

GOVERNMENT OF INDIA
MINISTRY OF POWER

RAJYA SABHA

STARRED QUESTION NO.31
ANSWERED ON 06.02.2024

GRID PROBLEMS OF RENEWABLE ENERGY

31. SHRI JAWHAR SIRCAR:

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

- (a) the reasons as to why grid problems are continuing to bother renewable energy, despite the unified national network of 117 GW;
- (b) the problems of integration of renewable energy in the grid built for scales and stability of thermal and hydro power generation;
- (c) the progress in implementing Renewable Energy Source Grid-Connected Generation system (RES-GGS) and whether there is any plan to soften the higher initial investment cost; and
- (d) whether the very-delayed payments are received and passed on by DISCOMs continuing to create deep financial difficulties for renewable energy?

A N S W E R

THE MINISTER OF POWER AND NEW & RENEWABLE ENERGY

(SHRI R.K. SINGH)

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

STATEMENT

STATEMENT REFERRED TO IN REPLY TO PARTS (a) TO (d) IN RESPECT OF RAJYA SABHA STARRED QUESTION NO. 31 FOR REPLY ON 06.02.2024 REGARDING GRID PROBLEMS OF RENEWABLE ENERGY ASKED BY SHRI JAWHAR SIRCAR.

(a) to (c) : It is incorrect to say that there has been any problem in Grid stability due to the addition of RE capacity. Grid continues to be stable. The Government have added 196.558 GW generation capacity since 2014, which includes 104.059 GW of RE capacity increasing the total generation capacity by 70 % from 248.554 GW in March 2014 to 428.299 GW in December 2023. In order to accommodate this substantial capacity addition, Government of India planned and added 189052 circuit Km (ckm) of transmission lines in the same period. This has resulted in increase of inter regional transfer capacity from 36 GW in 2014 to 116.540 GW till date.

In addition to this 24,000 ckm of transmission lines are under construction and 17,860 ckm is under bidding. CEA has drawn up a plan of transmission augmentation to handle a total RE capacity of 500 GW and transmission capacity is being added accordingly. While Government are adding transmission system at a rapid pace, the renewable energy capacity is also being increased rapidly. The RE capacity has gone up from 75.5 GW in 2014 to 180.80 GW upto December, 2023. In addition, 103.66 GW is under implementation and 71.65 GW is under bid.

Wind and Solar energy is variable and intermittent. Thirteen (13) Renewable Energy Management Centres (REMCs) have been setup for better forecasting and real time monitoring of Renewable Energy generation. The variability is balanced by load dispatch centres through resources like Hydro and Thermal. Flexibilization of significant capacity of Thermal Power plants has already been done and the same is being implemented in the balance Thermal plants. The current level of Variable RE (VRE) penetration is quite low. Out of 1624.34 BUs energy generated in 2022-23, only 173.8 BUs(10.7%) were generated by Solar and Wind.

Solar and Wind which are inverter based generators, need to respond as per the CEA Technical Standards for connectivity during transmission line faults in the grid. A few incidents of some of these generators going out of the grid in the Rajasthan RE-complex had occurred in the past. The Grid was however stable. These incidents were inter-alia traced to inverter level protective system settings which have been changed and such incidents have been minimized.

As far as cost of electricity from RE sources is concerned, it is cheaper than conventional energy sources. The Solar tariff discovered in recent bids is around Rs 2.50 per kWh and Wind tariff is around Rs 3.18 per kWh. While aggregating the demand of various DISCOMs for tariff based competitive bidding from various coal based thermal generating stations, the price discovered was around Rs 5.30 per kWh.

(d) : The total outstanding dues of GENCOs were Rs 139947 crores (including dues of RE GENCOs at Rs 17232 crores) in 2021-22. The Government have put in place rules, [Electricity (Late Payment Surcharge and Related Matters) Rules, 2022], which ensured payment of legacy dues in instalments as well as the current dues in full. Non payment of dues results in regulation of access to the market. As a result, the GENCO legacy dues have now reduced from Rs.1,39,947 crores to Rs. 49451 crores (Rs 3116 crores of RE GENCOs).

GOVERNMENT OF INDIA
MINISTRY OF POWER

RAJYA SABHA
UNSTARRED QUESTION NO.473
ANSWERED ON 06.02.2024

FUNDS ALLOTTED TO STATES UNDER VARIOUS SCHEMES

473 DR. ANIL AGRAWAL:
SMT. SANGEETA YADAV:
SHRI BRIJ LAL:
DR. ANIL SUKHDEORAO BONDE:
SHRI KAMAKHYA PRASAD TASA:

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

- (a) whether the funds allotted to the States of Kerala, Maharashtra and Assam under various schemes of the Ministry during the period of 2019-2024 are higher as compared to recent past;
- (b) if so, the allotment of funds thereof annually from 2019-2024;
- (c) whether Government has approved any special projects in the Power sector for the States of Kerala, Maharashtra and Assam from 2019-2024; and
- (d) if so, the details thereof annually during the period 2019-2024?

A N S W E R

THE MINISTER OF POWER AND NEW & RENEWABLE ENERGY

(SHRI R.K. SINGH)

(a) & (b) : Funds released to Kerala, Maharashtra and Assam during the period from 2019-24 under various schemes of Ministry of Power are at **Annexure**.

(c) & (d) : No.

ANNEXURE

ANNEXURE REFERRED IN REPLY TO PARTS (a) & (b) OF UNSTARRED QUESTION
NO.473 ANSWERED IN THE RAJYA SABHA ON 06.02.2024.

