

GOVERNMENT OF INDIA
MINISTRY OF POWER

RAJYA SABHA
UNSTARRED QUESTION NO.1587
ANSWERED ON 05.08.2024

GAP IN DEMAND AND SUPPLY IN ELECTRICITY GENERATION

1587 SHRI NARAIN DASS GUPTA:

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

- (a) the total electricity demand and the electricity generated in the country;
- (b) whether there is surplus or deficit of electricity, if deficit, steps taken by Government to fill the gap;
- (c) the different sources of generation of electricity, cost of generation (source-wise), carbon-emissions figures (source-wise);
- (d) steps taken to improve more cost effective generation of electricity in future; and
- (e) the future plan of Government to reduce carbon emission while producing electricity?

A N S W E R

THE MINISTER OF STATE IN THE MINISTRY OF POWER

(SHRI SHRIPAD NAIK)

(a) & (b) : There is adequate availability of power in the country. Government of India has addressed the critical issue of power deficiency by adding 2,14,237 MW of generation capacity in the last ten years transforming our country from power deficit to power sufficient.

The details of Energy Requirement and Energy Supplied for the years 2021-22 to 2023-24 and the current year 2024-25 (upto June, 2024) is given at **Annexure-I**. The total quantity of power generated in the country during the last three years and the current year (upto June, 2024) is given at **Annexure-II**.

The growth in Energy Supplied has been commensurate with the growth in Energy Requirement in the country. Marginal gap between Energy Requirement and Energy Supplied is generally on account of constraints in the State transmission/distribution network etc.

(c) : The source-wise details of generation of electricity in the country during years 2021-22 to 2023-24 and the current year 2024-25 (upto June, 2024) is given at **Annexure-III**.

The per unit cost of generation for various generating stations varies depending on the technology used, location, utilization factor or plant load factor, financing structure, vintage, efficiency etc. The Weighted Average Rate of Sale of Power (WARSP) of Power Generation from Thermal, Nuclear and Hydro for the year 2020-21 to 2022-23 and Weighted Average Rate for Solar and Wind for the year 2024 is given at **Annexure-IV**.

The source-wise carbon-emission figures from grid connected thermal stations for F.Y. 2022-23 is given at **Annexure -V**.

(d): Government of India has taken the following steps to reduce the cost of power generation and resultant reduction in cost of electricity to consumers:

- (i) Introduction of flexibility in utilization of domestic coal by State/Central Generation Companies (GENCOs)
- (ii) Rationalization of linkage sources of State/Central Generating Companies (GENCOs) and Independent Power Producers (IPPs) with a view to optimize transportation cost has been allowed.
- (iii) Issuance of guidelines for tariff based bidding process for procurement of electricity under Section 63 of Electricity Act, 2003 to promote competitive procurement of electricity by distribution licensees.
- (iv) Reduction of Aggregate Technical & Commercial (AT&C) losses under RDSS will improve the finances of the utilities, which will enable them to better maintain the system and buy power as per requirements; benefitting the consumers.
- (v) Operationalisation of National Merit Order Dispatch with the objective of lowering the cost of electricity to consumers.

(e): In order to reduce carbon emission, the Government is presently adopting various technologies and practices as mentioned below:

- (i) Ministry of Power is promoting installation of efficient Supercritical/ Ultra Super-critical units over Subcritical Thermal Units as these units are more efficient and their CO₂ emission per unit of electricity generation is less than subcritical units.
- (ii) To improve the energy efficiency, the Perform Achieve and Trade (PAT) scheme has been implemented in various thermal power plants. Improvement in energy efficiency reduces carbon dioxide emission in thermal power generation.
- (iii) Carbon Capture Utilization and Storage (CCUS) project are under implementation in few thermal power plants on pilot basis to reduce carbon dioxide in the flue gases.
- (iv) Ministry of Power has issued policy on Bio-mass utilization for Power Generation through Co-firing in Coal based Power Plants to use 5-10 % blend of biomass pellets made, primarily of agro-residue along with coal after assessing the technical feasibility.

ANNEXURE-I**ANNEXURE REFERRED IN REPLY TO PARTS (a) & (b) OF UNSTARRED QUESTION NO. 1587 ANSWERED IN THE RAJYA SABHA ON 05.08.2024**

The details of Energy Requirement and Energy Supplied for the years 2021-22 to 2023-24 and the current year 2024-25 (upto June, 2024).

