GOVERNMENT OF INDIA
MINISTRY OF NEW AND RENEWABLE ENERGY
LOK SABHA
UNSTARRED QUESTION NO. 1684
ANSWERED ON 30/07/2025

ELECTRICITY FROM NON-FOSSIL SOURCES

1684. SHRI VIJAYAKUMAR ALIAS VIJAY VASANTH
SHRI MANICKAM TAGORE B

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

(a) the current percentage of cumulative electric power installed capacity from non-fossil fuel-based energy resources along with the annual target set for reaching the fifty per cent mark by the year 2030;
(b) the details of specific policy interventions and fiscal incentives that have been introduced to accelerate the installation of renewable energy capacity in solar, wind, hydro and nuclear segments during the last three years;
(c) the mechanisms put in place to ensure grid stability and integration of intermittent renewable energy sources, especially as their share in the national grid increases;
(d) the details of role is being assigned to emerging technologies like green hydrogen, battery storage, offshore wind and floating solar in the roadmap toward achieving the 2030 target; and
(e) the manner in which the Government is planning to upgrade transmission infrastructure and storage systems to support the large-scale integration of non-fossil energy sources across States?

ANSWER
THE MINISTER OF STATE FOR NEW & RENEWABLE ENERGY AND POWER

(SHRI SHRIPAD YESSO NAIK)

(a) As per the report of the Central Electricity Authority (CEA), the non-fossil fuel based installed electricity capacity in the country has reached 50.08% of the total electricity capacity as on 30.06.2025.

(b) The Government has taken several steps and initiatives to promote and accelerate renewable energy capacity in the country to realize the target of 500 GW non-fossil fuel based electricity generation capacity by 2030, as given at **Annexure-I**.

The provision of the Central Financial Assistance (CFA) under major ongoing schemes/ programmes of the Ministry are given at **Annexure-II.**

Further, as per the information received from Department of Atomic Energy, the Government has announced an ambitious Nuclear Energy mission for Viksit Bharat with a target of reaching a nuclear power capacity of 100 GW by 2047. The Government has also announced measures for enabling R&D in Small Modular Reactors (SMRs) and new advanced technologies.

(c) Wind and Solar energy are variable and intermittent sources of power. The measures taken by the Government to address the issue of grid stability with the increasing share of renewable sources like solar and wind, include:

(i) Government has set up thirteen Renewable Energy Management Centres (REMCs) for better forecasting and real time monitoring of RE generation.

(ii) Load dispatch centres ensure that electricity demand is fully met using dispatchable sources such as hydro and thermal power when the wind does not blow and sun does not shine.

(iii) Installation of Static Synchronous Compensators (STATCOMs) to improve the grid reliability and voltage stability limit. A STATCOM acts as a voltage controller for the electricity grid, quickly adding or removing extra power to keep the system running smoothly.

(iv) Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations lay down the minimum technical requirements for RE generating plants to ensure the safe, secure and reliable operation of the grid.

(d) No specific source/ technologies-wise targets have been assigned.

(e) In order to facilitate integration of large scale renewable generation capacity addition in the country, following measures have been taken :

i. Implementation of Intra-State and Inter-State transmission systems for evacuation of renewable energy.

ii. Setting up of Regional Energy Management Centres (REMCs) for better forecasting of renewable energy and to assist grid operators to manage variability and intermittency of renewable energy generated.

Renewable power from wind and solar is variable and intermittent in nature. Energy Storage Systems enhances grid stability by addressing intermittency and variability and ensuring reliable power supply from renewable energy sources. Government has taken following measures for promoting energy storage systems:

i. Published a National Framework for promoting & developing Energy Storage Systems.
ii. Granted waiver on Inter-State Transmission System charges for renewable energy projects with energy storage systems.
iii. Approved Viability Gap Funding for development of approximately 43 GWh of Battery Energy Storage Systems.
iv. Issued an ‘Advisory on co-locating Energy Storage Systems with Solar Power Projects to enhance grid stability and cost efficiency’.

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Annexure-I

Annexure-I referred to in reply of part (b) of the Lok Sabha Unstarred Question No. 1684 to be answered on 30.07.2025