The details of funds released under all the schemes to the State of Maharashtra, Kerala and Assam

Year wise Fund Release Details								
(Rupees in Crores)								
Sl. No	Name of the State	Name of schemes	2019-20	2020-21	2021-22	2022-23	2023-24	Total
1	Kerala	Promoting Energy Efficiency Activities in different Sectors of Indian Economy and National Mission for Enhanced Energy Efficiency (NMEEE)	4.34	2.80	6.93	6.11	1.90	22.08
		Power System Development Fund (PSDF)	-	-	15.8	-	-	15.8
		Integrated Power Development Scheme (IPDS) [Reformed Accelerated Power Development and Reform Programme (R-APDRP) subsumed]*	52	227	49	-	-	328
		Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY)/ Pradhan Mantri Sahaj Bijli Har Ghar Yojana (SAUBHAGYA)*	34	13	65	-	-	112
		Revamped Distribution Sector Scheme (RDSS)	-	-	-	69.36	70.04	139.40
2	Maharashtra	Promoting Energy Efficiency Activities in different Sectors of Indian Economy and National Mission for Enhanced Energy Efficiency (NMEEE)	3.30	6.92	10.73	5.86	7.69	34.50
		PSDF	3.66	-	-	119.36	-	123.02
		IPDS (R-APDRP subsumed)*	816	110	151	-	-	1077
		DDUGJY/SAUBHAGYA*	269	158	41	-	-	468
		RDSS	-	-	-	423.67	819.64	1243.31
3	Assam	Promoting Energy Efficiency Activities in different Sectors of Indian Economy and National Mission for Enhanced Energy Efficiency (NMEEE)	1.78	1.64	2.29	1.81	1.64	9.16
		North-Eastern Region Power System Improvement Project (NERPSIP)	254.71	182.63	265.53	131.88	62.73	897.43
		PSDF	13.51	-	-	-	-	13.51
		IPDS (R-APDRP subsumed)*	318	86	87	-	-	491
		DDUGJY/SAUBHAGYA*	782	534	360	-	-	1676
		RDSS	-	-	-	118.60	639.64	758.24

* Schemes closed on 31.03.2022

GOVERNMENT OF INDIA
MINISTRY OF POWER

RAJYA SABHA
UNSTARRED QUESTION NO.474
ANSWERED ON 06.02.2024

OUTCOME OF NERPSIP

474 SHRI PABITRA MARGHERITA:

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

- (a) the details of outcomes of the North Eastern Region Power System Improvement Project (NERPSIP); and
- (b) the status and outcome of the Comprehensive Scheme for Strengthening of Transmission and Distribution Systems in Arunachal Pradesh, Assam and Sikkim?

A N S W E R

THE MINISTER OF POWER AND NEW & RENEWABLE ENERGY

(SHRI R.K. SINGH)

(a) & (b) : Ministry of Power is implementing two projects for strengthening of intra-state transmission system as well as distribution system in North-Eastern States and Sikkim.

(i) North-Eastern Region Power System Improvement Project (NERPSIP) for Six (6) States (Assam, Manipur, Meghalaya, Mizoram, Tripura and Nagaland) for strengthening of the Intra-State Transmission and Distribution Systems (33kV and above) at revised cost of ₹6700 crore.

(ii) Comprehensive Scheme for Strengthening of Transmission and Distribution System in Arunachal Pradesh and Sikkim at revised cost of ₹9129.32 crore.

The implementation of the above projects will strengthen intra-state transmission as well as distribution system of the North Eastern Region and improve connectivity of the upcoming load centers with the National grid to achieve affordable and reliable 24X7 power supply to all categories of end consumers in NER States, including Sikkim..

Status of elements completed state-wise is attached as **Annexure**.

ANNEXURE

ANNEXURE REFERRED IN REPLY TO PARTS (a) & (b) OF UNSTARRED QUESTION NO. 474 ANSWERED IN THE RAJYA SABHA ON 06.02.2024

1. North-Eastern Region Power System Improvement Project (NERPSIP)

a) Status of Project Implementation (As on Dec'23)

Transformation Capacity (MVA)		Transmission Line (ckm)	
Total	Completed	Total	Completed
5848.65	5393	3482	3336

State	Total elements	Completed Elements	Status
Assam	116	115	Balance 13 elements expected progressively by Dec'24.
Tripura	151	145	
Meghalaya	41	41	
Mizoram	11	10	
Nagaland	56	54	
Manipur	71	68	
Total	446	433	

2. Comprehensive Scheme for Strengthening of Transmission and Distribution System in Arunachal Pradesh and Sikkim

a) Status of Project Implementation (As on Dec'23)

Transformation Capacity (MVA)		Transmission Line (ckm)	
Total	Completed	Total	Completed
1980	1100	3641	801

State	Total Elements	Completed Elements	Status
Arunachal Pradesh	234	112	Balance 139 elements expected progressively by Dec'24.
Sikkim	58	41	
Total	292	153	

GOVERNMENT OF INDIA
MINISTRY OF POWER

RAJYA SABHA
UNSTARRED QUESTION NO.475
ANSWERED ON 06.02.2024

GREEN HYDROGEN PLANT

475 # MS. INDU BALA GOSWAMI:

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

- (a) whether an agreement has been signed between State Government and NHPC for setting up a green hydrogen plant in Chamba district of Himachal Pradesh;
- (b) if so, the details thereof; and
- (c) the details of capacity of the said green hydrogen plant in kilowatt?

A N S W E R

THE MINISTER OF POWER AND NEW & RENEWABLE ENERGY

(SHRI R.K. SINGH)

(a) : A Memorandum of Understanding has been signed between the District Administration, Chamba and NHPC Limited on 15.04.2022 for setting up a “Pilot Green Hydrogen Mobility Project” in District Chamba, Himachal Pradesh.

(b) : The Pilot project is envisaged as green fuel alternative to reduce the carbon emission in transportation sector besides creating job opportunities for the local people.

