नवीन एवं
नवीकरणीय ऊर्जा मंत्रालय
MINISTRY OF
NEW AND
RENEWABLE ENERGY
सत्यमेव जयते

MINISTRY OF NEW AND RENEWABLE ENERGY





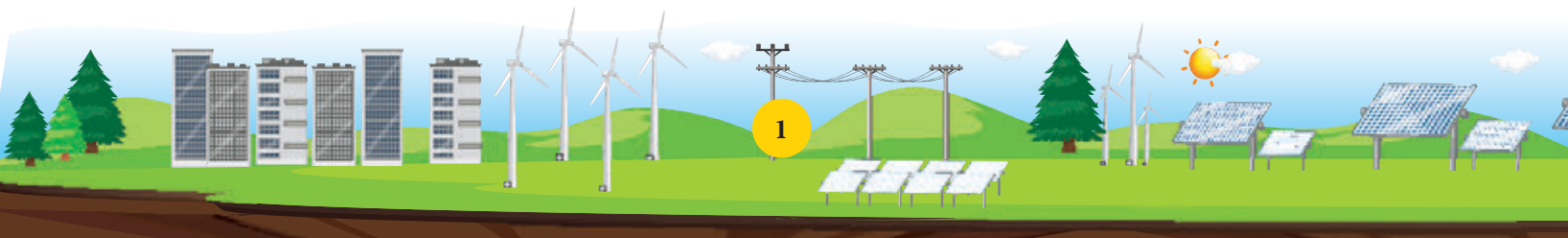


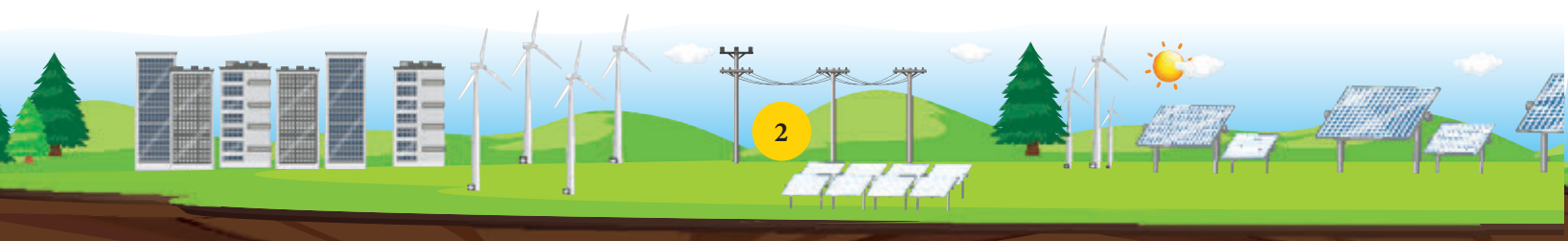


ANNUAL REPORT 2025-26

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Overview – Summary

1.1 Commitments And Achievements

In line with the Prime Minister Shri Narendra Modi's vision articulated in the Panchamrit Goals, India continued its accelerated transition towards clean energy in 2025, recording its highest-ever annual expansion in renewable energy capacity and achieving multiple structural milestones well ahead of national and international timelines.

India achieved a landmark milestone in June 2025 by sourcing 50 per cent of its cumulative installed electricity capacity from non-fossil fuel sources, five years ahead of its 2030 Nationally Determined Contribution (NDC) commitment under the Paris Agreement. This momentum continued through the year, with India crossing the 250 GW non-fossil installed capacity milestone in August 2025.

As of December 2025, India's total renewable installed capacity stood at 258 GW, accounting for 50.2 per cent of the country's total electricity installed capacity of 513.7 GW. This is an increase of over 23 per cent compared to 209.4 GW in December 2024.

The year witnessed the highest-ever renewable energy capacity addition, with 48.6 GW added during 2025, nearly doubling the capacity addition during the corresponding period in 2024.

Table 1.1: Sector-wise Achievements (as on 31.12.2025)

Sector-wise Achievements (as on 31.12.2025)	
Sector	**Installed Capacity (GW)**
Solar Power	135.81
Wind Power	54.51
Bio Energy	11.61
Small Hydro Power	5.16
Sub-Total	207.09
Large Hydro Power	50.91
Total	258.00

On 29 July 2025, India recorded its highest-ever share of renewable energy in daily electricity generation, with renewables meeting 51.5 per cent of the country's total electricity demand of 203 GW on that day.

According to IRENA Renewable Energy Statistics 2026 (data as of 31.12.2025), India globally ranks 3rd in total renewable energy installed capacity, 3rd in solar power capacity and , 4th in wind power capacity, underscoring its growing global leadership in clean energy deployment.

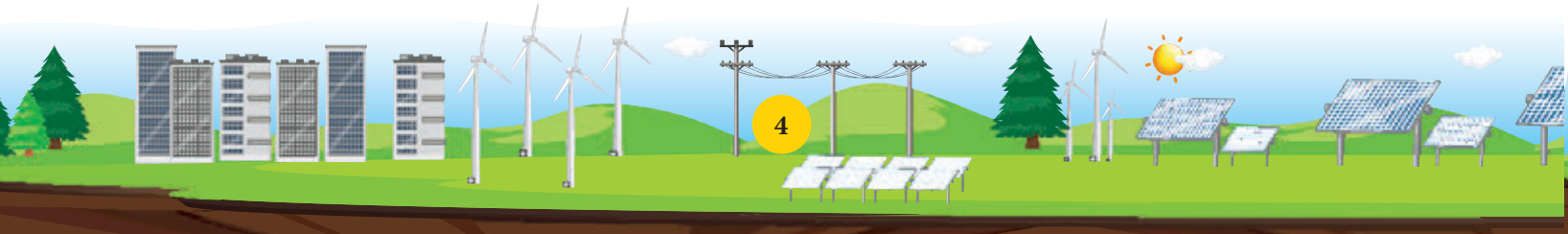
Solar energy emerged as the principal driver of growth in 2025. The country crossed the 100 GW solar milestone in January 2025, with Renewable Energy installed solar capacity reaching 135.81 GW in December 2025, an increase of over 38.8 per cent from 97.86 GW in 2024. Wind energy also recorded significant progress. Installed wind capacity crossed the 50 GW milestone in March 2025 and reached 54.51 GW in December 2025.

Citizen-centric energy transition remained a key focus in 2025. PM Surya Ghar: Muft Bijli Yojana continued as a cornerstone initiative to promote rooftop solar adoption. Flagship initiatives such as PM KUSUM continued to gather momentum, enabling the expansion of decentralised renewable energy in the agriculture sector and strengthening energy access at the grassroots level. These efforts reflected the Ministry's emphasis on inclusive growth, climate resilience and farmer-centric solutions as integral elements of India's broader energy transition.

India alone is expected to require around Rs 30 lakh crore by 2030, creating significant opportunities across renewable generation, battery storage, green hydrogen, transmission & infrastructure and Renewable Energy manufacturing. With stable policies and transparent markets, India continues to remain one of the most attractive destinations for clean energy investment.

The year also marked a decisive shift from planning to implementation under the National Green Hydrogen Mission. Progress during 2025 spanned pilot deployments across key industrial and mobility sectors, development of certification and standards frameworks, and strengthening of research, testing and skill-building ecosystems. Dedicated national and international platforms, including the 3rd International Conference on Green Hydrogen (ICGH 2025), were convened to foster dialogue among governments, industry, research institutions and startups, supporting the emergence of a globally competitive green hydrogen ecosystem.

India further reinforced its global leadership in clean energy through active international engagement and knowledge sharing. The Ministry strengthened bilateral and multilateral cooperation, participated in leading global forums such as the World Hydrogen Summit and European Hydrogen Week, and hosted the 8th International Solar Alliance Assembly, advancing collaborative initiatives including One Sun One World One Grid (OSOWOG) and support for Small Island Developing States (SIDS). Together, these engagements underscored India's role as a trusted partner and convenor in advancing a just, inclusive and sustainable global energy transition.



A tableau of the Ministry of New and Renewable Energy participated in the Republic Day Parade at Kartavya Path, New Delhi. The Vibrant display offered a glimpse into India's evolving energy landscape, highlighting its groundbreaking strides in renewable energy while celebrating the nation's deep cultural heritage. Eight hundred special invitees, comprising beneficiaries of PM Surya Ghar: Muft Bijli Yojana, PM KUSUM and RE technicians invited by the Ministry, were among the first to witness the unique portrayal of India's path to a sustainable and self-reliant future.



Fig. 1.1: Tableau of the Ministry of New and Renewable Energy participated in the Republic Day Parade 2025

The year 2025 stood out as a watershed moment in India's energy transition, defined not only by record capacity additions, but by structural shifts in generation mix, decentralised adoption, industrial decarbonisation, and global leadership. India's clean energy transition has firmly moved from ambition to irreversible momentum.

1.2 Various RE Sectors Schemes

The section outlines achievements under various schemes of the Ministry during the year.

1.2.1 Pradhan Mantri Kisan Urja Suraksha Evam Utthaan Mahabhiyan (PM KUSUM) for Decentralised Solar Application in the Agricultural Sector

During the year 2025, concerted efforts were undertaken under the PM KUSUM Scheme to expedite implementation, enhance awareness, and strengthen capacity building, resulting in significant progress on both physical and financial fronts. As on 31.12.2025, a cumulative 720.91 MW of solar power capacity has been installed under Component-A; over 9.75 lakh standalone solar agricultural pumps have been installed under Component-B; and over 12.01 lakh grid-connected agricultural pumps have been solarized under Component-C.

During 2025 alone, Component-A recorded an installed capacity addition of around 323.93 MW. Under Components B and C, more than 14.48 lakh agricultural pumps were installed / solarized during the year, which is nearly three times the installation/solarization achieved in the previous year. Cumulatively, a total of 10,946 MW solar capacity has been installed under the scheme, of

which 7,261 MW (around 66%) was installed during 2025. During the Seva Parv period from 17-09-2025 to 02-10-2025, implementation was undertaken in mission mode, resulting in installation/solarization of more than 2 lakh pumps during that duration.

Financially, the expenditure under PM KUSUM during 2025 stood at ₹3,560 crore so far, which constitutes approximately 44% of the total funds released under the Scheme since its launch.

1.2.2 The Pradhan Mantri Surya Ghar: Muft Bijli Yojana (PMSG: MBY)

The PM Surya Ghar: Muft Bijli Yojana (PMSG: MBY) has been launched in February 2024 with the objective of achieving rooftop solar (RTS) installations in one crore residential households across the country by FY 2026–27, with a total outlay of ₹75,021 crore. The Scheme is demand-driven in nature and enables all residential consumers with grid-connected electricity connections of the local DISCOM to avail its benefits by applying through the National Portal of the Scheme.

Under the scheme, 55.62 lakh applications have been submitted on National Portal, and 26.05 lakh households have been benefited with installation of rooftop solar as on 31-12-2025. An amount of Rs. 14,771 Crores has been disbursed as CFA to 18.81 Lakh beneficiaries. The accelerated pace of installations reflects strong consumer response, streamlined digital processes, and enhanced coordination with States and DISCOMs, reinforcing the Scheme's role as a key driver of decentralized renewable energy adoption in the residential sector.

1.2.3 Central Public Sector Undertaking (CPSU) Scheme for Grid-Connected Solar Photovoltaic (PV) Power Projects:

As of 31.12.2025, around 8.2 GW of projects have been awarded under this scheme, with around 5.4 GW commissioned and balance is under implementation.

1.2.4 Development of Solar Parks and Ultra Mega Solar Power Projects As on 31-12-2025

Under this scheme, 55 Solar Parks of cumulative capacity 39,973 MW in 13 States have been approved, of which 18 solar parks with an aggregate capacity 10,856 MW have been fully developed and 8 Solar Parks of aggregate capacity 10,043 MW partially developed. Solar Projects of total capacity 15,293 MW have been commissioned in 26 parks.

1.2.5 PLI Scheme: 'National Programme on High-Efficiency Solar PV Modules'

Ministry of New and Renewable Energy, Government of India is implementing the Production Linked Incentive (PLI) Scheme for National Programme on High Efficiency Solar PV Modules, with an outlay of Rs. 24,000 crores. 48,337 MW fully/ partially integrated solar PV module manufacturing capacities have been awarded under the Scheme and are under implementation.