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

- 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 (REIAs) [REIAs: Solar Energy Corporation of India Limited (SECI), NTPC Limited, NHPC Limited, SJVN Limited] from FY 2023-24 to FY 2027-28.
- Foreign Direct Investment (FDI) has been permitted up to 100 percent under the automatic route.
- Inter State Transmission System (ISTS) charges have been waived for Green Hydrogen Projects till December 2030 and for offshore wind projects till December 2032.
- 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 on non-compliance. RCO also includes specified quantum of consumption from Decentralized Renewable Energy sources.
- 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.
- 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, New Solar Power Scheme (for Tribal and PVTG Habitations/Villages) under Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM JANMAN) and Dharti Aabha Janjatiya Gram Utkarsh Abhiyan (DA JGUA), National Green Hydrogen Mission, Viability Gap Funding (VGF) Scheme for Offshore Wind Energy Projects have been launched.
- Scheme for setting up of Solar Parks and Ultra Mega Solar Power projects is being implemented to provide land and transmission to RE developers for installation of RE projects at large scale.
- 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.
- Electricity (Rights of Consumers) Rules, 2020 has been issued for net-metering up to five hundred Kilowatt or up to the electrical sanctioned load, whichever is lower.
- "National Repowering and Life Extension Policy for Wind Power Projects, 2023" has been issued.

- “Strategy for Establishments of Offshore Wind Energy Projects” has been issued indicating a bidding trajectory of 37 GW by 2030 and various business models for project development.
- 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.
- Standard & Labelling (S&L) programs for Solar Photovoltaic modules and Grid-connected Solar Inverters have been launched.
- To augment transmission infrastructure needed for steep RE trajectory, transmission plan has been prepared till 2030.
- “The Electricity (Late Payment Surcharge and related matters) Rules (LPS rules) have been notified.
- 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.
- Green Term Ahead Market (GTAM) has been launched to facilitate sale of Renewable Energy Power through exchanges.
- Government has issued orders that power shall be dispatched against Letter of Credit (LC) or advance payment to ensure timely payment by distribution licensees to RE generators.

Annexure-II referred to in reply of part (b) of the Lok Sabha Unstarred Question No. 1684 to be answered on 30.07.2025

Incentives being provided as Central Financial Assistance (CFA) for the implementation of major ongoing Renewable Energy Schemes/Programmes

<table>
<tr><th>Scheme/Programmes</th><th>Incentives presently available as per the Scheme</th></tr>
<tr><td>a) PM Surya Ghar: Muft Bijli Yojana</td><td>1. Under the PMSG: MBY, the CFA for installation of Rooftop Solar in the Residential Sector is given below:
<table>
<tr><th>S.No.</th><th>Type of Residential Segment</th><th>CFA</th><th>CFA (Special Category States/UTs)</th></tr>
<tr><td>1</td><td>Residential Sector (first 2 kWp of Rooftop Solar (RTS) capacity or part thereof)</td><td>Rs.30,000/kWp</td><td>Rs.33,000/kWp</td></tr>
<tr><td>2</td><td>Residential Sector (with additional RTS capacity of 1 kWp or part thereof)</td><td>Rs.18,000/kWp</td><td>Rs.19,800/kWp</td></tr>
<tr><td>3</td><td>Residential Sector (additional RTS capacity beyond 3 kWp)</td><td>No additional CFA</td><td>No additional CFA</td></tr>
<tr><td>4</td><td>Group Housing Societies/ Residential Welfare Associations (GHS/RWA) etc. for common facilities including EV charging up to 500 kWp (@ 3 kWp per house)</td><td>Rs.18,000/kWp</td><td>Rs.19,800/kWp</td></tr>
</table>
2. The PMSG: MBY scheme includes the provision for incentive to DISCOMs to motivate and help them in activities such as create conducive regulatory and administrative mechanisms, achieve targets for implementation. The incentive is pegged at 5% of applicable benchmark cost for capacity achieved above 10% and less than 15% of installed base capacity; 10% of the applicable benchmark cost for capacity achieved beyond 15% of installed base capacity.
3. To push the deployment of residential rooftop solar system (RTS) and undertake local mobilization efforts, the PMSG: MBY scheme also includes the provision for incentive to the Urban Local Bodies (ULBs) and Panchayat Raj Institutions (PRIs), at the rate of Rs.1000 for every installation of RTS in residential segment in the jurisdiction of ULB/PRI, for which CFA has been transferred to consumer.
4. Further, a fund of Rs. 800 crore has been provisioned for developing a Model Solar Village in each district of the country, with an assistance of Rs 1 crore per Model Solar Village under PMSG: MBY scheme.</td></tr>
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Scheme/Programmes	Incentives presently available as per the Scheme
b) Central Public Sector Undertaking (CPSU) Scheme Phase-II (Government Producer Scheme) for grid-connected Solar Photovoltaic (PV) Power Projects by the Government Producers	Viability Gap Funding (VGF) support up to Rs. 55 lakhs per MW to the CPSUs/Govt. Organizations entities selected through competitive bidding process.
c) PLI Scheme 'National Programme on High Efficiency Solar PV Modules'	The beneficiaries are eligible for Production Linked Incentive (PLI) on production and sale of solar PV modules. The quantum of PLI eligible for disbursal depends upon: (i) quantum of sales of solar PV modules; (ii) performance parameters (efficiency and temperature coefficient of maximum power) of solar PV modules sold; and (iii) percentage of local value addition in modules sold.
d) Solar Park Scheme	(a) Up to Rs. 25 lakhs per Solar Park, for preparation of Detailed Project Report (DPR). (b) Rs. 20 lakh per MW or 30% of the project cost, whichever is lower, for development of shared infrastructure of Solar Park.
e) PM-KUSUM scheme	**Component A**: Setting up of 10,000 MW of Decentralized Ground/Stilt Mounted Solar Power Plants Benefits available: Procurement Based Incentive (PBI) to the DISCOMs @ 40 paise/kWh or Rs.6.60 lakhs/MW/year, whichever is lower, for buying solar power under this scheme. The PBI is given to the DISCOMs for a period of five years from the Commercial Operation Date of the plant. Therefore, the total PBI payable to DISCOMs is up to Rs. 33 Lakh per MW. **Component B**: Installation of 14 Lakh Stand-alone Solar Pumps Benefits available: CFA of 30% of the benchmark cost or the tender cost, whichever is lower, of the stand-alone solar agriculture pump is provided. However, in North Eastern States, Sikkim, Jammu & Kashmir, Ladakh, Himachal Pradesh, Uttarakhand, Lakshadweep and A&N Islands, CFA of 50% of the benchmark cost or the tender cost, whichever is lower, of the stand-alone solar pump is provided. Component B can also be implemented without State share of 30%. The Central Financial Assistance will continue to remain 30% and rest 70% will be borne by the farmer. **Component C:** Solarisation of 35 Lakh Grid Connected Agriculture Pumps including through Feeder Level Solarisation Benefits available: (a) Individual Pump Solarization (IPS): CFA of 30% of the benchmark cost or the tender cost, whichever is lower, of the solar PV component will be provided. However, in North Eastern States, Sikkim, Jammu & Kashmir, Ladakh, Himachal Pradesh, Uttarakhand, Lakshadweep and A&N Islands, CFA of 50% of the benchmark cost or the tender cost, whichever is lower, of the solar PV component is provided. Component C (IPS) can also be implemented without State share of 30%. The Central Financial Assistance will continue to remain 30% and rest 70% will be borne by the farmer. (b) Feeder Level Solarization (FLS): Agriculture feeders can be solarized by the State Government in CAPEX or RESCO mode with CFA of Rs. 1.05 Crore per MW as provided by MNRE. However, in North Eastern States, Sikkim, Jammu & Kashmir, Ladakh, Himachal Pradesh, Uttarkhand, Lakshadweep and Andaman & Nicobar Island, CFA of Rs. 1.75 crore per MW is provided.