(c) : The Green Hydrogen Plant is to have a production capacity of 20 kg green hydrogen per day and a solar power plant of above 300 kilowatt capacity.

GOVERNMENT OF INDIA
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RAJYA SABHA
UNSTARRED QUESTION NO.477
ANSWERED ON 06.02.2024

RURAL ELECTRIFICATION

477 SHRI TIRUCHI SIVA:

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

- (a) the percentage of rural electrification from renewable and non-renewable resources;
- (b) the standards of late payment surcharges applicable in rural areas;
- (c) the quantum of funds allocated to each State for rural electrification during the last three years and the current year; and
- (d) whether certain States and Union Government have formed strategy to enable rural electrification via renewable pathways and the States demanded additional funds?

A N S W E R

THE MINISTER OF POWER AND NEW & RENEWABLE ENERGY

(SHRI R.K. SINGH)

(a) : Government of India electrified the un-electrified villages and strengthened the sub-transmission and distribution network under the Deen Dayal Gram Jyoti Yojana. Under the scheme, total 18,374 villages were electrified of which a total of 2,763 villages were electrified through renewable resources.

Besides, Government of India also launched the scheme of Pradhan Mantri Sahaj Bijli Har Ghar Yojana (SAUBHAGYA) for universal electrification of till then un-electrified households at Country level. A total of 2.86 Cr households have been electrified under the scheme. All States certified that all unelectrified households were electrified under the scheme.

(b) : Tariff is being declared by the respective State Electricity Regulatory Commission (SERC). Late Payment Surcharge (LPS) to be levied on consumers, if any, is regulated by SERC, in accordance with the law and the rules.

(c) : The State-wise details of Government of India grant disbursed since 2020-21 under the scheme of DDUGJY and SAUBHAGYA is as per **Annexure-I**.

Revamped Distribution Sector Scheme (RDSS), launched by Government of India with the objective of improving the quality and reliability of power supply to consumers through a financially sustainable and operationally efficient Distribution Sector, has an outlay of Rs. 3,03,758 Crore having Gross Budgetary Support of Rs. 97,631 Crore from Government of India over a period of five years from 2021-22 to FY 2025-26. RDSS has a universal coverage and is mainly focused on strengthening of sub-transmission and distribution network of project areas for the benefit of consumers. The Central Government in line with its commitment is further supporting States for electrification of households which were missed out under SAUBHAGYA, under the ongoing scheme of Revamped Distribution Sector Scheme (RDSS). In addition, all identified PVTG (Particularly Vulnerable Tribal Groups) Households under PM-JANMAN for on-grid electricity connection shall be eligible for funding under RDSS as per the scheme guidelines.

Under RDSS, proposal for 4.96 lakh Household electrification works have been sanctioned for the State of Uttar Pradesh, Rajasthan and Andhra Pradesh till date for a cost of Rs 813 cr. Further, under PM-JANMAN, as on date On-grid electrification of a total of 87, 863 Households in 7,113 Habitations have been sanctioned. State-wise details of number of Households and cost sanctioned under RDSS are attached as **Annexure-II**.

(d): Government of India has taken up rural electrification works based on the renewable resources under the earlier schemes, details of which are provided at (a) above. Further, Government of India has issued a New Solar Power Scheme for Particularly Vulnerable Tribal Groups (PVTG) Habitation/ Villages under PM JANMAN (Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan). This scheme will cover electrification of all un-electrified PVTG household by provision of off-grid solar systems where electricity supply through grid is not techno-economically feasible. In addition, the scheme has provision for providing solar lighting in 1500 Multi-Purpose Centres (MPCs) in PVTG area where electricity through grid is not available. A total financial outlay of Rs. 515 crore has been provided under the Scheme. Further, the Scheme provides for electrification of HHs through standalone solar home lighting systems where HHs are scattered and through solar mini-grid for a cluster of Households. The details of the sanction issued, based on the proposals received from states, are at **Annexure-III**.

ANNEXURE-I

ANNEXURE REFERRED IN REPLY TO PART (c) OF UNSTARRED QUESTION NO. 477
ANSWERED IN THE RAJYA SABHA ON 06.02.2024

(Rs in Crore)

State-wise, Year-wise Release of funds under DDUGJY & Saubhagya					
Sl. No.	State/UT	Release during 2020-21	Release during 2021-22	Release [^] during 2022-23	Release [^] during 2023-24
1	Andhra Pradesh	8	81	2	
2	Arunachal Pradesh	32	79	80	
3	Assam	534	360	34	514
4	Bihar	847	597	708	
5	Chhattisgarh	96	172	19	
6	Gujarat	13	51		
7	Haryana	5	50	10	
8	Himachal Pradesh	37	1	20	
9	J&K	35	-2	156	20
10	Jharkhand	415	287	241	
11	Karnataka	13	100	18	
12	Kerala	13	65	0	
13	Ladakh			42	0
14	Madhya Pradesh	284	763	140	
15	Maharashtra	158	41	140	
16	Manipur	62	34	96	
17	Meghalaya	62	19	113	
18	Mizoram	11	24	1	
19	Nagaland	11	22	44	
20	Orissa	122	347	49	5
21	Punjab	17	30	-17	
22	Rajasthan	217	401	110	
23	Sikkim	29	10	6	
24	Tamil Nadu		100	0	
25	Telangana		66	0	
26	Tripura	49	95	35	
27	Uttar Pradesh	1714	1367	181	
28	Uttarakhand	5	6	3	
29	West Bengal	165	529	73	
30	Goa		2		
31	D&N Haveli		2		
32	Puducherry	3	1	0	
33	Andaman Nicobar	2	3	0	4
	Total	4959	5701.98	2302.25	543.97