1.2.6 Green Energy Corridor

As on 31.12.2025, 9170 ckm of intra-state transmission lines have been constructed, and 22116 MVA intra-state substations have been charged, under Phase-I of the Intra State Transmission System (InSTS) Green Energy Corridor (GEC). Additionally, a central grant of Rs. 2839.104 crore has been disbursed to the States under this Phase.



Under Phase-II of the InSTS GEC, 75 out of 91 packages have been tendered as on 31.12.2025, of which 73 packages have been awarded, with Rs. 1056.116 crore disbursed to the States.

1.2.7 Human Resource Development Programme

Under the Human resource Development programme, a cumulative total of 66,351 no. Suryamitras (Solar PV Technicians) have been trained as of 31.12.2025 out of which 33,705 no. candidates have gained employment. Ministry's Jal-Urjamitra Skill Development Programme coordinated by IIT-Roorkee has trained 961 candidates as Jal-urjamitras and 66 trainers as of 31.12.2025. Under Vayu Mitra Skill Development Programme Phase-1, 281 trainers and 2160 participants were trained.

1.2.8 Renewable Energy Research and Technology Development (RE-RTD) Programme

In the area of advanced solar technologies, significant progress was achieved under MNRE-supported research initiatives. An MNRE-sponsored project at IIT Bombay developed a perovskite solar cell with the world's second-highest efficiency of 26% and achieved a power conversion efficiency of 30.2% for a four-terminal perovskite–silicon tandem solar cell, marking a major breakthrough in next-generation photovoltaic technologies.

Further strengthening India's technical capabilities, CSIR–National Physical Laboratory (CSIR-NPL) established the country's first National Primary Standard Facility for Solar Cell Calibration, achieving a world-leading measurement uncertainty of 0.35% (highest accuracy). This milestone significantly enhances precision, credibility, and self-reliance in solar metrology and testing infrastructure.

1.2.9 Solar-Wind Hybrid

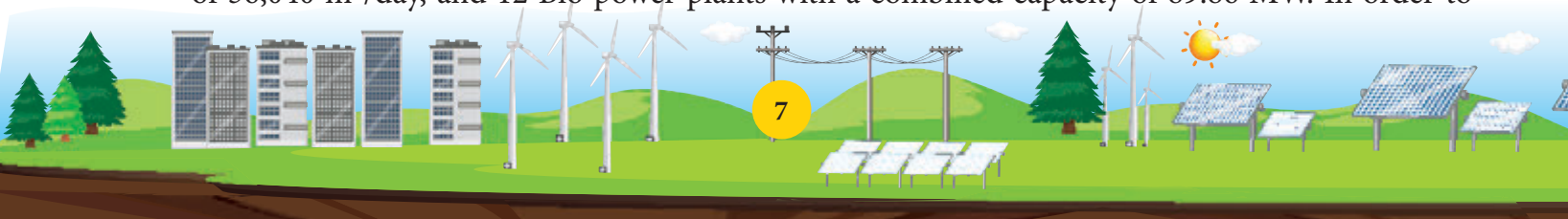
Revised 'Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Wind Solar Hybrid Projects' was issued on 21.08.2023 to promote renewable capacity additions and RPO fulfilment, facilitate a transparent and fair procurement of electricity through competitive means; provide for a standardized framework for an Intermediary Procurer as an Aggregator/Trader; and provide a risk-sharing framework between various stakeholders.

1.2.10 Wind Energy

India has the fourth highest wind installed capacity in the world. A capacity of 6.34 GW was added during the year 2025 compared to 3.2 GW during the same period in 2024. Wind energy installed capacity crossed 50 GW mark in March, 2025. The wind energy installed capacity has reached 54.51 GW in December, 2025 which is an increase of over 13.1% as compared to December, 2024, when the capacity was 48.16 GW.

1.2.11 Bioenergy

During 2025, the bioenergy sector registered steady progress with the commissioning of 59 Compressed Biogas (CBG) plants having a cumulative capacity of 684.33 TPD, 8 Biomass Pellet/ Briquette plants with a total capacity of 21.5 TPH, 4 Biogas plants with an aggregate capacity of 56,040 m^3/day, and 12 Bio power plants with a combined capacity of 89.86 MW. In order to



strengthen stakeholder engagement and promote sectoral growth, the Ministry conducted nine capacity-building and awareness workshops on "Organic Biomethanation and its Application" for banks, financial institutions, biogas/CBG plant developers, and other relevant stakeholders, in collaboration with UNIDO and TERI.

The Ministry also observed National Biofuel Day on 10 August in collaboration with the Indian Federation of Green Energy, and organised a workshop on "Unlocking Alternative Markets for Bagasse Utilisation" on 23.06.2025 in partnership with the India Sugar & Bioenergy Manufacturers Association. These initiatives contributed to enhancing awareness, expanding market linkages, and supporting sustainable growth of the bioenergy ecosystem.

1.2.12 National Green Hydrogen Mission

The Green Hydrogen Mission, was launched on 04.01.2023, with an outlay of INR 19,744 crore from 2023-24 to 2029-30, including an outlay of Rs. 17,490 crore for the Strategic Interventions for Green Hydrogen Transition (SIGHT) programme, Rs. 1,466 crore for pilot projects, Rs. 400 crore for R&D, and Rs. 388 crore towards other Mission components.

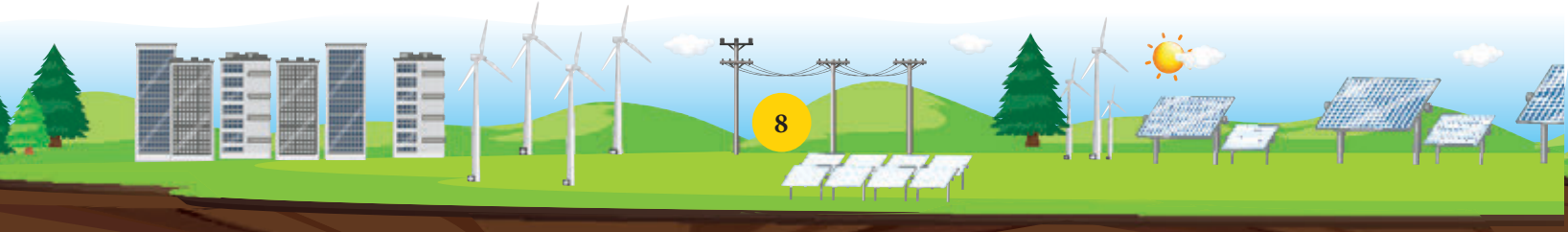
During 2025, the National Green Hydrogen Mission recorded significant progress in production, industrial adoption, and ecosystem development. Incentives were awarded for 4,50,000 TPA of Green Hydrogen production with a financial allocation of approximately ₹2,239 crore. SECI discovered prices for 7,24,000 TPA of Green Ammonia supply to fertilizer units with allocated support of about ₹1,534 crore, achieving one of the lowest globally discovered weighted average prices of ₹53.27 per kilogram. Projects were also awarded for supply of 20,000 MTPA of Green Hydrogen to IOCL, BPCL, and HPCL refineries.

In the steel sector, four pilot projects have been sanctioned with a total funding support of about ₹106 crore to promote hydrogen-based decarbonisation. In the mobility sector, a pilot project has been awarded for deployment of a hydrogen-fuelled vehicle along with a hydrogen refuelling station, with a fund sanction of approximately ₹17 crore. Further strengthening infrastructure, a project has been sanctioned for development of bunkering and refuelling facilities at V.O. Chidambaranar Port Authority, Tuticorin, with a financial support of ₹35 crore.

To build a robust innovation ecosystem, twenty-three R&D projects have been awarded under the Mission with total funding of about ₹115 crore. Five projects have been sanctioned for developing testing facilities across the Green Hydrogen value chain, with a fund allocation of approximately ₹114 crore. Four projects have been selected for development as Hydrogen Valley Innovation Clusters (HVICs), with sanctioned funding of around ₹170 crore.

1.3 New Initiatives

Apart from the progress achieved under the schemes outlined in Section 1.2, the Ministry introduced policy reforms and enablers to push progress in segments like green hydrogen, offshore wind, solar rooftop, decentralized renewables, and geothermal energy. Key examples are noted below:



1.3.1 Wind Turbine Testing & Certification Framework

To promote indigenous innovation and strengthen testing infrastructure, the Ministry issued the Revised Guidelines for installation of prototype wind turbine models on 12.06.2025. The guidelines facilitate installation of a limited number of prototype wind turbines to support testing, validation, and certification within the country. This measure is aimed at accelerating technology development and enhancing domestic capability in wind turbine design and performance evaluation.

1.3.2 ALMM–Wind and Component Manufacturing Reforms

On 31.07.2025, amendments were issued to the procedure for inclusion and updating of wind turbine models in the Revised List of Models and Manufacturers (RLMM), which has been renamed as the Approved List of Models and Manufacturers (ALMM–Wind). The revised framework mandates the use of listed critical components such as blades, towers, generators, gearboxes, and special bearings (main, pitch, and yaw bearings). It also introduces important data security provisions, including mandatory relocation of data centres within India and prohibition of real-time data transfer outside the country.

Further, the Standard Operating Procedure (SOP) for ALMM–Wind and ALMM–Wind Turbine Components (WTC) was issued on 29.10.2025, providing a detailed end-to-end process for application, verification, factory inspection, and model enlistment. These reforms collectively strengthen domestic manufacturing, ensure supply-chain integrity, and enhance quality assurance and cybersecurity in the wind energy sector.

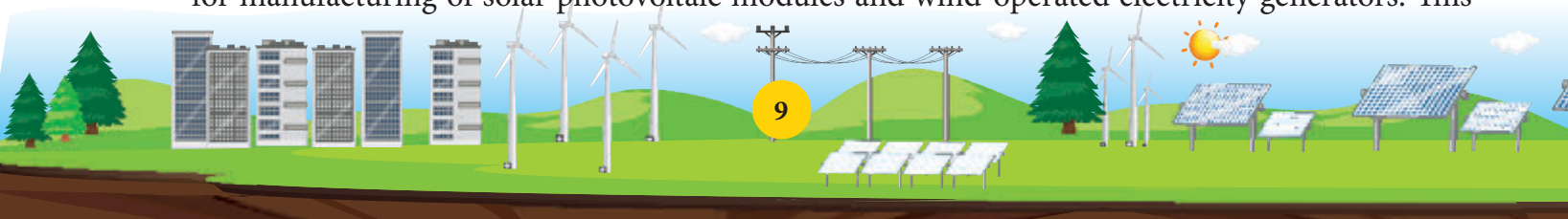
1.3.3 GST Rationalisation for Solar Energy Devices:

With effect from 22.09.2025, the Goods and Services Tax (GST) rate has been reduced from 12% to 5% on specified solar energy devices and their parts used for manufacture. The revised rate applies, inter alia, to solar power-based devices, solar power generators, solar lanterns/solar lamps, and photovoltaic cells (whether or not assembled in modules or made up into panels). This measure is expected to lower costs, enhance affordability, and further accelerate the adoption of solar energy systems across the country.

1.3.4 Regulatory Strengthening and Import Monitoring:

In January 2025, the Ministry notified the Solar Systems, Devices and Components Goods Order, 2025, which revises and supersedes the earlier Solar Photovoltaic Systems, Devices and Components Goods (Requirements for Compulsory Registration) Order, 2017. The new Order expands and streamlines the regulatory framework and covers Solar PV modules, inverters used in Solar PV applications, and storage batteries, thereby strengthening quality assurance and compliance standards across the solar value chain.

Further, the Renewable Energy Equipment Import Monitoring System (REEIMS) portal was introduced pursuant to DGFT Notification No. 40/2025-56 dated 10.10.2025, effective from 01.11.2025. The REEIMS portal facilitates monitoring of specified items and components imported for manufacturing of solar photovoltaic modules and wind-operated electricity generators. This



initiative enhances data transparency, supports evidence-based policymaking, and strengthens domestic manufacturing planning and supply-chain visibility.

1.3.5 Expansion of Domestic Solar Manufacturing Capacity

India continued to witness robust growth in domestic solar manufacturing during 2025. Indigenous solar module manufacturing capacity under the Approved List of Models and Manufacturers (ALMM) for Solar Modules reached approximately 144 GW per annum, with about 81 GW added during calendar year 2025 alone. This reflects an impressive year-on-year growth of nearly 99% compared to the addition of around 41 GW in 2024, underscoring the rapid scale-up of domestic production capacity.