Scheme/Programmes	Incentives presently available as per the Scheme
f) Green Energy Corridor Scheme (for development of intra-state and inter-state transmission system for RE projects)	(a) GEC Phase-I (intra-State): CFA of 40% of DPR cost or awarded cost whichever is lower. (b) GEC Phase-II (Intra-State): CFA of 33% of DPR cost or awarded cost whichever is lower. (c) GEC Phase-II (Inter-state): CFA of 40% of DPR cost or awarded cost whichever is lower.
g) Biomass Programme	(a) For Briquette manufacturing plants: Rs. 9 Lakhs/MTPH (metric ton/hour) [Maximum CFA- Rs. 45 Lakh per project] (b) For Non-Bagasse Cogeneration Projects: Rs. 40 Lakhs/MW (on installed capacity) (Maximum CFA- Rs. 5 Crore per project) (c) For pellet plants whose applications have been received **before 16.07.2024**: Rs. 9 Lakhs/MTPH (metric ton/hour) [Maximum CFA- Rs. 45 Lakh per project] (d) For pellet plants whose applications have been received **on or after 16.07.2024** : i. For Non-Torrefied Pellet manufacturing plant: Rs. 21 lakhs/MTPH production capacity or 30% of the capital cost considered for plant and machinery of 1 MTPH plant, whichever is lower (Maximum Rs. 105 lakhs per project) ii. For Torrefied Pellet manufacturing plant: Rs. 42 lakhs/MTPH production capacity or 30% of the capital cost considered for plant and machinery of 1 MTPH plant, whichever is lower (Maximum Rs. 210 lakhs per project)
h) Waste to Energy Programme	(a) For Biogas generation: Rs. 0.25 crore per 12000 cum/day (Maximum CFA- Rs.5 crore/project) (b) For BioCNG/Enriched Biogas/Compressed Biogas generation: (Maximum CFA- Rs.10 crore/project) (i) BioCNG generation from new Biogas plant – Rs. 4 Crore per 4800 Kg/day; (ii) BioCNG generation from existing Biogas plant - Rs 3 Crore per 4800 Kg/day; (c) For Power generation based on Biogas (Maximum CFA - Rs. 5 crore/project): (i) Power generation from new biogas plant: Rs. 0.75 crore per MW (ii) Power generation from existing biogas plant: Rs. 0.5 crore per MW (d) For Power generation based on bio & agro-industrial waste (other than Municipal Solid Waste (MSW) through incineration process): Rs.0.40 crore/MW (Maximum CFA - Rs.5.00 Crore/Project) (e) For Biomass Gasifier for electricity/ thermal applications: i) Rs. 2,500 per kW_e with dual fuel engines for electrical application ii) Rs. 15,000 per kW_e with 100% gas engines for electrical application iii) Rs. 2 lakh per 300 kW_{th} for thermal applications. Note:

Scheme/Programmes	Incentives presently available as per the Scheme
	• In case, the Waste to Energy plants are set up in Special Category States (NE Region, Sikkim, Himachal Pradesh and Uttarakhand), Jammu & Kashmir, Ladakh, Lakshadweep and Andaman & Nicobar Islands, the eligible CFA would be 20% higher than Standard CFA pattern given above. • Biogas/BioCNG/Power (biogas based) generation plants based on cattle dung as main feedstock set up by Gaushalas independently or through joint ventures/partnerships will be eligible for 20% higher CFA than Standard CFA pattern given above. These Gaushalas (Shelters) should be registered with the respective State Government.
i) Biogas Programme	(a) Rs. 9800/- to Rs. 70,400/- per plant based on size of the plant in cubic meter for small biogas plants (1-25 cubic meter/day plant capacity) (b) Rs. 35,000/- to Rs. 45,000/- per kilowatt for power generation and Rs. 17,500 /- to Rs. 22,500/- per kilowatt equivalent for thermal applications (25 - 2500 cubic meter/day plant capacity) The eligible CFA would be 20% higher than Standard CFA in for North Eastern Region (NER), Island, Registered Gaushalas and SC/ST beneficiaries.
j) R&D programme	The Ministry encourages research and technology development proposals in collaboration with the industry and provides up to 100% financial support to Government/non-profit research organizations and up to 70% to Industry, Start-ups, Private Institutes, Entrepreneurs and Manufacturing units.

k) National Green Hydrogen Mission	• SIGHT programme for Electrolyser manufacturing has an allocation of ₹4,440 Crores. The incentives start from ₹4,440 per kW in the first year and end at ₹1,480 per kW in the fifth year.
	• SIGHT programme for Green Hydrogen production and its derivatives have an allocation of ₹13,050 Crores.
	  o For Green Hydrogen Production, incentives are capped at ₹50/kg, ₹40/kg and ₹30/kg for the first, second and third year respectively.
	  o For Green Ammonia production, incentives are ₹8.82/kg in the first year of production and supply, ₹7.06/kg during the second year of production and supply, and ₹5.30/kg during the third year of production and supply.
	• Pilot projects for projects in Transport Sector have an outlay of ₹496 Crores till FY 2025-26.
	• Pilot projects in Shipping sector have an outlay of ₹115 Crores till FY 2025-26.
	• Pilot projects in Steel sector have an outlay of ₹455 Crores till FY 2029-30.
	• Hydrogen Hubs have an outlay of ₹200 Crores till FY 2025-26.
	• The R&D program of the Mission has a budget of ₹400 Crores till FY 2025-26.
	• Skill Development component of the Mission has an outlay of ₹35 Crores till FY 2029-30.
	• The Testing component of the Mission has an outlay of ₹200 Crores till FY 2025-26.
	• The New and Innovative Techniques and Applications for Green Hydrogen has an outlay of ₹200 Crores by FY 2025-26.

l) New Solar Power Scheme (for Tribal and PVTG	

<table>
<tr><th>Scheme/Programmes</th><th>Incentives presently available as per the Scheme</th></tr>
<tr><td>Habitations/Villages) under Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM JANMAN) and Dharti Aabha Janjatiya Gram Utkarsh Abhiyan (DA JGUA)</td><td>
<table>
<tr><th>Components</th><th>Central Share (100%)</th></tr>
<tr><td>Provision of 0.3 kW Solar offgrid system for 1 lakh Tribal and PVTG HHs</td><td>Rs. 50,000 per HH or as per actual cost</td></tr>
<tr><td>Solar street lighting and provision of lighting in 1500 MPCs of PVTG areas (under PM JANMAN component only)</td><td>Rs. 1 lakh per MPC</td></tr>
<tr><td>Solarisation of 2000 public institutions through off-grid solar systems (under DA JGUA component only)</td><td>Rs 1 lakh per kW with maximum solar PV capacity of 20 kW per public institution</td></tr>
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