Note: ^ From RDSS Budget Head

ANNEXURE-II

ANNEXURE REFERRED IN REPLY TO PART (c) OF UNSTARRED QUESTION NO. 477
ANSWERED IN THE RAJYA SABHA ON 06.02.2024

a) Electrification of Additional HHs under RDSS:

S No.	State	Sanctioned Figures	
		Number of Households	Sanctioned cost (Rs. in Cr.)
1	Uttar Pradesh	2,99,546	338.46
2	Rajasthan	1,90,959	459.18
3	Andhra Pradesh	5,577	16.17
TOTAL		4,96,082	813.81

b) Electrification of PVTG HHs under PM-JANMAN Mission (Funded under RDSS):

S. No.	State	Sanctioned Figures	
		Number of Households	Sanctioned cost (Rs. in Cr.)
1	Rajasthan	17,633	40.34
2	Uttarakhand	221	0.41
3	Maharashtra	2,395	10.81
4	Jharkhand	6,943	41.99
5	Chhattisgarh	4,417	25.15
6	Kerala	261	0.58
7	Tripura	11,664	61.53
8	Andhra Pradesh	20,587	80.40
9	Tamil Nadu	7,364	22.72
10	Karnataka	1,615	3.77
11	Telangana	3,495	6.45
12	Uttar Pradesh	316	1.10
13	Madhya Pradesh	10,952	68.28
TOTAL		87,863	363.52

ANNEXURE-III**ANNEXURE REFERRED IN REPLY TO PART (d) OF UNSTARRED QUESTION
NO. 477 ANSWERED IN THE RAJYA SABHA ON 06.02.2024**

Details of number of PVTG households sanctioned for electrification works in renewable mode

Sl. No.	State	DISCOM	Number of Habitations	Number of Households
01	Andhra Pradesh	Andhra Pradesh Eastern Power Distribution Company Limited (APEPDCL)	41	756
02	Chhattisgarh	Chhattisgarh State Power Distributing Company Limited (CSPDCL)	107	870
03	Jharkhand	Jharkhand Bijli Vitran Nigam Limited (JBVNL)	114	1233
04	Karnataka	Chamundeshwari Electricity Supply Corporation (CESC)	12	179
05	Telangana	Telangana State Northern Power Distribution Company Limited (TSSPDCL)	11	90
06		Telangana State Southern Power Distribution Company Limited (TSSPDCL)	12	236
07	Tripura	Tripura State Electricity Corporation Limited (TSECL)	30	1703
		Total	327	5067

GOVERNMENT OF INDIA
MINISTRY OF POWER

RAJYA SABHA
UNSTARRED QUESTION NO.478
ANSWERED ON 06.02.2024

INCREASE IN DEMAND FOR ELECTRICITY IN SEVERAL VILLAGES

478 DR. M. THAMBIDURAI:

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

- (a) whether Government is aware that several villages across the country are experiencing a huge increase in demand for electricity;
- (b) if so, the details thereof, State-wise including Tamil Nadu;
- (c) whether Government is finding it difficult to manage the huge increase in demand for electricity;
- (d) if so, the reasons therefor;
- (e) the number of villages facing severe electricity shortage, State-wise; and
- (f) the steps taken/being taken by Government to meet this demand?

A N S W E R

THE MINISTER OF POWER AND NEW & RENEWABLE ENERGY

(SHRI R.K. SINGH)

(a) to (d): Yes. The Indian power sector has come a long way in past decade transforming from a power deficit to a power sufficient country. During the last nine (09) years, we have implemented Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) and Integrated Power Development (IPDS) schemes to achieve the objective of providing uninterrupted power supply by strengthening the sub-transmission and distribution network. We have also implemented the Pradhan Mantri Sahaj Bijli Har Ghar Yojana- (SAUBHAGYA) with the objective to achieve universal household electrification for providing electricity connection to all willing un-electrified household in rural area and all willing poor household in urban areas in the country. Under these schemes, with an investment of 1.85 lakh crores, 18374 villages have been electrified and 2.86 crore household were provided electricity connections. As a result 100% villages have been electrified. Besides this, 2927 new substations have been added, upgradation of 3965 existing sub stations has been carried out, 6,92,200 Distribution Transformers have been installed, Feeder separation of 1,13,938 Circuit Kilometer (CKm) has been done and 8.5 Lakh Circuit Kilometer (CKm) of HT and LT lines have been added/changed.

There is adequate availability of power in the country. We have addressed the critical issue of power deficiency by adding 196558 MW of generation capacity since April 2014 transforming our country from power deficit to power sufficient. We have increased the generation capacity by 72.3% from 248554 MW in March 2014 to 428299 MW in December 2023.

As a result of these measures, the availability of power in rural areas has increased from 12 hours in 2015 to 20.6 hours in 2023. The details of State/UT-wise Power Supply Position in the country during the period from April, 2023 to December, 2023 including the State of Tamil Nadu is given at **Annexure**.

.....2.

(e) & (f) : We have taken following steps to meet the increased demand for power in the country:

- (i) In order to ensure an uninterrupted power supply for the nation's growth, the anticipated capacity addition between 2023-32 is given below:
 - a) 26380 MW of Thermal Capacity is under construction, 11960 MW has been bid out and 19050 MW is under clearances. The total anticipated Thermal capacity addition by 2031-2032 will be 93380 MW.
 - b) 18033.5 MW of Hydro Capacity (including stalled projects) is under construction and the total anticipated Hydro capacity addition by 2031-2032 will be 42014 MW.
 - c) 8000 MW of Nuclear Capacity is under construction and the total anticipated Nuclear capacity addition by 2031-2032 will be 12200 MW.
 - d) 103660 MW of Renewable Energy Capacity is also currently under construction and the anticipated RE capacity addition by 2031-32 will be 322000 MW.

