure constraints and technology upgradation, sub-optimal billing and collection efficiencies including delays in payment of Government department dues and subsidies by the State Governments which is critical for improving the financial viability and operational performance of the Utilities.

To help States address the above challenges and improve the quality and reliability of power supply to consumers, Government of India launched the Revamped Distribution Sector Scheme (RDSS), in July 2021, with an outlay of Rs.3,03,758 Cr. The scheme aims to reduce the Aggregate Technical and Commercial (AT&C) losses to pan-India levels of 12-15% and ACS-ARR gap to zero.

Under the Scheme, Projects worth Rs. 2.78 lakh Cr. have been sanctioned. Loss reduction Infrastructure projects amounting to Rs. 1.48 lakh Cr. have been sanctioned which includes works for replacement of bare conductors with covered conductors, laying Low Tension Aerial Bunched (LT AB) cables, and upgradation/augmentation of Distribution transformers (DT)/sub-stations, etc.

Further, 19.79 Cr prepaid smart consumer meters, 2.11 lakh communicable feeder meters and 52.53 lakhs Distribution Transformer (DT) communicable meters have been sanctioned.

The sanctioned works are under various stages of implementation. Further, the fund disbursement under the scheme has been linked to performance of the State against different financial parameters.

Prepaid smart metering is one of the critical interventions envisaged under RDSS to improve the AT&C losses. It allows the Distribution Utilities to timely collect the revenues and measure energy flows at all levels, without any human interference. Proper and accurate energy accounting is the key to identification of high loss and theft prone areas, which will improve the billing and collection efficiencies of the utilities significantly.

GoI has issued various advisories and Standard operating Procedures for prepaid smart metering. As per the advisory issued, prepaid smart meters may be prioritised in Government establishments including offices/institutions/ local bodies, etc. and Commercial, Industrial and high load consumers. Based on experience, the smart prepaid meters may be installed for other category of consumers.

As a result of measures taken by the Government, the AT&C losses have come down from 21.91% in FY2021 to 15.37% in FY2023.

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ANNEXURE-I

ANNEXURE REFERRED TO IN PART (a) OF THE STATEMENT LAID IN REPLY TO STARRED QUESTION NO. 05 ANSWERED IN THE RAJYA SABHA ON 03.02.2025 REGARDING STATE-WISE POWER GENERATION CAPACITY

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The details of State/ UT-wise and source-wise power generation capacity as on 31.12.2024:

(All figures in MW)

State/UT	Modewise breakup							Total
	Coal	Lignite	Gas	Diesel	Hydro	RES (other than Large Hydro)	Nuclear	
Andhra Pradesh	13,190	0	4,678.54	36.8	1610	9,564.62	0	29,079.96
Arunachal Pradesh	0	0	0	0	1115	155.46	0	1,270.46
Assam	750	0	597.36	0	350	221.55	0	1918.9
Bihar	9,060	0	0	0	0	527.96	0	9,587.96
Chhattisgarh	23,688	0	0	0	120	1,687.34	0	25,495.34
Goa	0	0	48	0	0	54.55	0	102.55
Gujarat	14,692	1,400	7,551.41	0	1990	29,492.79	1,840	56,966.2
Haryana	5,330	0	431.59	0	0	2,353.08	0	8,114.67
Himachal Pradesh	0	0	0	0	10,281.02	1,173.42	0	11,454.44
Jammu and Kashmir	0	0	175	0	3360	264.29	0	3,799.29
Jharkhand	5,570	0	0	0	210	224.06	0	6,004.06
Karnataka	9,480	0	0	25.2	3,689.2	18,912.92	880	32,987.32
Kerala	0	0	533.58	159.96	1,904.15	1,656.18	0	4,253.87
Ladakh	0	0	0	0	89	53.59	0	142.59
Madhya Pradesh	22,000	0	0	0	2,235	8,076.94	0	32,311.94
Maharashtra	24,006.01	0	3,207.08	0	3,047	17,574.07	1,400	49,234.16
Manipur	0	0	0	36	105	19.24	0	160.24
Meghalaya	0	0	0	0	322	73.11	0	395.11
Mizoram	0	0	0	0	60	75.86	0	135.86
Nagaland	0	0	0	0	75	35.84	0	110.84
Odisha	9,600	0	0	0	2,154.55	790.77	0	12,545.32
Punjab	5,680	0	0	0	1,096.3	2130.4	0	8,906.7
Rajasthan	9,200	1,580	1,022.83	0	411	31,835.38	1,180	45,229.21
Sikkim	0	0	0	0	2,282	62.67	0	2,344.67
Tamil Nadu	10,522.5	3,640	1,027.18	211.7	2,178.2	22,145.22	2,440	42,164.8
Telangana	9,442.5	0	0	0	2,405.6	5,282.74	0	17,130.84
Tripura	0	0	1,067.6	0	0	37.24	0	1,104.84
Uttar Pradesh	26,715	0	1,493.14	0	501.6	5,667.47	440	34,817.21
Uttarakhand	0	0	664	0	4,035.35	969.13	0	5668.48
West Bengal	13,487	0	80	0	1,341.2	757.48	0	15,665.68
Andaman & Nicobar Islands	0	0	0	92.71	0	35.16	0	127.87
Chandigarh	0	0	0	0	0	77.05	0	77.05
DNH&DD	0	0	0	0	0	51.87	0	51.87
Delhi	0	0	2,208.4	0	0	378.9	0	2,587.3
Lakshadweep	0	0	0	26.83	0	4.97	0	31.8
Puducherry	0	0	32.5	0	0	53.26	0	85.76
Total	**2,12,413.01**	**6,620**	**24,818.21**	**589.2**	**46,968.17**	**1,62,476.58**	**8,180**	**4,62,065.16**