Further strengthening the upstream manufacturing ecosystem, MNRE issued the ALMM List-II (for Solar Cells) on 31.07.2025. As of now, approximately 24 GW of solar cell manufacturing capacity has been enlisted under ALMM List-II, marking a significant step toward enhancing self-reliance across the solar value chain.

1.3.6 New Solar Power Scheme (for Tribal and PVTG Habitations/Villages)

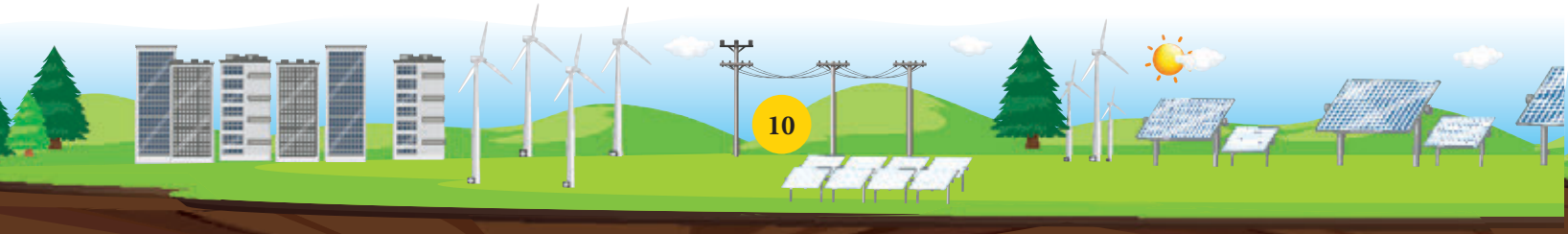
The New Solar Power Scheme (for PVTG Habitations/Villages) under Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM JANMAN) was issued on 04.01.2024. On 18.10.2024, the scheme was revised to include other tribal habitations/villages and renamed as New Solar Power Scheme (for Tribal and PVTG Habitations/Villages) under Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM JANMAN) and Dharti Aabha Janjatiya Gram Utkarsh Abhiyan (DA JGUA).

The scheme aims to cover electrification of One Lakh un-electrified households (HHs) in Tribal and PVTG areas identified by Ministry of Tribal Affairs (MoTA) by provision of off-grid solar systems. The scheme also includes a provision for providing off-grid solar lighting in 1500 Multi-Purpose Centres (MPCs) in PVTG areas under PM JANMAN and solarisation of 2000 Public Institutions through off-grid solar systems under DA JGUA. The off-grid solar systems are provided only where electricity supply through conventional grid is not techno-economically feasible.

Based on the proposals received from state implementing agencies the Scheme, Ministry has sanctioned electrification of total 12,922 nos. of (8823 under PM JANMAN Component + 4099 under DA JGUA Component) PVTG and Tribal households have been sanctioned till 31.12.2025, of which 6,897 households are reported electrified. Further, 8 nos. of Public Institution have been sanctioned in Assam for electrification under DA JGUA.

1.3.7 Green Hydrogen Certification Scheme

The Green Hydrogen Certification Scheme of India (GHCI) was launched in April 2025, and 128 standards (cumulative since the launch of the Mission) have been published or adopted across the Green Hydrogen value chain. In the area of skill development, 43 Qualification Packs have been



approved by the National Council for Vocational Education and Training (NCVET), and 6,541 trainees have been certified cumulatively since inception of the Mission.

Strategic partnerships and stakeholder engagement were further strengthened during the year. The National Institute of Solar Energy (NISE), Gurugram, signed a Memorandum of Understanding with Toyota Kirloskar Motor for a pilot project on hydrogen use in the mobility sector. A national workshop focusing on the role of Micro, Small and Medium Enterprises (MSMEs) in India's Green Hydrogen ecosystem was organised on 29.04.2025 in New Delhi to accelerate MSME participation. The Ministry also organised the inaugural Green Hydrogen R&D Conference 2025 on 11–12 September 2025 in New Delhi, during which a Call for Proposals was launched to support hydrogen-focused start-ups. A start-up expo featuring 25 DPIIT-registered start-ups showcasing cutting-edge innovations was held alongside the conference.

1.3.8 National Policy 2025 on Geothermal Energy

The MNRE after due consultation with relevant ministries & agencies including with Ministry of Petroleum & Natural Gas, DG Hydrocarbons, ONGC, Oil India Ltd., notified National Policy on Geothermal Energy (2025) on 15.09.2025 to accelerate clean energy transition, supporting India's Net Zero 2070 Commitment. This policy aims to harness untapped potential through Research, Innovation, Technology, Ecosystem Development, Capacity Development and Partnerships.

1.4 International Cooperation

The Ministry has been actively engaging with various countries through bilateral and multilateral engagements for promoting international cooperation in development & deployment of Renewable Energy in the country. In this process, a series of Joint Working Group meetings, Task Force engagements, and other bilateral and multilateral consultations were carried out with partner countries including Japan, the United Kingdom, Tajikistan, Egypt, Norway, Portugal, Australia, Germany, Sri Lanka, and Denmark to identify priority areas and formulate joint activities in Renewable Energy collaboration. Memorandums of Understanding and Joint Declarations of Intent were signed with Brazil, Japan, Bhutan, and Jordan, the Ministry which will further strengthen bilateral cooperation in Clean / Green Hydrogen, Green Ammonia, and Renewable Energy.

India also deepened its multilateral engagement through active participation in the 8th International Solar Alliance (ISA) Assembly held in New Delhi, which witnessed high-level participation from 137 countries and 36 organizations. Key milestones included the launch of important ISA knowledge products, operationalisation of the One Sun One World One Grid (OSOWOG) roadmap, adoption of the Global SIDS Initiative Declaration, and the launch of new initiatives such as the ISA Global Capability Center, the ISA Academy, and the SUNRISE Community of Practice. These engagements reinforced India's role as a leading convener and trusted partner in advancing Global Renewable Energy cooperation.



MNRE Snapshot

2.1 Introduction

In 1982, a separate Department of Non-Conventional Energy Sources (DNES) was created in the Ministry of Energy to look after all the aspects relating to New and Renewable Energy. The Department was upgraded into a separate Ministry of Non-Conventional Energy Sources (MNES) in 1992 and was renamed as Ministry of New and Renewable Energy (MNRE), in October 2006.

2.2 Allocation Of Business Rules

As per distribution of subjects among the Ministries/Departments under allocation of Business rules, following subjects have been allocated to the Ministry of New and Renewable Energy (Naveen aur Navikarniya Urja Mantralaya).

1. Research and development of bio-gas and programmes relating to bio-gas units.
2. Commission for Additional Sources of Energy (CASE).
3. Solar Energy - including photovoltaic devices and their development, production and applications.
4. All matters relating to small/mini/micro hydel projects of and below 25 MW capacity.
5. Programmes relating to improved chulhas and research and development thereof.
6. Indian Renewable Energy Development Agency.
7. Research and development of other non-conventional/renewable sources of energy and programmes relating thereto.
8. Tidal Energy.
9. Integrated Rural Energy Programme (IREP).
10. Geothermal Energy.

2.3 Structure Of The Ministry

Sh. Santosh Kumar Sarangi, IAS (Odisha:1994) is the Secretary of the Ministry of New & Renewable Energy with effect from 21.04.2025. The Ministry has One Additional Secretary, Three Joint Secretaries, One JS & FA, One Mission Director (National Green Hydrogen Mission), One Economic Advisor, One Deputy Director General as on 31.12.2025.

2.4 Institutions Under The Ministry

The Ministry is supported by three autonomous bodies i.e. National Institute of Solar Energy (NISE), National Institute of Wind Energy (NIWE) and Sardar Swaran Singh - National Institute of Bio Energy (SSS-NIBE) and two public sector undertakings i.e. Indian Renewable Energy Development Agency (IREDA) and Solar Energy Corporation of India (SECI). NISE is located at Gurugram, Haryana and serves as the technical focal point for research and development in solar energy sector. NIWE is located at Chennai, Tamil Nadu and serves as the technical focal point for research & development in wind energy sector. SSS-NIBE is located at Kapurthala, Punjab and is focusing on research & development in bio energy sector. IREDA, a Non-Banking Financial Institution under the administrative control of this Ministry, provides term-loans for renewable energy and energy efficiency projects. SECI functions as the implementing and executing arm of the Ministry for implementation of the National Solar Mission and Wind energy projects. In addition, the Department of Hydro and Renewable Energy (HRED) formerly known as the Alternate Hydro Energy Centre (AHEC), Indian Institute of Technology, Roorkee provides technical support for small hydro power development. However, HRED is not an institution under the control of the Ministry.

2.5 Public Grievances Redressal

Grievances are received in the Ministry through President's Secretariat, Prime Minister's Office, Department of Administrative Reforms and Public Grievances (DARPG), other Ministries/ Departments and from the individuals concerned on MNRE's Window of CPGRAMS portal of DARPG. With a view to deliver expeditious redressal of grievances in a responsible and effective manner, the following measures have been put in place in the MNRE: -

i. Sh. Pankaj Gupta, Deputy Secretary has been designated as Liaison Officer for SC/ST/OBC for implementation of scheme of reservation for persons of Schedule Caste (SC)/ Scheduled Tribe (ST)/ Other Backward Class (OBC) categories.

ii. A committee has been constituted to enquire into the complaints of sexual harassment for any of the women working in this Ministry.

iii. DARPG has undertaken a comprehensive reform for the Centralized Public Grievance Redress and Monitoring System (CPGRAMS) to make it more responsive to the need of the citizens. In this regard, DARPG has introduced several measures for strengthening CPGRAM, viz. monitoring dashboards for stakeholders' facilities deeper analysis of grievance, universalization of CPGRAMS version 7.0 for auto-routing of grievances to last mile etc.

iv. Time Frame for Redressal of the Grievance/petition is within a maximum period of 21 days.



India's Solar Journey

3.1 PM Surya Ghar: Muft Bijli Yojana (PMSG: MBY)

3.1.1 About PMSG: MBY

The Ministry of New and Renewable Energy (MNRE) is implementing PM Surya Ghar Muft Bijli Yojana (PMSG: MBY) since February 2024 with an aim to achieve rooftop solar (RTS) installations in one crore households in the residential sector by FY 2026-27.

The PMSG: MBY is a demand-driven scheme wherein all residential consumers in the country, having a grid-connected electricity connection with the local DISCOM, can avail the benefits of the scheme, for installation of RTS systems by applying on the National Portal of the scheme (https://pmsuryaghar.gov.in).

3.1.2 Aim and Objectives of PMSG: MBY:

i. To achieve 1 crore rooftop solar (RTS) installations in residential sector.

ii. To help provide free/low-cost electricity to 1 crore households up to 300 units of electricity per month by installation of RTS.

iii. To produce renewable electricity of 1 lakh crore units through the solar capacity installed under the scheme, which will result in reduction of 72 crore ton of CO2eq emission during the 25 years of lifetime for RTS projects.

iv. To develop the required enabling ecosystem for RTS projects, including regulatory support, manufacturing facilities, supply chain, vendor network, operation & maintenance facilities, etc., in the country.

v. To boost local economy and employment generation along with enhanced energy security.

vi. To aid in achievement of India's commitment for green climate through its NDCs (Nationally Determined Contributions) at UNFCCC by installation of 30 GW of solar capacity through RTS by 2026-27.

3.1.3 The Financial Outlay for the scheme includes the following components: -

Sr. No.	Scheme Component	Outlay
1.	CFA to Residential Consumers	₹ 65,700 crore
2.	Incentives for Discoms	₹ 4,950 crore

3.	Model Solar Villages in each district	₹ 800 crore
4.	Incentives for Local Bodies	₹ 1000 crore
5.	Payment Security Mechanism	₹ 100 crore
6.	Innovative Projects	₹ 500 crore
7.	Capacity Building (1% of CFA)	₹ 657 crore
8.	Awareness & Outreach (1% of CFA)	₹ 657 crore
9.	Service Charge (1% of CFA)	₹ 657 crore
	Total	₹ 75,021 crore

3.1.4 REC limited has been designated as the National Programme Implementing Agency (NPIA) and DISCOMs/Electricity Departments, as the case may be, will be the State Implementation Agencies (SIA).