Thus, total 156073.5 MW of Capacity is under construction and the total anticipated capacity addition by 2031-2032 will be 469594 MW.

- (ii) 1,89,052 circuit kilometer (ckm) of transmission lines, 6,88,142 MVA of Transformation capacity and 80,590 MW of Inter-Regional capacity has been added connecting the whole country into one grid running on one frequency with the capability of transferring 1,16,540 MW from one corner of the country to another. India's grid has emerged as one of the largest unified grids in the world. Connecting the whole country into one grid has transformed the country into one unified power market. Distribution Companies can buy power at cheapest available rates from any generator in any corner of the country thereby enabling cheaper electricity tariffs for consumers
- (iii) India has committed to augment non fossil fuel based installed electricity generation capacity to over 500000 MW by 2030. Transmission plan for integration of 500000 MW RE capacity by 2030 is being implemented in a phase manner commensurate with RE capacity addition. At present about 179000 MW of non fossil fuel generation capacity is already integrated.
- (iv) Setting up of Ultra Mega Renewable Energy Parks to provide land and transmission to RE developers for installation of RE projects at large scale.
- (v) We have reformed the Electricity market by adding the Real Time Market (RTM), Green Day Ahead Market (GDAM), Green Term Ahead Market (GTAM), High Price Day Ahead Market (HP-DAM) in Power Exchanges. Also, DEEP Portal (Discovery of Efficient Electricity Price) for e-Bidding and e-Reverse for procurement of short-term power by DISCOMs was introduced.
- (vi) We have constructed Green Energy Corridors and put in place 13 Renewable Energy Management Centres. Presently Renewable Energy Capacity is 180800 MW and 103660 MW is under installation.
- (vii) We have made the Power Sector viable. The AT&C losses have come down from 25.72% in 2014-15 to 15.40% in 2022-23. Since implementation of LPS Rules, legacy dues of Gencos have come down from Rs. 1,39,947 crore as on 03.06.2022 to Rs. 49,451 crore as on 31.01.2024. Further, Discoms are making payments for current overdues on time.

ANNEXURE

ANNEXURE REFERRED IN REPLY TO PARTS (a) TO (d) OF UNSTARRED QUESTION NO.478 ANSWERED IN THE RAJYA SABHA ON 06.02.2024.

The details of State/UT-wise Power Supply Position in the country during the period from April, 2023 to December, 2023 including the State of Tamil Nadu

State / Region	April,2023 - December,2023			
	Energy Requirement	Energy Supplied	Energy not Supplied	
	(MU)	(MU)	(MU)	(%)
Chandigarh	1,406	1,406	0	0.0
Delhi	28,355	28,352	3	0.0
Haryana	50,271	50,020	251	0.5
Himachal Pradesh	9,539	9,512	26	0.3
UT of J&K and Ladakh	14,591	14,386	205	1.4
Punjab	55,758	55,753	5	0.0
Rajasthan	79,192	78,688	503	0.6
Uttar Pradesh	1,17,090	1,16,766	324	0.3
Uttarakhand	11,788	11,704	84	0.7
Northern Region	3,68,991	3,67,588	1,403	0.4
Chhattisgarh	28,951	28,900	51	0.2
Gujarat	1,09,754	1,09,726	28	0.0
Madhya Pradesh	72,396	72,333	63	0.1
Maharashtra	1,53,794	1,53,620	174	0.1
Dadra & Nagar Haveli and Daman & Diu	7,570	7,570	0	0.0
Goa	3,813	3,813	0	0.0
Western Region	3,83,401	3,83,085	316	0.1
Andhra Pradesh	60,392	60,335	56	0.1
Telangana	60,550	60,542	8	0.0
Karnataka	67,271	67,118	153	0.2
Kerala	22,755	22,750	5	0.0
Tamil Nadu	93,581	93,570	11	0.0
Pondicherry	2,633	2,632	1	0.0
Lakshadweep	47	47	0	0.0
Southern Region	3,07,218	3,06,985	233	0.1
Bihar	32,952	32,456	496	1.5
DVC	20,031	20,026	5	0.0
Jharkhand	10,847	10,498	349	3.2
Odisha	31,894	31,874	21	0.1
West Bengal	53,004	52,934	70	0.1
Sikkim	366	366	0	0.0
Andaman- Nicobar	287	278	10	3.4
Eastern Region	1,49,140	1,48,200	940	0.6
Arunachal Pradesh	737	737	0	0.0
Assam	9,882	9,803	78	0.8
Manipur	720	717	2	0.3
Meghalaya	1,660	1,495	165	10.0
Mizoram	485	485	0	0.0
Nagaland	711	711	0	0.0
Tripura	1,340	1,340	0	0.0
North-Eastern Region	15,541	15,295	246	1.6
All India	12,24,291	12,21,152	3,139	0.3

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MINISTRY OF POWER

RAJYA SABHA
UNSTARRED QUESTION NO.479
ANSWERED ON 06.02.2024

GAP BETWEEN THE DEMAND AND SUPPLY OF ELECTRICITY

479 DR. M. THAMBIDURAI:

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

- (a) whether it is a fact that there is a huge gap between the demand and supply of electricity;
- (b) if so, the details of the gap between the demand and supply of electricity at present;
- (c) the measures being taken by Government to bridge the said gap;
- (d) whether Government has recently conducted any study to assess the demand of electricity in the next few years, if so, the details thereof; and
- (e) whether Government has taken any measures to meet the excess demand and if so, the details thereof and if not, the reasons therefor?

A N S W E R

THE MINISTER OF POWER AND NEW & RENEWABLE ENERGY

(SHRI R.K. SINGH)

(a) to (c): There is adequate availability of power in the country. We have addressed the critical issue of power deficiency by adding 196558 MW of generation capacity since April 2014 transforming our country from power deficit to power sufficient. We have increased the generation capacity by 72.3% from 248554 MW in March 2014 to 428299 MW in December 2023.