Year	Energy Requirement	Energy Supplied	Energy not Supplied	
	(MU)	(MU)	(MU)	(%)
2021-22	13,79,812	13,74,024	5,788	0.4
2022-23	15,13,497	15,05,914	7,583	0.5
2023-24	16,26,132	16,22,020	4,112	0.3
2024-25 (upto June, 2024)	4,52,399	4,51,811	588	0.1

ANNEXURE-II

**ANNEXURE REFERRED IN REPLY TO PARTS (a) & (b) OF UNSTARRED QUESTION
NO. 1587 ANSWERED IN THE RAJYA SABHA ON 05.08.2024**

The total quantity of power generated in the country during the last three years and the current year (upto June, 2024)

(All figures are in Million Units)

	2021-22	2022-23	2023-24	2024-25 (Upto June)
Total Power Generated	14,91,859.37	16,24,465.61	17,39,091.19	4,84,000.61

ANNEXURE-III

ANNEXURE REFERRED IN REPLY TO PART (c) OF UNSTARRED QUESTION NO. 1587
ANSWERED IN THE RAJYA SABHA ON 05.08.2024

Source-wise details of generation of electricity in the country during years 2021-22 to 2023-24 and the current year 2024-25 (upto June, 2024)

All figures are in Million Units

Fuel		2021-22	2022-23	2023-24	2024-25 (Upto Jun, 2024)
THERMAL	COAL	10,41,487.43	11,45,907.58	12,60,902.62	3,49,749.26
	DIESEL	117.24	229.71	400.58	117.24
	HIGH SPEED DIESEL	0	0	0	0
	LIGNITE	37,094.04	36,188.34	33,949.79	9,054.06
	MULTI FUEL				
	NAPHTHA	0	0.83	0.03	0
	NATURAL GAS	36,015.77	23,884.21	31,295.91	13,496.51
THERMAL Total		11,14,714.48	12,06,210.67	13,26,548.93	3,72,417.07
NUCLEAR		47,112.06	45,861.09	47,937.41	13,108.27
HYDRO		1,51,627.33	1,62,098.77	1,34,053.92	34,878.24
Bhutan Import		7,493.2	6,742.4	4,716.1	744
TOTAL [Conventional]		13,20,947.07	14,20,912.93	15,13,256.36	4,21,147.58
Wind		68,640.07	71,814.16	83,385.35	23,121.80
Solar		73,483.94	1,02,014.24	1,15,975.11	36,112.70
Biomass		3,482.70	3,161.32	3,417.19	847.32
Bagasse		12,573.88	12,863.16	10,825.59	1,286.79
Small Hydro		10,463.55	11,170.62	9,485.04	2,104.37
Others		2,268.17	2,529.18	2,746.55	716.21
TOTAL [Renewable excluding conventional Hydro]		1,70,912.30	2,03,552.68	2,25,834.83	64,189.19
GRAND TOTAL:		14,91,859.37	16,24,465.61	17,39,091.19	4,85,336.77

Note: Gross generation figures of conventional power plants, is for plants of capacity 25 MW and above only.

ANNEXURE-IV**ANNEXURE REFERRED IN REPLY TO PART (c) OF UNSTARRED QUESTION NO. 1587
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Details of Weighted Average Rate of Sale of Power (WARSP) for different sources of Power Generation for the year 2020-21 to 2022-23.

Sr. No.	Mode of Generation/category	Weighted Average Rate of Sale of Power (Paisa/kWh)		
		2020-21	2021-22	2022-23
1	All India Hydro	244.84	251.03	298.34
2	All India Thermal (coal)	368.72	394.16	446.25
3	All India Nuclear	311.33	315.54	353.03
4	All India Thermal (N/LSHS/WHR/HSD) N – Naptha LSHS - Low Sulphur Heavy Stock WHR - Waste Heat Recovery HSD - High Speed Diesel	386.46	431.34	490.24

Details of Weighted Average Rate of Solar and Wind for 2024 as provided by NLDC:

S. No	Mode of Generation	Average PPA Rate
1	Solar	₹ 2.938 / kWh
2	Wind	₹2.936 / kWh

ANNEXURE-V

**ANNEXURE REFERRED IN REPLY TO PART (c) OF UNSTARRED QUESTION NO. 1587
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The source-wise carbon-emission figures from grid connected thermal stations for F.Y. 2022-23

Sl. No.	Source of Generation	CO₂ Emissions (gmCO₂ /kWh)
1.	Coal	978
2.	Lignite	1286
3.	Gas	478