3.1.5 Scheme Components

a. **CFA to Residential Consumers:** The scheme provides central financial assistance (CFA) for RTS capacity upto 3 kW per household as per details given below:

Sr. No.	Type of Residential Segment	CFA	CFA (Special Category States)*
1.	Residential Sector (first 2 kWp)	Rs 30,000/kWp	Rs 33,000/kWp
2.	Residential Sector (additional 1 kWp)	Rs 18,000/kWp	Rs 19,800/kWp
3.	Residential Sector (above 3 kWp)	No additional CFA	No additional CFA
4.	GHS/RWA etc, for common facilities for up to 500 kWp (@3 kWp per house)	Rs 18,000/kWp	Rs 19,800/kWp

*The benchmark cost is 10% higher for Special category States/UTs (Uttarakhand, Himachal Pradesh, J&K, Ladakh, States in the North East including Sikkim, UTs of A&N and Lakshadweep).

To avail CFA, it is mandatory to install solar modules manufactured in the country using domestically manufactured solar cells. Further, Ministry has approved list of modules and manufacturers (ALMM) and it is mandatory to procure solar modules only that are approved under the ALMM.

b. **Incentive to DISCOMs:** The objective of incentivising DISCOMs is to motivate towards installation of RTS. These incentives will help DISCOMs in carrying out activities to promote installation of RTS including regulatory and administrative mechanisms. The total financial outlay for incentives to DISCOM component is Rs. 4,950 crores. The incentives will be 5% of applicable benchmark cost for capacity achieved above 10% and less than 15% of the installed base capacity and 10% of the applicable benchmark cost for capacity achieved beyond 15% of the installed base capacity.

c. **Model Solar Village:** The objective is to solarize one village per district and promote uptake of solar rooftops in India. The scheme would promote green and clean energy access to electricity in the villages. An amount of ₹ 800 crore has been allocated for this component with a provision of central financial assistance of ₹ 1 crore per model village.

d. **Incentive to Local Bodies:** The objective is to incentivize Urban Local Bodies (ULBs) & Panchayat Raj Institutions (PRIs) and push the deployment of residential RTS and undertake local mobilization efforts. Rs 1000 crore is allocated for this component. Every installation in residential segment in the jurisdiction of ULB or PRI, for which CFA has been transferred to consumer will be considered for calculating the incentive @ ₹1,000 per installation.

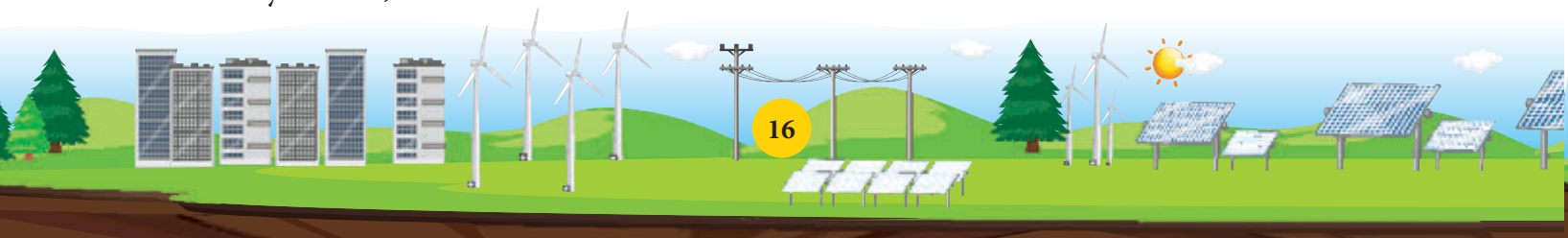
e. **Payment Security Mechanism (PSM):** Provision of Rs 100 crores to set up suitable PSM for upscaling RESCO model. The payment security fund will insulate RESCO players from delays in settlement of payments from the DISCOMs/contracting party.

f. **Support for Innovative Projects:** Allocation of Rs 500 Cr has been provisioned to implement pilots for innovations such as Block chain-based peer to peer RTS, Digital solutions for RTS, Smart building materials, RTS with EVs, Grid responsive RTS with battery storage solutions, DISCOM IT systems for RTS management, and promote new & innovative business models, (Behind the Meter Storage, Rent-A-Roof Models, Peer to Peer Sale of electricity etc.)

g. **Capacity Building:** The objective is to create more than 3 lakh skilled manpower, through fresh skilling, and up-skilling, out of which at least 1 lakh will be Solar PV Technicians. An outlay of 1% of CFA for residential consumers i.e., Rs 657 crore is allocated for Capacity Building. The National Programme Implementing Agency (NPIA) and State Implementation Agencies (SIA) which will formulate a Skilling and Capacity Building Action Plan with the approval of MNRE. Training agencies for capacity building include National Institute of Solar Energy (NISE), MSDE identified Agencies, National Power Training Institute (NPTI), Tata Power Skills Development Institute, TERI and State Institutions.

h. **Awareness and Outreach:** The objective is to create awareness among electricity consumers with focus on residential sector and to encourage residential consumers to participate in rooftop PV system installation while educating them about the process. The Financial Outlay for the scheme includes a component on Awareness and outreach with a financial budget of Rs 657 crore. NPIA and SIA are responsible to implement this component at National and State level respectively.

i. **Service Charges:** Provision of Rs. 657 Cr as service charges to national/state implementing agencies for activities including, Demand aggregation activities; Operation of IT System; Creation of working RTS cell/PMUs/PMCs in DISCOMs, SECI and MNRE; Registration process management; Availability and streamlining the process of net-metering /billing; Inspection, monitoring, development of online portal; 3rd party verification of the projects by MNRE, etc.



3.1.6 Key Elements: PM Surya Ghar: Muft Bijli Yojana

a. **National Portal:** The scheme is being implemented through the National Portal (https://www.pmsuryaghar.gov.in) where all consumers can apply, select vendors, mutually decide rate of installation and after due approvals and inspection of system, are eligible for the subsidy claim as per the installed capacity of the RTS system.

b. **Vendor Registration and Empanelment:** Vendors has to register with the beneficiaries' Distribution Utility (DISCOM) by submitting an application with a declaration and a Performance Bank Guarantee (PBG) of ₹2.5 lakh. The vendor is responsible to:

- Conduct a physical survey to assess the RTS capacity.
- Guide beneficiaries on the technical and financial aspects.
- Assist in obtaining necessary approvals and installing net-meters.
- Ensure compliance with technical standards and provide maintenance for five years.

DISCOMs can take action against vendors providing misleading information or failing to meet the conditions, including blacklisting and forfeiture of the PBG.

REC Limited is the Registering Authority for National Registration and multi-state registration at the National level. The vendors have to submit a bank guarantee of Rs 25 Lakh for the National registration and a bank guarantee equivalent of Rs 2.5 lakh per State/UT under which registration is being sought for multi-state registration.

c. **Vendor rating Programme:** To enhance consumer confidence and ensure high-quality installations, the PM Surya Ghar: Muft Bijli Yojana includes a comprehensive Vendor Rating Programme. The rating system will help consumers make informed choices and encourage vendors to adhere to industry best practices.

The scheme also include provision of Third Party Assessment (TPA). The National Programme Implementing Agency (NPIA) shall establish adequate mechanism to ensure independent third party assessment of RTS installations of at least 1% of installed systems on a pan-India basis which corresponds to inspection of 1 lakh installations through Third party Assessment.

The NPIA has already empanelled agencies for third-party assessment for conducting field quality installations of rooftop solar (RTS) installations on random basis and inspections are already underway. As of December 2025, a total of 3,327 inspections have been completed by Third Party Agencies (TPAs).

d. **Saturation of Government Buildings:** Objective is to saturate all the feasible government buildings with rooftop solar. No Central Financial Assistance to be provided under the Scheme for buildings in the Government sector. The Ministry is coordinating with all Central Ministries/State/UT Governments to undertake saturation of Government buildings with Rooftop Solar. Central Public Sector Enterprises (CPSEs) have been allocated to assist all Ministries and States/UTs in undertaking RTS installations on their assets in a mission mode.

e. **Financing by Banks:** The scheme also provides for easy, collateral free loans from public sector banks at 5.75 % rate of interest, at present, that can be accessed seamlessly through the Jan Samarth portal under the Department of Financial Services which has been integrated with National Portal.

Parameter	Details
Loan amount	Maximum Loan Amount: 2.00 lakh
Eligibility	All Individuals with roof rights & sufficient roof area; No Electricity Bill overdues.
Interest Rate and Tenor	REPO + 50 bps = 5.75% for 10 years
Security	Collateral free, no processing fees
Moratorium	6 Months (for installation) from the date of disbursement

f. **Additional subsidies by States/UTs**

S. No	State/UT	Subsidy
1.	Uttar Pradesh	Rs 15,000/kW up to 2 kW
2.	Haryana	Up to Rs 25,000/kW up to 2 kW (only for poor families)
3.	Goa	50% till 10 kW, 10% till 30 kW
4.	DNH & DD	Rs.10,000/kW up to 3 kW
5.	Ladakh	Rs. 20,000 /kWp upto 2 kWp; Rs. 10,000/kWp for additional 1kW
6.	Delhi	Rs. 10,000 /kWp with a ceiling limit of Rs. 30,000/- (3 kW solar plants)
7.	Assam	Rs. 15,000/kW up to 3kW; capped at Rs. 45,000
8.	Odisha	Rs 25,000/kW for upto 2kW and 10,000 for extra 1 kW i.e 60,000 upto 3kW
9.	J&K	Rs 3,000/kW upto 3kW
10.	Lakshadweep	Rs 45,000/kW upto 2kW, Rs 27000 for next 1kW
11.	A & N Islands	Rs 45,000/kW upto 2kW, Rs 27000 for next 1kW
12.	Mizoram	Within AMC Area: Rs 12,000/kW, up to 100 KM: Rs 14,000/kW, up to 200 KM: Rs 16,000/kW, Beyond 200 KM, Rs 18,000/KW. Subsidy up to 10 kW for all cases.
13.	Rajasthan	Rs 17,000 per system upto 5 kW
14.	Nagaland	Rs 50000/- upto 3 KW
15.	Chhattisgarh	Rs 15000/- for 1 KW, Rs 30000/- for 2 KW

g. **Governance Framework:** The scheme's implementation framework includes the constitution of Group of Ministers to provide overall direction and coordination for the scheme, a Steering Committee chaired by Cabinet Secretary, a State Level Coordination Committee headed by the Chief Secretary of State/Advisor to Administrator of UTs and a District Level Committee headed by the District Magistrate/District Collector. The scheme is being implemented through a Mission Directorate and REC Limited has been named as the National Programme Implementing Agency (NPIA) for the Scheme and the respective DISCOMs are designated as State Implementing Agencies (SIAs) in their respective operational areas.

3.1.7 Measures taken by the Ministry to accelerate adoption of Rooftop Solar

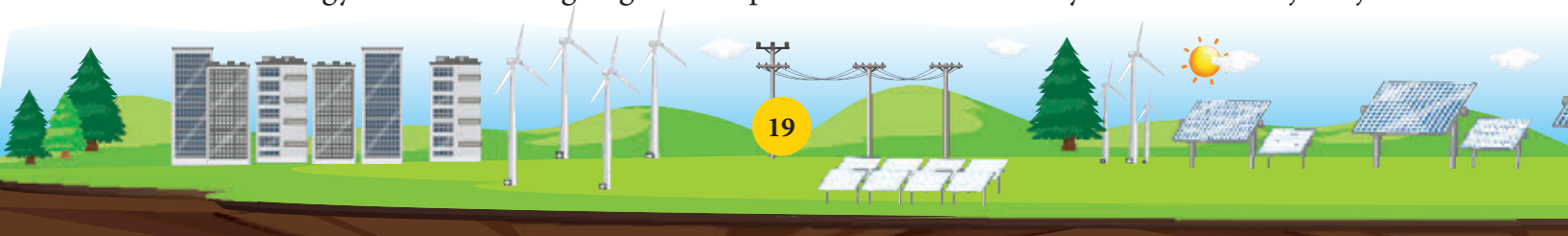
Further, the Government of India has taken following measures to achieve target of benefiting one crore households with rooftop solar installations by 2026-27 under the scheme:

- Online process from application to disbursal of subsidy directly into the bank account of the residential consumer through National Portal.
- Availability of collateral free loan from nationalized banks at concessional interest rate of repo-rate plus 50 bps i.e. 5.75% per annum for the present with tenure of 10 years.
- Simplified the regulatory approval process by waiving technical feasibility requirement and introducing auto load enhancement up to 10 kW.
- Net metering agreement has been made part of application in the National Portal eliminating need for waiver of agreement.
- Included RESCO/ Utility led Aggregation (ULA) Models.
- Simplified process for registration of vendors to ensure sufficient and qualified vendors are available.
- Capacity building and training programmes being conducted for creating skilled manpower.
- Creating awareness about the scheme, through awareness and outreach program such as print advertising in leading newspapers, TV commercials campaigns, Radio campaigns across FM stations including regional channels, etc., in the country.
- Regular monitoring of the progress of the scheme at different levels including with states/ DISCOMs.
- Established grievance redressal mechanism for timely resolution of grievances. A Call Centre with telephone number 15555 is operational in 12 languages.
- Convergence with Ministry of Cooperation, Ministry of Panchayati Raj, Ministry of Housing & Urban Affairs and Ministry of Rural Development for increasing awareness on the ground level.