We have added 189052 ckt kilometre of transmission lines in the past nine years (09) connecting the whole country into one grid running on one frequency. This has enabled us to transfer 116540 MW from one corner of the country to another. We strengthened the distribution system by implementing projects of 1.85 lac crores under DDUGJY/IPDS/SAUBHAGYA. Under the above distribution sector schemes, 2927 new sub-stations have been added, upgradation of 3965 existing sub-stations has been carried out, 6,92,200 Distribution Transformers have been installed, Feeder separation of 1,13,938 Circuit Kilometer (CKm) has been done and 8.5 Lakh Circuit Kilometer (CKm) of HT and LT lines have been added/changed across the States. As a result of these measures, the availability of power supply in rural areas has increased from 12.5 Hours in 2015 to 20.6 Hours in 2023. The power supply in urban areas has increased to 23.78 Hours in 2023. The gap between Energy Requirement and Energy Supplied has come down from 4.2% in 2013-14 to 0.3 % in 2023-24. Even this gap between Energy Requirement and Energy Supplied is generally on account of constraints in the State transmission/distribution network and financial constraints of DISCOMs etc.

.....2.

(d) : Central Electricity Authority (CEA) conducts Electric Power Survey (EPS) of the country every five years for estimating the electricity demand of the country on medium and long term basis as obligated under Section 73(a) of the Electricity Act-2003.

The 20th Electric Power Survey (EPS) report published in November 2022, covers electricity demand projection for the year 2021-22 to 2031-32 as well as perspective electricity demand projection for the year 2036-37 and 2041-42 for the country. The details are given at **Annexure**.

(e) : We have taken following steps to meet the increased demand for power in the country: -

- (i) In order to ensure an uninterrupted power supply for the nation's growth, the anticipated capacity addition between 2023-32 is given below:
 - a) 26380 MW of Thermal Capacity is under construction, 11960 MW has been bid out and 19050 MW under clearances. The total anticipated Thermal capacity addition by 2031-32 will be 93380 MW.
 - b) 18033.5 MW of Hydro Capacity (including stalled projects) is under construction and the total anticipated Hydro capacity addition by 2031-2032 is likely to be 42014 MW.
 - c) 8000 MW of Nuclear Capacity is under construction and the total anticipated Nuclear capacity addition by 2031-2032 will be 12200 MW.
 - d) 103660 MW of Renewable Energy Capacity is also currently under construction and the anticipated RE capacity addition by 2031-32 will be 322000 MW.

Thus, total 156073.5 MW of Capacity is under construction and the total anticipated capacity addition by 2031-2032 will be 469594 MW.

- (ii) India has committed to augment non fossil fuel based installed electricity generation capacity to over 500000 MW by 2030. Transmission plan for integration 500000 MW RE capacity by 2030 is being implemented in a phase manner commensurate with RE capacity addition.
- (iii) Setting up of Ultra Mega Renewable Energy Parks to provide land and transmission to RE developers for installation of RE projects at large scale.
- (iv) Govt have constructed Green Energy Corridors and put in place 13 Renewable Energy Management Centres. Presently Renewable Energy Capacity is 180800 MW and 103660 MW is under installation.
- (v) We have made the Power Sector viable. The AT&C losses have come down from 25.72% in 2014-15 to 15.40% in 2022-23. Since implementation of LPS Rules, legacy dues of Gencos have come down from Rs. 1,39,947 crore as on 03.06.2022 to Rs. 49,451 crore as on 31.01.2024. Further, Discoms are making payments for current overdues on time.

ANNEXURE

ANNEXURE REFERRED IN REPLY TO PART (d) OF UNSTARRED QUESTION NO.479
ANSWERED IN THE RAJYA SABHA ON 06.02.2024.

Electricity demand projection for the year 2023-24 to 2031-32.

Year	Electrical energy requirement (in MU)	Peak Electricity Demand (in MW)
2023-24	1600214	230144
2024-25	1694634	244565
2025-26	1796627	260118
2026-27	1907835	277201
2027-28	2021072	294716
2028-29	2139125	313098
2029-30	2279676	334811
2030-31	2377646	350670
2031-32	2473776	366393

Perspective electricity demand projection for the year 2036-37 and 2041-42

Year	Electrical energy requirement (in MU)	Peak Electricity Demand (in MW)
2036-37	30,95,487	4,65,531
2041-42	37,76,321	5,74,689

GOVERNMENT OF INDIA
MINISTRY OF POWER

RAJYA SABHA
UNSTARRED QUESTION NO.480
ANSWERED ON 06.02.2024

NLC POWER PLANTS

480 SHRI R. GIRIRAJAN:

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

- (a) whether Government has any issues at NLC power plants at Neyveli and Tuticorin, North Chennai units, Vallur and other Thermal power plants in Tamil Nadu;
- (b) if so, the details thereof and the details of total installed capacity and power generated since May 2021 and the power (in terms of units) shared with other States, State-wise;
- (c) whether the Central Grid Load Flow Strength and Capacity production increased in Tamil Nadu, if so, the details thereof and if not the reasons there for; and
- (d) the steps taken to develop Power plants and increase the total power generation?

A N S W E R

THE MINISTER OF POWER AND NEW & RENEWABLE ENERGY

(SHRI R.K. SINGH)

(a): The Government has no issues at Neyveli Lignite Corporation (NLC) power plants at Neyveli and Tuticorin, North Chennai units, Vallur and other Thermal power plants in Tamil Nadu.

(b): The total installed power capacity in Tamil Nadu is 38,548.35MW and its details are at **Annexure-I**.