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ANNEXURE-II

ANNEXURE REFERRED TO IN PART (a) OF THE STATEMENT LAID IN REPLY TO STARRED QUESTION NO. 05 ANSWERED IN THE RAJYA SABHA ON 03.02.2025 REGARDING STATE-WISE POWER GENERATION CAPACITY

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Details of State/UT-wise installed Renewable capacity as on 31.12.2024:

(All figures in MW)

S. No.	STATES / UTs	Small Hydro Power	Wind Power	Bio Power Total	Solar Power Total	Large Hydro	Total Capacity
		(MW)	(MW)	(MW)	(MW)	(MW)	(MW)
1	Andhra Pradesh	163.31	4,096.65	574.39	4,730.27	1,610	11,174.62
2	Arunachal Pradesh	140.61	0	0	14.85	1,115	1,270.46
3	Assam	34.11	0	2	185.44	350	571.55
4	Bihar	70.7	0	140.22	317.04	0	527.96
5	Chhattisgarh	76	0	275	1,336.34	120	1,807.34
6	Goa	0.05	0	1.94	52.56	0	54.55
7	Gujarat	106.64	12,473.78	116.6	16,795.77	1,990	31,482.79
8	Haryana	73.5	0	292.62	1,986.96	0	2,353.08
9	Himachal Pradesh	1,000.71	0	10.2	162.51	10,281.02	11,454.44
10	Jammu & Kashmir	189.93	0	0	74.36	3,360	3,624.29
11	Jharkhand	4.05	0	20.14	199.87	210	434.06
12	Karnataka	1,284.73	6,731.3	1,909.95	8,986.94	3,689.2	22,602.12
13	Kerala	276.52	63.5	2.5	1,313.66	1,904.15	3,560.33
14	Ladakh	45.79	0	0	7.8	89	142.59
15	Madhya Pradesh	123.71	2,844.29	135.36	4,973.58	2235	10,311.94
16	Maharashtra	384.28	5,216.38	2,984.05	8,989.36	3,047	20,621.07
17	Manipur	5.45	0	0	13.79	105	124.24
18	Meghalaya	55.03	0	13.8	4.28	322	395.11
19	Mizoram	45.47	0	0	30.39	60	135.86
20	Nagaland	32.67	0	0	3.17	75	110.84
21	Odisha	115.63	0	59.22	615.92	2,154.55	2,945.32
22	Punjab	176.1	0	567.25	1,387.05	1,096.3	3,226.7
23	Rajasthan	23.85	5,195.82	126.06	26,489.65	411	32,246.38
24	Sikkim	55.11	0	0	7.56	2,282	2,344.67
25	Tamil Nadu	123.05	11,413.34	1,045.45	9,563.38	2,178.2	24,323.42
26	Telangana	90.87	128.1	221.67	4842.1	2,405.6	7,688.34
27	Tripura	16.01	0	0	21.23	0	37.24
28	Uttar Pradesh	49.1	0	2,271.38	3,346.99	501.6	6,169.07
29	Uttarakhand	233.82	0	142.24	593.07	4,035.35	5,004.48
30	West Bengal	98.5	0	348.36	310.62	1,341.2	2,098.68
31	Andaman & Nicobar Islands	5.25	0	0	29.91	0	35.16
32	Chandigarh	0	0	0	77.05	0	77.05
33	Dadra & Nagar Haveli and Daman & Diu	0	0	3.75	48.12	0	51.87
34	Delhi	0	0	84	294.9	0	378.9
35	Lakshadweep	0	0	0	4.97	0	4.97
36	Puducherry	0	0	0	53.26	0	53.26
	Total (MW)	**5,100.55**	**48,163.16**	**11,348.15**	**97,864.72**	**46,968.17**	**2,09,444.75**

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