3.1.8 Making Rooftop Solar Affordable Through GST Reform

In line with the vision of Hon'ble Prime Minister Shri Narendra Modi to make GST a truly "Good and Simple Tax" that strengthens every sector of the economy, the renewable energy sector has received a major impetus under the latest GST reforms approved by the GST Council in its 56th meeting held on 03.09.2025. The rationalization of GST rates across the renewable energy value chain from 12% to 5% will bring down the cost of clean energy projects, making electricity more affordable and directly benefiting households, farmers, industries, and developers.

The reform will make rooftop solar systems more affordable for households. A typical 3 kW rooftop system will now be cheaper by about ₹9,000–10,500, making it easier for lakhs of families to adopt solar energy and accelerating large-scale uptake under the PM Surya Ghar: Muft Bijli Yojana.



3.1.9 Progress of the scheme:

i. **Physical Progress:** Under the scheme, 55.62 lakh applications have been submitted on National Portal, and 26.05 lakh households have been benefited with installation of rooftop solar as on 31.12.2025. An amount of Rs. 14,771 Crores has been disbursed as CFA to 18.81 Lakh beneficiaries.

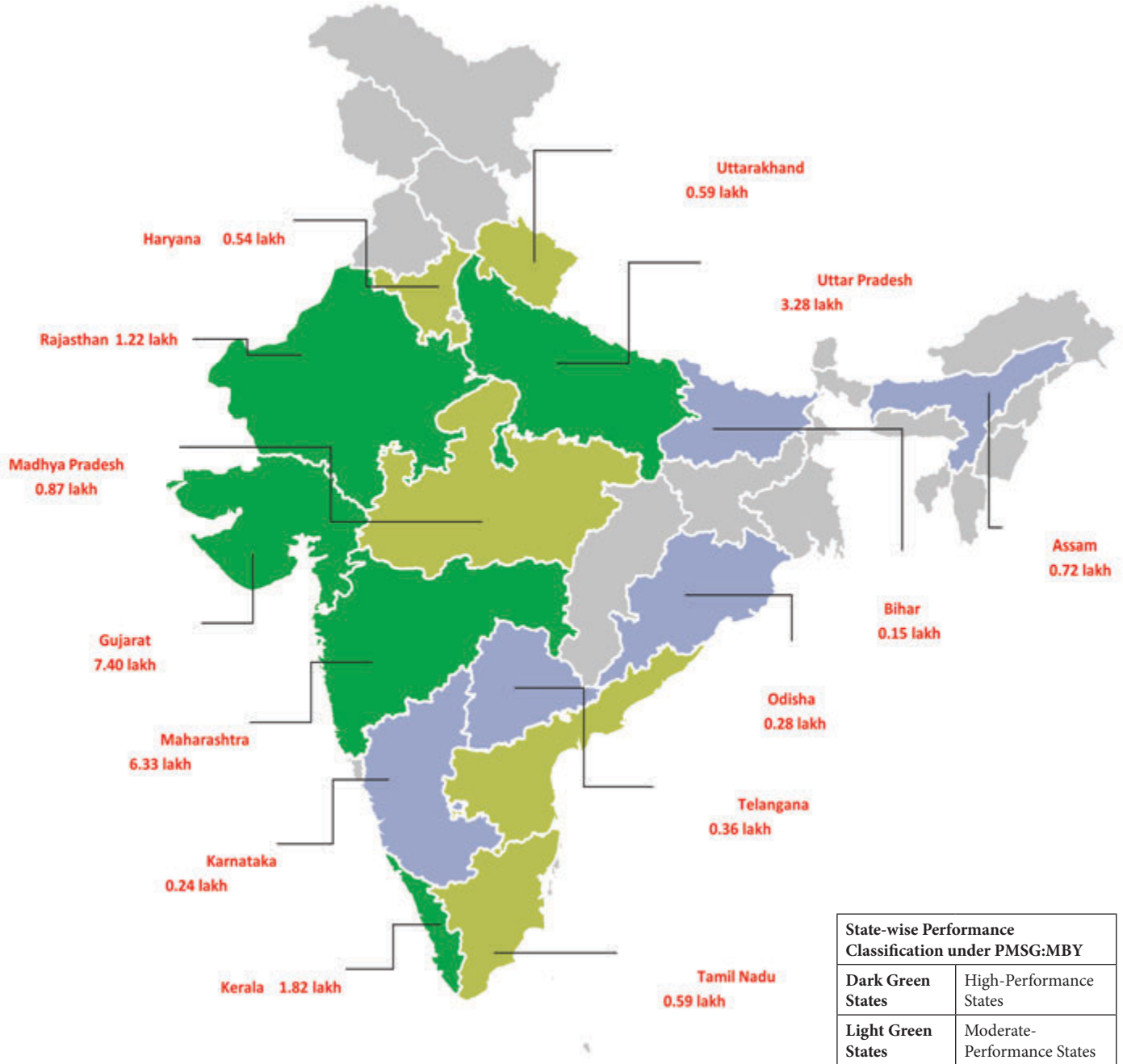


Figure 3.1: RTS households under PMSG:MBY

State-wise Performance Classification under PMSG:MBY	
Dark Green States	High-Performance States
Light Green States	Moderate-Performance States
Light Blue States	Emerging States
Grey States	Early-Stage / Low-Adoption States

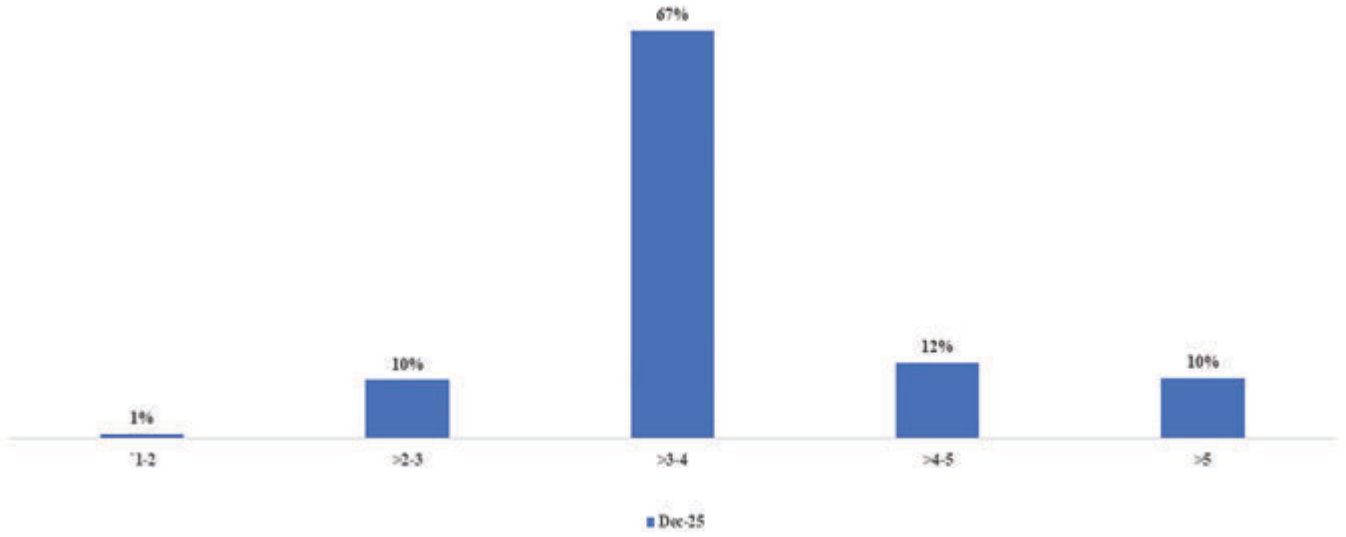


Figure 3.2: Distribution of Installations

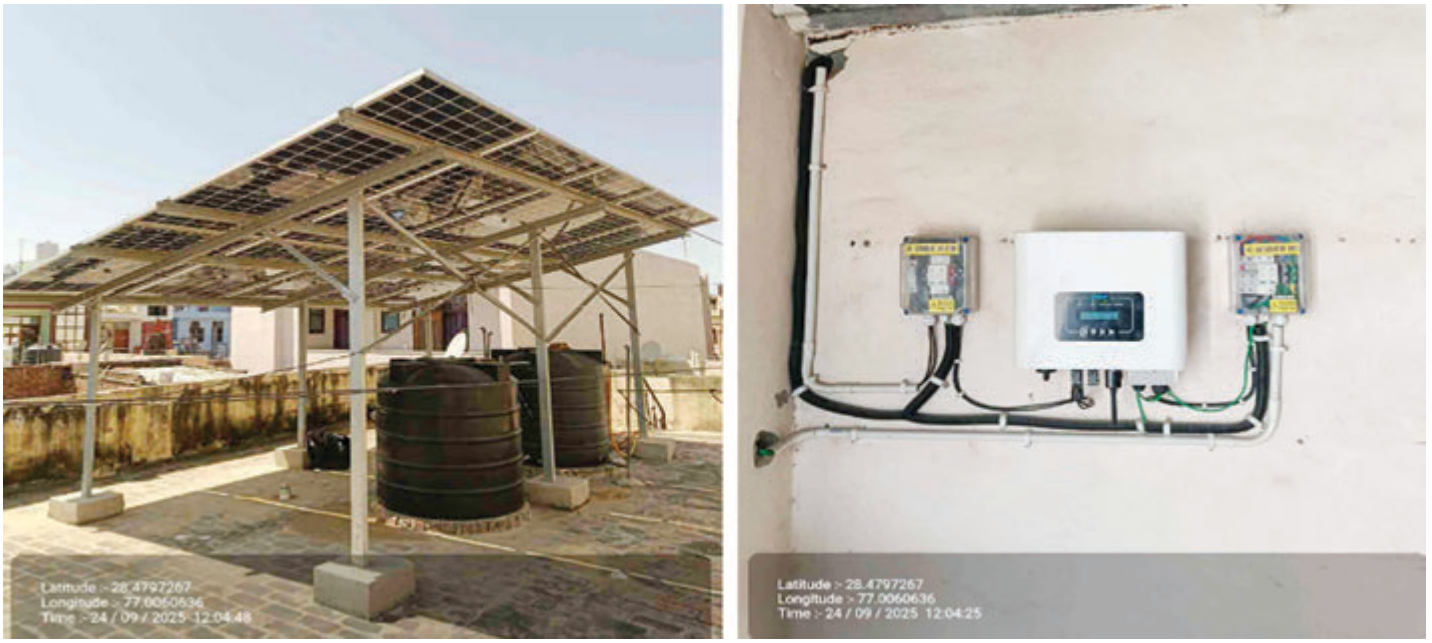


Figure 3.3: Rooftop Solar (RTS) Plant at Gurugram, Haryana –
Installed Capacity: 3.96 kWp | Inverter Capacity: 5 kVA

ii. **Financial Progress:** A Budget Estimate (BE) of ₹20,000 crores has been allocated to the PM Surya Ghar Muft Bijli Yojana for FY 2025-26. As of 31.12.2025, an expenditure of approx Rs. 12,052.57 crores has been incurred.

iii. **Loan applications:** as on 31.12.2025, 17.35 Lakh loan applications have been received under the scheme, of which 8.66 Lakh applications have been sanctioned, out of which 7.70 Lakh have been disbursed.