The total power generated from April 2021 to December 2023 in Tamil Nadu is 3,15,880.70 Million Units (MU) and its details are at **Annexure-II**.

The details of power (in term of Million Units) shared by the Central Generating Stations in Tamil Nadu with other States is at **Annexure-III**.

(c): The interstate power flow in the transmission corridor in the state of Tamil Nadu has increased from 8,500 MW to 10,400 MW due to commissioning of transmission elements of State Transmission Utility (STU).

(d): To increase the total power generation in the state of Tamil Nadu, new power generation capacity of 3960 MW is being added through the execution of the under construction of Thermal and Hydro projects as mentioned below:

Sl. No.	Name of the Projects	Capacity (MW)	Tentative Commissioning Schedule
Thermal projects			
1.	North Chennai Stage III	800	2023-24
2.	Udangudi Stage I	1320	2024-25
3.	Ennore SEZ	1320	2025-26
Hydro Projects			
4.	Kundah Pumped Storage Hydro Electric Project	500	2025-26
5.	Kollimalai Hydro Electric Project	40	2024-25
Total		3960	

ANNEXURE-I

ANNEXURE REFERRED IN REPLY TO PART (b) OF UNSTARRED QUESTION NO. 480
ANSWERED IN THE RAJYA SABHA ON 06.02.2024

Fuel-Wise, Station Wise - Total installed Power capacity in Tamil Nadu (in MW)

Sl. No.	Fuel	Sector	Organisation	Name of Project	Capacity (MW)
1	Coal	Central Sector	NTPC Tamil Nadu Energy Co. Ltd. (NTECL)	VALLUR TPP	1500
2			NLC Tamil Nadu Power Ltd. (NTPL)	NTPL TUTICORIN TPP	1000
		Sub Total			2500
3		State Sector	TANGEDCO	METTUR TPS	840
4				METTUR TPS-II	600
5				NORTH CHENNAI TPS	1830
6				TUTICORIN TPS	1050
		Sub Total			4320
7		Private Sector	Coastal Energen Power Ltd. (CEPL)	MUTHIARA TPP	1200
8				Ind Barath (IBPIL)	TUTICORIN (P) TPP
9	IL&FS Tamil Nadu Power Co. Ltd. (ITPCL)			ITPCL TPP	1200
10	SEPC Pvt Power Ltd. (SPPL)			TUTICORIN TPP ST-IV	525
	Sub Total			3225	
Coal Total					10045
11	Lignite	Central Sector	Neyveli Lignite Corporation (NLC)	NEYVELI (EXT) TPS	420
12				NEYVELI NEW TPP	1000
13				NEYVELI TPS-II	1470
14				NEYVELI TPS-II EXP	500
		Sub Total			3390
15		Private Sector	ST-CMSECP	NEYVELI TPS(Z)	250
	Sub Total			250	
Lignite Total					3640

16	Diesel	Private Sector	MADURAI P	SAMAYANALLUR DG	106.001		
17				SAMALPATI	SAMALPATTI DG	105.7	
			Sub Total			211.701	
Diesel Total					211.701		
18	Gas	State Sector	TANGEDCO	BASIN BRIDGE GT (Liq.)	120		
19						KOVIKALPAL CCPP	107.88
20						KUTTALAM CCPP	100
21						NARIMANAM GPS	10
21						VALUTHUR CCPP	186.2
				Sub Total			524.08
23		Private Sector	ABAN POWR	KARUPPUR CCPP	119.8		
24			PENNA	VALANTARVY CCPP	52.8		
25			PPNPGCL	P.NALLUR CCPP	330.5		
		Sub Total			503.1		
Gas Total					1027.18		
26	Hydro	State Sector	TANGEDCO	ALIYAR HPS	60		
27						BHAWANI BARRAGE-II HPS	30
28						BHAWANI BARRAGE-III HPS	30
29						BHAWANI KATTAL	30
30						KADAMPARI HPS	400
31						KODAYAR-I HPS	60
32						KODAYAR-II HPS	40
33						KUNDAH-I HPS	60
34						KUNDAH-II HPS	175
35						KUNDAH-III HPS	180
36						KUNDAH-IV HPS	100
37						KUNDAH-V HPS	40
38						LOWER METTUR-I HPS	30
39						LOWER METTUR-II HPS	30
40						LOWER METTUR-III HPS	30
41						LOWER METTUR-IV HPS	30
42						METTUR DAM HPS	50
43						METTUR TUNNEL HPS	200
44						MOYAR HPS	36
45						PAPANASAM HPS	32
46						PARSON'S VALLEY HPS	30

47				PERIYAR HPS	161
48				PYKARA HPS	59.2
49				PYKARA ULTMATE HPS	150
50				SARKARPATHY HPS	30
51				SHOLAYAR HPS (TN)	70
52				SURULIYAR HPS	35
				Sub Total	2178.2
				Hydro Total	2178.2
53			Nuclear Power Corporation of India Ltd. (NPCIL)	KUDANKULAM	2000
54	Nuclear	Central Sector		MADRAS A.P.S.	440
				Sub Total	2440
				Nuclear Total	2440
				Conventional Total	19542.08
	RES (Excluding Large Hydro)				
	Small Hydro				123.05
	Wind Power				10433.57
	BM Power/Cogen.				1012.65
	Waste to Energy				31.05
	Solar Power				7405.95
	RES Total				19006.27
				Grand Total	38548.35

ANNEXURE-II

ANNEXURE REFERRED IN REPLY TO PART (b) OF UNSTARRED QUESTION NO. 480
ANSWERED IN THE RAJYA SABHA ON 06.02.2024

Fuel-Wise, Station Wise Generation of Plants in Tamil Nadu From 2021-22 to 2023-24(Upto Dec' 2023)