Figure 3.4: Promotion of scheme by Banks

iv. **Registered vendors:** 21,689 vendors have been registered under the scheme as on December 2025. This number has increased significantly (from ~4000) at the launch of the scheme, creating several jobs in the supply chain and rooftop solar ecosystem.

v. **State-Level Targets:** Several states have set targets for themselves for PMSG installations, totaling to 1.10 crore. 33 States/UTs have signed MoU under PMSG: MBY.

vi. **Simplified provisions notified by DISCOMs:** The Ministry of Power has notified amendments to Electricity (Rights of Consumers) Rules with several RTS friendly provisions such as deemed technical feasibility for small RTS systems, time-bound inspection of RTS installations etc.

   a. All DISCOMs in 36 States/UTs have adopted deemed technical feasibility provision upto 10 KW, substantially reducing time delays for consumers.

   b. Further, all DISCOMs have also approved auto load enhancement upto 10 KW.

   c. Several states (Rajasthan, Andhra Pradesh, Gujarat, Uttar Pradesh etc.) have also adopted other progressive measures such as waiver of all fees/charges, removal of requirement of signing of net metering agreement, digital net meter agreement signing etc.

vii. **Incentive to DISCOMs:** An amount of Rs 2,220.67 crore has been disbursed to various DISCOMs of states/UTs as incentive for facilitating solar rooftop in their jurisdiction.

viii. **Grievance management:** An online grievance raising tool has been developed as part of National Portal, which allows consumers to submit their grievances. Upon submission of the grievance, a unique ticket number is generated for tracking purpose. Further, a call centre has also been made operational for answering queries of the interested consumers.

(Call Centre Number: 15555). Queries are being handled by Call Centre in 12 Languages (English, Hindi, Tamil, Assamese, Bengali, Gujarati, Kannada, Malayalam, Marathi, Odia, Punjabi, Telugu). A total of 2,57,516 grievance tickets have been raised, out of which 2,51,441 tickets have been closed.

ix. **Capacity Building:** 88,291 Solar installers/Engineers/Technicians have been trained by DGT and 4,104 by NISE. Out of all trainees, 77,861 have also completed OJT. 1218 individuals have gone through refresher training conducted by DGT, 21,632 training for entrepreneurs as vendors has been conducted by NISEBUD, 23,944 DISCOM officials have been trained by NPTI and 1,279 by TPSDI. Also, 424 individuals have been trained as trainers by NPTI.



Figure 3.5: Discom Officials Training, Uttar Pradesh



Figure 3.6: Solar Installer Training Program, Rajasthan



Figure 3.7: Vendor Training Program, Uttar Pradesh



Figure 3.8: Solar Installer Training Program (Women), Bihar



Figure 3.9: Solar Helpers Training Program, Madhya Pradesh

x. **Awareness and Outreach:** The awareness and outreach program for PMSG: MBY has been carried out in the entire country. Consumer awareness has been carried out through various channels such as Print advertising in leading newspapers. TV commercials campaigns in TV channels, radio campaigns across FM stations including regional channels. Outdoor hoardings have been installed at prominent locations across the country.

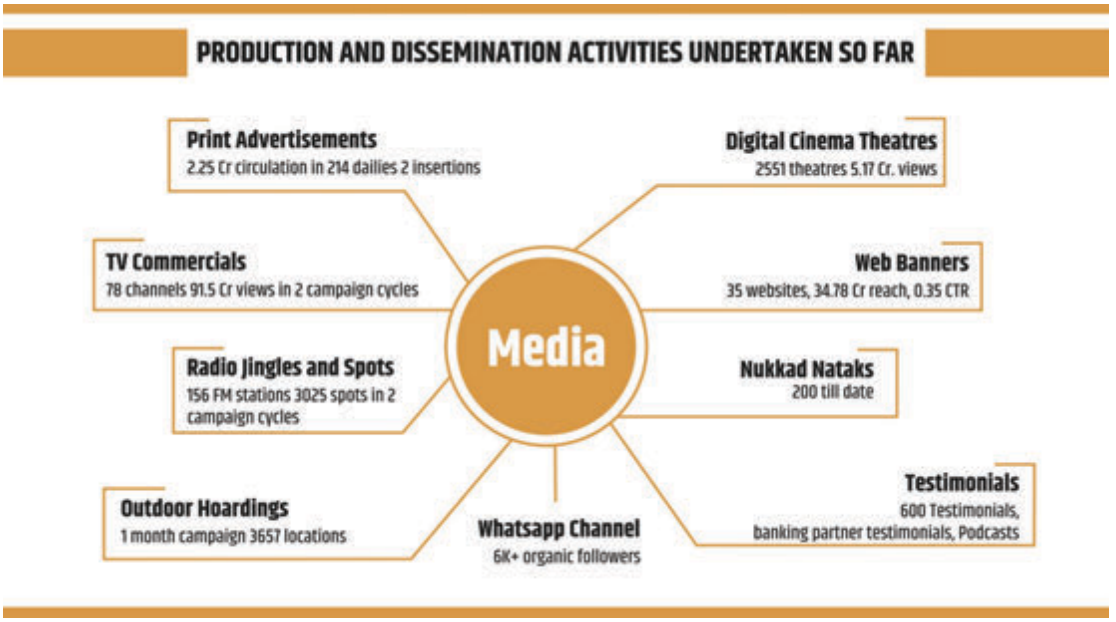


Figure 3.10: Awareness and Outreach Activities



Figure 3.11: Dissemination of IEC Material (Hindi & English)



Figure 3.12: Snapshot of IEC Activities for PMSG:MBY

xi. Utility Led Models: The Ministry of New and Renewable Energy (MNRE) has issued Operational Guidelines for implementation of the "Payment Security Mechanism" Component and the "Central Financial Assistance (CFA)" Component for RESCO Models / Utility Led Aggregation (ULA) Models under the PM Surya Ghar: Muft Bijli Yojana (PMSG: MBY)

on 28.12.2024. The objective of CFA component for RESCO Models / ULA Models is to enable DISCOMs/ State Governments/ State Designated entities to support rooftop solar development under RESCO and ULA models, primarily for low-income households/ families. Several states have proposed utility led aggregation models to install rooftop solar for low-income households. Under the ULA model of the PMSG: MBY, the MNRE has issued the final sanction to 7 States/UTs i.e. Andhra Pradesh, Odisha Jammu & Kashmir, Andaman & Nicobar Islands, Ladakh, DNH & DD and Telangana for around 8.08 lakh RTS installations.

xii. **Model Solar Village:** Operational guidelines for the Model Solar Village (MSV) component of the scheme have been issued. 594 districts have set up District-Level Coordination (DLC) Committees to oversee the implementation of Model Solar Village. A total of 521 districts has already initiated the challenge for selection of village to be developed as MSV, out of which challenge period has been concluded for 423 districts. MSV has been selected in 199 districts.

xiii. **Solarization of Government Buildings:** Under PMSG: MBY, solarization of Government buildings by installation of rooftop solar is one of the components of the scheme. A total of 619.78 MW rooftop solar capacity has been installed on 13,525 no. of government buildings of various Central Ministries/Departments. Notably, Chandigarh and Daman & Diu have reported the achievement of 100% solarization of their government buildings.



Figure 3.13: 525 kW solar plant installed at Sardar Vallabhbhai Patel National Police Academy, Hyderabad

Madhya Pradesh Government Introduces Payment Security Mechanism Payments for Statewide Solarization of Government Buildings by FY 2025–26

The Government of Madhya Pradesh has mandated the solarization of all government buildings across the state by FY 2025–26 in mission mode, aligning with national renewable energy goals. Rooftop solar systems will primarily be implemented through the RESCO model, with Capex projects requiring State-Level Committee approval. MP Urja Vikas Nigam Limited (MPUVN) will act as the nodal agency for both models, while implementation and monitoring will be overseen by State and District Committees under the PM Surya Ghar scheme.

Departments will manage tenders based on building eligibility and location, ensure sanctioned load enhancements, and clear any pending electricity dues. Payments to RESCO developers are to be made within 30 days, with a dedicated budget head and revolving fund mechanism enabling MPUVN to release payments if departments delay. This arrangement also functions as a payment security mechanism for RESCO developers, ensuring financial stability and timely compensation.

3.1.10 IEC campaigns for outreach of PMSG: MBY across India

i. **National Level:** The Ministry has undertaken a multipronged approach to popularize the PM Surya Ghar Muft Bijli Yojana, utilizing all communication media like print, digital, outdoor, television, radio, etc., to maximize reach and awareness.

ii. **State Level:** Additionally, all States/UTs in India have been provided a budget to undertake awareness and outreach plans in their respective regions. Promotional activities such as hoardings/banners, print ads, radio jingles, melas, Surya Rath, etc. have been used by various State Nodal Agencies/DISCOMs to create widespread awareness of PMSG:MBY.

States and UTs are encouraged to design additional activities tailored to their specific state- or district-level needs.

iii. **Activities undertaken under the "Sewa Parv":** Several activities and outreach drives were undertaken for mass rooftop solar deployment during Sewa Parv, observed from September 17 to 02.10.2025. These initiatives resulted in receipt of 1.21 lakh applications, of which 71,257 installations were completed, and Central Financial Assistance (CFA) amounting to Rs. 820.6 crore was released to 1.03 lakh beneficiaries across India during Sewa Parv. Snapshots of the activities taken up by State Nodal Agencies/DISCOMs during the Sewa Parv are provided below:



Figure 3.14: Activities such as Bank Mela, Awareness Campaigns during Sewa Parv

3.1.11 Number of consumers who have achieved Zero Bill under the PMSG:MBY

Number of consumers who have achieved Zero Bill under the PMSG:MBY

As reported by 64 Discoms, over 12.47 lakh consumers have reported zero energy charges in their electricity bills following rooftop solar installation under the PMSG: MBY as on December 2025. While electricity bill of the remaining consumers has been drastically reduced.

3.1.12 Feedback from consumers post installation under PM Surya Ghar: Muft Bijli Yojana

Shri Pushkar Singh



My name is Pushkar Singh, and I reside in Ashok Nagar, Sarkanda. I have installed a 3.3-kilowatt solar panel system at my home under the PM Surya Ghar Muft Bijli Yojana. The total cost of the installation was approximately Rs. 1,85,000. I received a subsidy of Rs. 78,000 from the Central Government and am in the process of receiving an additional Rs. 30,000 subsidy from the Chhattisgarh Government. It has been almost three months since the installation, and I am happy to report that I am receiving zero electricity bills. I would like to express my gratitude to our honorable Prime Minister, Shri Narendra Modi, and our respected Chief Minister, Shri Vishnu Deo Sai, for their support in making this initiative a reality. I encourage the people of Chhattisgarh to take full advantage of this wonderful scheme.

Shri Sharif



My name is Sharif, and I live in Kollam district. Under the PM Surya Ghar Yojana, I have installed a 3 kW solar power plant. I received a subsidy of ₹78,000 for this project. Earlier, my monthly electricity bill used to be around ₹4,000, but now my electricity bill has reduced to ₹0. I would like to thank the PM Surya Ghar Yojana, the Government of India, KSEB, and everyone involved for their support.

Dr. Saeeda Wafer



I'm Dr. Saeeda Wafer from Goa, a scientist at the National Institute of Oceanography. For the past few days, we had been thinking about installing a solar energy system for our house. When we finally decided to do it, we spent about 5 lakh rupees on the installation. We received around a 60% subsidy from the government. Every month, our electricity bill is adjusted based on the solar power we generate, and we pay only the remaining amount. Overall, we are very happy with the results.

3.2 Pradhan Mantri Kisan Urja Suraksha Evam Utthaan Mahabhiyaan (PM KUSUM) Scheme

3.2.1 PM KUSUM (Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan) is the flagship scheme of MNRE launched by the Government in March, 2019 to support the installation of standalone solar pumps, Solarisation of Grid-connected Agriculture Pumps including Feeder Level Solarisation, and installation of solar power plants on farmer's land. The Scheme consists of three components: -

Sunita Devi

Village Tero, Bero Block, Ranchi District (Jharkhand)



I am Sunita Devi, a resident of Village Tero, Bero Block, Ranchi District (Jharkhand). Earlier, irrigation through a diesel pump was expensive and difficult, due to which I was limited to cultivating only one or two crops. I came to know about the PM Kusum Solar Pump Scheme through newspapers and the block office, after which I applied online for a 3HP submersible solar pump which was installed by JREDA within a year. After solar pump installation, farming has not only become easier but the expenses have also reduced significantly. Now I am growing several crops and vegetables such as potato, peas, onion, chilli, wheat, and paddy. Through this scheme, both my agricultural production and income have increased.

Component	Target	RE Capacity targeted (in GW)
Component-A	Setting up of 10000 MW of Decentralized Ground/ Stilt Mounted Grid Connected Solar or other Renewable Energy based Power Plants	10
Component-B	Installation of 14 lakh Standalone Solar Powered Agriculture Pumps	7
Component-C	Solarisation of 35 lakh existing individual Grid-connected Agriculture Pumps including Feeder Level Solarisation	17.8

3.2.2 The total central financial support for the scheme is Rs. 34,422 crore including service charges of 2% on eligible CFA to implementing agencies.

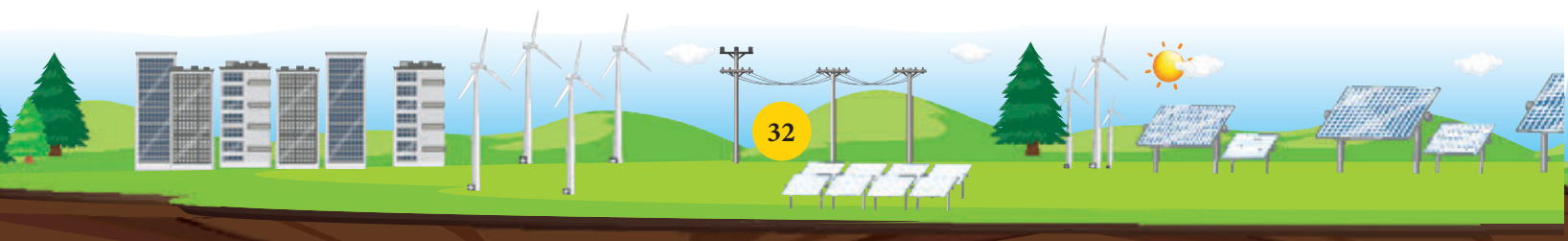
Component A aims at setting up of 10,000 MW of Decentralized Ground/ Stilt Mounted Grid Connected Solar or other Renewable Energy based Power Plants of capacity of 500 kW to 2 MW by the farmers on his own land either directly by himself or in partnership with group of farmers/ cooperatives/ panchayats/Farmer Producer Organisations (FPO)/ Water User associations (WUA), or through a developer by leasing their land. The solar power generated shall be purchased by DISCOMs at a feed-in-tariff (FiT) determined by the respective State Electricity Regulatory Commission (SERC) within the contract capacity. DISCOM would be eligible to get PBI @ Rs. 0.40 per unit purchased or Rs. 6.6 lakh per MW of capacity installed, whichever is less, for a period of five years from the Commercial Operation Date (COD).

Component B aims to install standalone Solar Agriculture Pumps or replace existing diesel Agriculture Pumps/irrigation systems in off-grid areas by Individual Farmers, Water User Associations (WUAs), Farmer Producer Organizations (FPOs), Primary Agriculture Credit Societies (PACS), or cluster-based irrigation systems. The Central Government provides financial assistance of 30% (or 50% for North Eastern Region/Hilly Regions/ Islands) of the Benchmark Cost or the Tender Cost, whichever is lower.

Component C : Individual Pump Solarisation (IPS), aims at solarization of grid-connected agricultural pumps by Individual farmers/ Water User Associations (WUA)/Farmer Producer Organizations (FPO)/Primary Agriculture Credit Societies (PACS) or cluster-based irrigation systems. Solar PV capacity up to two times of pump capacity in kW is allowed under the scheme. The farmer will be able to use the generated solar power to meet the irrigation needs and the surplus solar power will be sold to DISCOMs. In this case CFA of 30% is also provided.

3.2.3 Component C: Feeder Level Solarisation (FLS) aims to solarise grid-connected agriculture pumps through feeder-level solarisation. The Central Financial Assistance (CFA) CFA of 30% (50% in case of NE States, hilly states/UTs and Island UTs), based on Benchmark Cost is provided by central Government

- Solar plants of capacity that can cater to the requirement of the agriculture load of the selected feeder can be installed through CAPEX/RESCO mode for a project period of 25 years.
- A dedicated online portal can be developed by the States/SIAs/DISCOM which will serve as a centralized portal for land aggregation.



- CFA of 30% on the cost of installation of solar power plant (up to Rs. 1.05 Cr/MW) will be provided. However, in the North Eastern States, Sikkim, Jammu & Kashmir, Himachal Pradesh and Uttarakhand, Lakshadweep, and A&N Islands 50% (up to Rs. 1.75 Cr/MW) subsidy is available.

3.2.4 Steps taken in Year 2025 for expediting implementation of PM KUSUM Scheme:

- Meeting organized with lead banks/financial institutions to mobilize the financial support to the farmer.
- Screening Committee headed by Secretary, MNRE reviewed the implementation progress from time to time and accordingly, redistributed the capacities among performing States/ UTs.
- A joint meeting of State Implementing Agencies (SIAs) and vendors was conducted to address and resolve the issues related to implementation of Component-B of PM KUSUM Scheme.
- SIAs have been given timeline of 31.12.2025 for completing the signing of PPAs for solar power plants under Component-A and Component-C(FLS)/ issuing of Wos/ NTP under Component-B and Component-C(IPS).
- Progress review meetings were held with State Addl. Chief Secretaries/ Principal Secretaries/ Secretaries in charge Renewable Energy under Chairmanship of Hon'ble Minister of New and Renewable Energy.
- Progress review meetings were held with SIAs on regular basis.

3.2.5 The following workshops were organized to sensitize states and banks on financing and implementation of PM KUSUM are:

- Regional Workshops on RE in Mumbai – January 2025.
- Regional meet on RE in Jaipur – January 2025
- Bankers' Conclave in Mumbai – February 2025
- Regional meet on RE in Vishakhapatnam – June 2025
- Awareness and capacity-building workshops held across 15 states, reaching over 1,800 participants including farmers, solar manufacturers, vendors, DISCOMs, and financial institutions. These sessions provided a platform for training, demonstrations, and stakeholder interaction – September 2025.
- Regional Workshops on RE during October 2025 (Guwahati).
- Workshop on National and State portal under PM KUSUM Scheme during Nov, 2025.
- As on date all the targeted capacities has been llocated to States/ UTs. The State/UT-wise physical progress under PM KUSUM Scheme as of 31.12.2025 is given in Table 3.1.

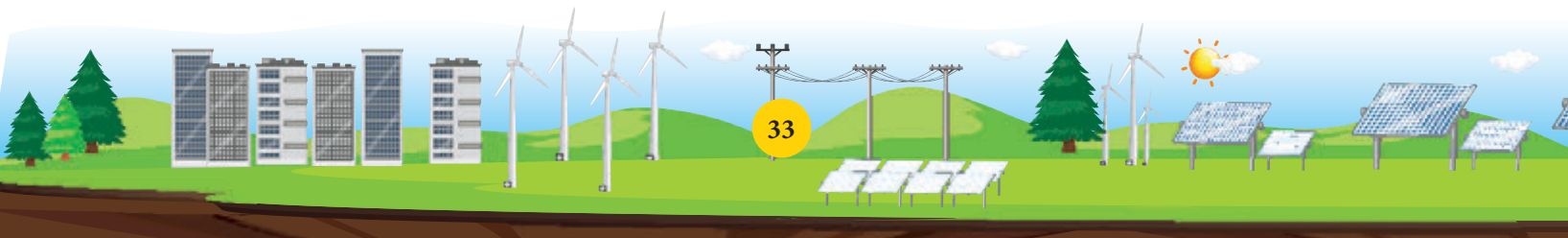


Table 3.1: State-wise Sanctioned Capacities under the Components of PM KUSUM Scheme

As of 31.12.2025

S. No	State/ UT Name	Component-A (In MW)		Component-B (No. of pumps)		Component-C (No. of pumps)		
		Sanctioned	Installed	Sanctioned	Installed	Sanctioned (IPS)	Sanctioned (FLS)	Total Solarized
1	A & N Islands	0.00	0.00	0	0	0	0	0
2	Andhra Pradesh	0.00	0.00	0	0	0	2,00,000	0
3	Arunachal Pradesh	0.00	0.00	700	682	0	0	0
4	Assam	2.00	0.00	4,000	151	0	0	0
5	Bihar	0.00	0.00	0	0	0	1,40,300	0
6	Chhattisgarh	366.00	7.00	0	0	0	10,000	0
7	Goa	24.00	4.00	900	157	0	11,000	700
8	Gujarat	300.00	0.00	22,792	12,700	0	4,67,114	2,25,000
9	Haryana	158.00	28.61	1,97,655	1,83,717	0	2,899	0
10	Himachal Pradesh	100.00	100.00	1,270	1,053	0	0	0
11	Jammu & Kashmir	0.00	0.00	5,000	3,867	0	0	0
12	Jharkhand	0.00	0.00	86,985	46,636	0	0	0
13	Karnataka	0.00	0.00	26,365	2,718	0	7,78,588	65,476
14	Kerala	0.00	0.00	8	8	9,448	22,368	13,553
15	Ladakh	1.00	0.00	1,400	102	0	0	0
16	Madhya Pradesh	1,790.00	60.80	59,400	7,325	0	3,45,000	38,656
17	Maharashtra	260.00	4.00	5,75,000	4,83,616	0	7,75,000	7,11,492
18	Manipur	0.00	0.00	450	150	0	0	0
19	Meghalaya	0.00	0.00	2,735	98	0	0	0
20	Mizoram	0.00	0.00	1,700	40	0	0	0
21	Nagaland	0.00	0.00	265	149	0	0	0
22	Odisha	90.00	0.00	18,441	12,042	0	5,223	0
23	Puducherry	0.00	0.00	72	0	0	0	0

24	Punjab	0.00	0.00	18,048	17,841	186	0	0
25	Rajasthan	5,250.00	512.50	1,44,752	1,21,940	2,138	4,00,000	1,39,637
26	Tamil Nadu	3.00	3.00	5,187	5,070	0	0	0
27	Telangana	1,650.00	0.00	20,000	0	28,000	0	0
28	Tripura	5.00	0.00	11,114	6,810	3,600	0	788
29	Uttar Pradesh	1.00	1.00	1,07,266	66,568	12,000	3,70,000	6,246
30	Uttarakhand	0.00	0.00	3,685	1,787	0	0	0
31	West Bengal	0.00	0.00	0	0	20	0	4
	Total	**10,000.00**	**720.91**	**13,15,190**	**9,75,227**	**55,392**	**35,27,492**	**12,01,552**

IPS: Individual Pump Solarization, FLS: Feeder Level SolarizationNote: No demand received or allocated capacity surrendered/ cancelled for low progress for States/ UTs not shown above

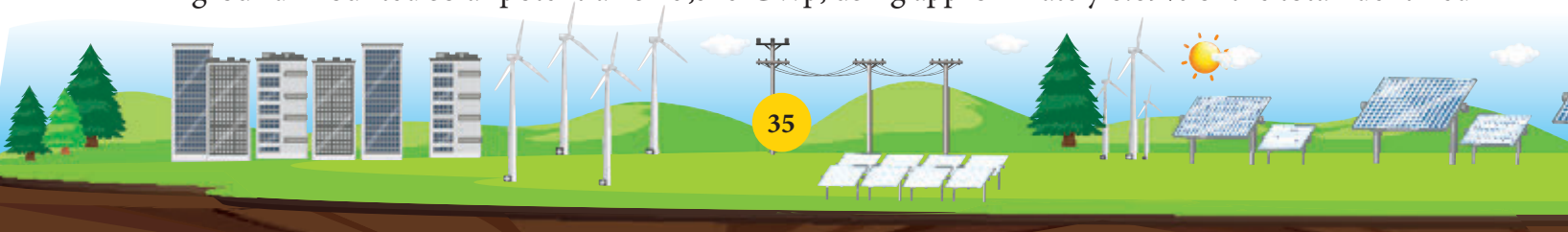
3.3 Grid Connected Solar Projects

The Government had set a target of 100 GW of installed solar power capacity in the country by 2022 under the National Solar Mission (NSM). Further, as per the target announced in the COP26, 500 GW of non-fossil-based capacity is proposed to be achieved by 2030. The Optimal Generation Mix 2030 Report of Central Electricity Authority estimates addition of around 292 GW solar capacity by 2029-30. The target is planned to achieve through various policy decisions and schemes such as Scheme for Development of Solar Parks and Ultra-Mega Solar Power Projects, Central Public Sector Undertaking (CPSU) Scheme Phase-II (Government Producer Scheme), Production Linked Incentive scheme for 'National Programme on High Efficiency Solar PV Modules', Pradhan Mantri Kisan Urja Suraksha and Utthaan Mahaabhiyan (PM KUSUM), PM Surya Ghar Muft Bijli Yojana etc.