Sl. No.	Fuel	Station Name	Generation in MU (Million Units)		
			2021-22	2022-23	2023-24 (upto Dec 23)
Thermal Capacity Generation					
1	COAL	ENNORE SCTPP	0	0	0
2		ITPCL TPP	3093.68	2302.51	5190.18
3		METTUR TPS	4795.92	5395.76	4266.39
4		METTUR TPS - II	2763.78	3000.69	2356.32
5		MUTHIARA TPP	1221.72	2349.99	3819.33
6		NORTH CHENNAI TPS	7868.89	8574.92	6910.6
7		NTPL TUTICORIN TPP	4182.47	5930.01	4120.4
8		TUTICORIN (P) TPP	0	0	0
9		TUTICORIN TPP ST-IV	0	922.46	2220.22
10		TUTICORIN TPS	4962.6	5717.92	4671.56
11		UDANGUDI TPP	0	0	0
12		VALLUR TPP	7913.49	9566.74	5743.08
	Total Coal		36802.55	43761	39298.08
13	LIGNITE	NEYVELI (EXT) TPS	3266.37	3114	1973.72
14		NEYVELI NEW TPP	6177.93	7156.19	5151.72
15		NEYVELI TPS(Z)	1538.28	1217.31	1021.9
16		NEYVELI TPS-I	0	0	0
17		NEYVELI TPS-II	9623.91	8000.26	3947.17
18		NEYVELI TPS-II EXP	2041.5	1972.52	1682.36
	Total Lignite		22647.99	21460.28	13776.87
19	Gas	BASIN BRIDGE GT (Liq.)	0	0.83	0
20		KARUPPUR CCPP	199.78	55.15	0
21		KOVIKALPAL CCPP	155.45	169.92	47.27
22		KUTTALAM CCPP	361.9	510.82	510.74
23		P.NALLUR CCPP	0	69.11	0
24		VALANTARVY CCPP	72.17	0	0
25		VALUTHUR CCPP	942.92	1056.12	859.94
	Total Gas		1732.22	1861.95	1417.95
26	DIESEL	SAMALPATTI DG	0	0	0
27		SAMAYANALLUR DG	0	0	0
	Total Diesel		0	0	0

Hydro Capacity Generation					
28	HYDRO	ALIYAR HPS	22.64	168.6	87.5
29		BHAWANI BARRAGE-II HPS	78.73	103.21	50.88
30		BHAWANI BARRAGE-III HPS	63.5	65.09	33.45
31		BHAWANI KATTAL	76.07	128.16	77.5
32		KADAMPARI HPS	265.63	263.51	48.17
33		KODAYAR-I HPS	207.37	221.68	74.89
34		KODAYAR-II HPS	38.98	70.75	6.91
35		KUNDAH-I HPS	262.06	271.1	194.96
36		KUNDAH-II HPS	718.55	742.89	509.33
37		KUNDAH-III HPS	449.15	463.95	313.65
38		KUNDAH-IV HPS	183.04	158.62	83.86
39		KUNDAH-V HPS	40	54.32	62.58
40		LOWER METTUR-I HPS	78.67	99.74	48.47
41		LOWER METTUR-II HPS	77.18	94.79	47.21
42		LOWER METTUR-III HPS	73.73	88.7	46.92
43		LOWER METTUR-IV HPS	61.52	67.59	38.74
44		METTUR DAM HPS	135.34	226.85	69.26
45		METTUR TUNNEL HPS	392.49	797.06	139.2
46		MOYAR HPS	104.47	129.04	72.38
47		PAPANASAM HPS	163.37	129.42	57.51
48		PARSON'S VALLEY HPS	41.13	44.66	23.43
49		PERIYAR HPS	779.16	661.9	279.42
50		PYKARA HPS	0.12	35.33	3.07
51		PYKARA ULTMATE HPS	322.37	463.51	243.63
52		SARKARPATHY HPS	143.41	117.11	43.28
53		SHOLAYAR HPS (TN)	400.15	298.19	202.87
54		SURULIYAR HPS	33.24	0	1.91
	Total Hydro	5212.07	5965.77	2860.98	
Nuclear Capacity Generation					
55	NUCLEAR	KUDANKULAM	14536.04	14226.3	10351.43
56		MADRAS A.P.S.	1089.22	1786.27	1098.9
	Total Nuclear		15625.26	16012.57	11450.33
	Conventional Grand Total		82020.09	89061.57	68804.21
	Renewable Generation		24061.28	27626.45	24307.07
	Grand Total		106081.40	116688.02	93111.28
Total Generation since April 2021 to December 2023				315880.70 MU	

ANNEXURE-III

ANNEXURE REFERRED IN REPLY TO PART (b) OF UNSTARRED QUESTION NO. 480
ANSWERED IN THE RAJYA SABHA ON 06.02.2024

**Power (in term of Million Units) shared by the Central Generating Stations in Tamil Nadu
with other States (firm allocation)**

State/UTs	NLC power plants (April 2021 to Dec. 2023) (in MU)	NTECL Vallur (JV of NTPC & TANGEDCO) (May- 21 to Dec-23) (in MU)	Nuclear Power Plants(April 2021 to Dec. 2023) (in MU)
TAMIL NADU	30,435	15,984.91	21,043.89
ANDHRA PRADESH	4,545	1,413.37	158.2
KARNATAKA	11,728	2,342.57	8,906.05
KERALA	5,288	732.56	5,409.99
TELANGANA	4,479	1,580.51	184.81
PUDUCHERRY	2,920	235.08	1355.62
J&K	171	57.09	-
UTTARAKHAND	109	40.75	-
ORISSA	8	3.26	-
DELHI	97	35.60	-
TOTAL	59,780	22,425.70	37,058.56