3.3.1 Achievements

As on 31.12.2025, a cumulative solar power capacity of 132.85 GW has been installed in the country. This includes 100.80 GW from ground-mounted solar, 23.16 GW from rooftop solar, 3.34 GW from solar component of hybrid projects & 5.55 GW from off-grid solar. In addition to this, a capacity of around 128.36 GW is under implementation and 46.93 GW of solar/hybrid/RTC/ FDRE projects are under tendering stage. It is expected that the solar power projects of capacity around 34 GW will be commissioned during this Financial Year 2025-26 including capacity from the Off-grid & Rooftop Solar.

Based on the "Solar PV Potential Assessment of India (Ground-Mounted)" report of National Institute of Solar Energy (NISE), which was released by Shri. Pralhad Joshi, Hon'ble Minister of Consumer Affairs, Food and Public Distribution and New and Renewable Energy, the feasible ground-mounted solar potential is ~3,343 GWp, using approximately 6.69% of the total identified



feasible wasteland. State-wise details of estimated solar energy potential in the country are given in Table-3.2.

Table-3.2 State-wise estimated Solar Energy Potential in the Country

Sr. No	States	Potential (GW_p)
1	Andaman & Nicobar Islands	0.59
2	Andhra Pradesh	299.31
3	Arunachal Pradesh	0.47
4	Assam	19.17
5	Bihar	32.99
6	Chandigarh	0.02
7	Chhattisgarh	126.48
8	DNHDD	0.50
9	Delhi	0.55
10	Goa	6.75
11	Gujarat	243.22
12	Haryana	6.47
13	Himachal Pradesh	21.50
14	Jammu and Kashmir	8.59
15	Jharkhand	51.83
16	Karnataka	223.28
17	Kerala	12.40
18	Ladakh	8.56
19	Madhya Pradesh	318.97
20	Maharashtra	486.68
21	Manipur	2.29
22	Meghalaya	14.67
23	Mizoram	0.61
24	Nagaland	0.19
25	Odisha	139.47
26	Puducherry	0.20
27	Punjab	9.21
28	Rajasthan	828.78

29	Sikkim	0.25
30	Tamil Nadu	204.77
31	Telangana	140.45
32	Tripura	9.11
33	Uttar Pradesh	97.84
34	Uttarakhand	4.44
35	West Bengal	22.74
	Total	**3,343.37**

The new report builds on the earlier 2014 estimate of 749 GWp and incorporates cutting-edge methodologies, including high-resolution GIS, satellite-derived datasets, and refined land-use models.

Key methodological features:

- High-resolution geospatial analysis to identify feasible solar sites.
- Integration of infrastructure and technical design factors, such as inter-row spacing, shading, proximity to substations and road networks.

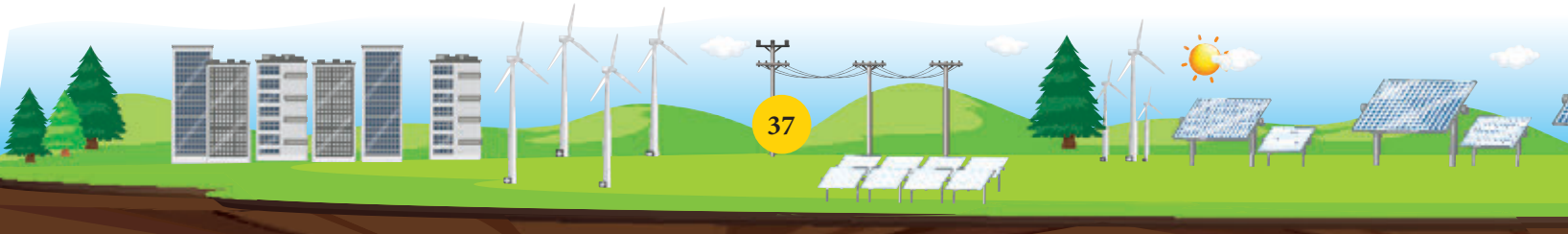
3.4 Scheme for Development of Solar Parks and Ultra Mega Solar Power Projects:

The Scheme for "Development of Solar Parks and Ultra Mega Solar Power Projects" was rolled out on 12-12-2014 with aggregate capacity 20,000 MW. Further, the capacity of the Solar Park Scheme was enhanced from 20,000 MW to 40,000 MW on 21-03-2017 to set up at least 50 Solar Parks. The timeline of the scheme is up to 2028-29

Solar Park is a large chunk of land developed with all necessary infrastructures and clearances for setting up of solar projects. The capacity of the Solar Parks is generally 500 MW and above. However, smaller parks (up to 20 MW) are also considered in States/UTs where there is shortage of non-agricultural land.

Under the scheme, the Ministry provides Central Financial Assistance (CFA) of up to Rs. 25 lakh per Solar Park for preparation of Detailed Project Report (DPR). Beside this, CFA of up to Rs. 20.00 lakh per MW or 30% of the project cost, including grid-connectivity cost, whichever is lower, is also provided on achieving the milestones prescribed in the scheme. The total Central Grants approved under the Scheme is Rs. 8100.00 crore (Rupees Eight Thousand and One Hundred Crore).

Solar Energy Corporation of India (SECI) & Indian Renewable Energy Development Agency (IREDA) implement the scheme and handle the fund being made available under the scheme on behalf of Government of India.



3.4.1 Selection of Solar Power Park Developers

The Solar Parks are developed in collaboration with the State Governments & their agencies, CPSUs and private entrepreneurs. The Solar Park implementing agency is termed as Solar Power Park Developer (SPPD) and are selected in any of the eight modes as per the Solar Park Scheme. The various modes for selection of SPPD and eligibility of CFA under various modes are given at Table 3.3:

Table 3.3: Different Modes under which Solar Power Parks are developed

Mode	Brief Description	CFA Pattern
Mode-1	The State designated nodal agency or a State Government Public Sector Undertaking (PSU) or a Special Purpose Vehicle (SPV) of the State Government.	Rs 12 lakh/MW or 30 % of the project cost, whichever is lower, to SPPD for development of internal infrastructure, and Rs 8 lakh/ MW or 30 % of the project cost, whichever is lower, to the CTU/STU for creation of external transmission infrastructure.
Mode-2	A Joint Venture Company of State designated nodal agency and Solar Energy Corporation of India Ltd (SECI).	
Mode-3	The State designates SECI as the nodal agency	
Mode-4	(i) Private entrepreneurs with/without equity participation from the State Government	
Mode-5	(ii) Selection of private entrepreneurs based on open transparent bidding process.	
Mode-6	Central Public Sector Undertakings (CPSUs) like SECI, NTPC etc.	No CFA
Mode-7	Private entrepreneurs without any Central Financial Assistance from MNRE	Rs 20 lakh/MW or 30% of the project cost, whichever is lower, for external transmission infrastructure only.
Mode-8	SECI will act as the Solar Power Park Developer (SPPD) for Renewable Energy Parks CPSU/ state PSU/ Government organisation/ their subsidiaries or the JV of above entities can act as SPPD.	Rs 20 lakh/MW or 30% of the project cost, whichever is lower, for internal infrastructure only.

3.4.2 Progress of Solar Park Scheme

The progress of Solar Park Scheme as on 31-12-2025 is given below:

1. **Capacity approved:** Based on the proposals received from the States, 55 Solar Parks of aggregate capacity 39,973 MW have been approved to 13 States. These Solar Parks are at different stages of development. The list of parks is given in Table-3.4 below.
2. **Commissioned capacity of solar projects inside Solar Parks:** Solar projects of aggregate capacity 16,121 MW have been commissioned inside various Solar Parks as given in the Table below:

Table-3.4: List of Solar Parks as on 31-12-2025

Sl. No.	State	Name of Park	Capacity sanctioned (MW)	Projects installed (as on 31.12.2025) (MW)
1.	Andhra Pradesh	Ananthapuramu-I Solar Park	1400	1400
2.		Kurnool Solar Park	1000	1000
3.		Kadapa Solar Park	1000	750
4.		Ananthapuramu-II Solar Park	500	400
5.		Ramagiri Solar Park, Ananthapuramu district	300	0
6.	Chhattisgarh	Rajnandgaon Solar Park	100	100
7.	Gujarat	Radhnesada Solar Park, Banaskantha district	700	700
8.		Dholera Solar Park, Ahmedabad district	1000	300
9.		NTPC RE Park, Kutch district	4750	1332
10.		GSECL RE Park, Kutch district	3325	0
11.		GIPCL RE Park Ph-I, Kutch district	600	600
12.		GIPCL RE Park Ph-II, Kutch district	1200	0
13.		GIPCL RE Park Ph-III, Kutch district	575	0
14.	Jharkhand	SECI Floating Solar Park, Ranchi district	100	0
15.		DVC Floating Solar Park Ph-II, Dhanbad	234	0
17.	Jharkhand & West Bengal	Floating Solar Park Ph-I, Tilaiya Dam (Jharkhand) & Panchet Dam (in Jharkhand & partly in West Bengal)	755	0
18.	Karnataka	Pavagada Solar Park, Tumkur	2000	2000
19.	Kerala	Kasargod Solar Park	105	105
20.		Floating Solar Park, Kollam	50	0
21.		Kasargod Solar Park Ph-II	100	0

22.	Madhya Pradesh	Rewa Solar Park	750	750
23.		Mandsaur Solar Park	250	250
24.		Neemuch Solar Park	500	330
25.		Agar Solar Park	550	550
26.		Shajapur Solar Park	450	450
27.		Omkareswar Floating Solar Park, Khandwa	518	278
28.		Barethi Solar Park, Chhatarpur	630	0
29.		Morena Park	600	0
30.		Dhar Solar Park	200	0
31.	Maharashtra	Sai Guru Solar Park, Dhule	500	0
32.		Dondaicha Solar Park, Dhule	250	100
33.		Patoda Solar Park, Beed	250	0
		Erai Floating Solar Park, Chandrapur	105	0
34.	Mizoram	Vankal Solar Park, Champai	20	20
35.	Odisha	Solar Park by NHPC, Ganjam	40	0
36.	Rajasthan	Bhadla-II Solar Park, Jodhpur	680	680
37.		Bhadla-III Solar Park, Jodhpur	1000	1000
38.		Bhadla-IV Solar Park, Jodhpur	500	500
39.		Phalodi-Pokaran Solar Park	750	750
40.		Fatehgarh Phase-1B Solar Park, Jaisalmer	421	421
41.		Nokh Solar Park, Jaisalmer	925	925
42.		Pugal Solar Park Ph-I, Bikaner	1000	0
43.		Pugal Solar Park Ph-II, Bikaner	1000	0
44.		Pugal Solar Park Ph-III, Bikaner	450	0
45.		RVUN Solar Park, Bikaner	2000	0
46.		Bodana Solar Park, Jaisalmer	2000	0

47.	Uttar Pradesh	Solar Park in UP (Jalaun, Allahabad, Mirzapur & Kanpur Dehat)	365	365
48.		Jalaun Solar Park	1200	0
49.		Mirzapur Solar Park	100	0
50.		Kalpi Solar Park, Jalaun	65	65
51.		Lalitpur Solar Park	600	0
52.		Jhansi Solar Park	600	0
53.		Chitrakoot Solar Park	800	0
54.		Kanpur Dehat Park	75	0
		Kanpur Nagar Park	35	0
Total			**39973**	**16121**

3.5. Scheme for "Installation of grid-connected solar project & various off-grid applications for 100% Solarization of Konark Sun Temple & Konark Town"

The administrative guidelines of the Scheme for solarisation of Konark sun-temple & Konark city has been issued on 19.05.2020 with support of total CFA of around Rs. 25.00 crores as a high visibility project. Odisha Renewable Energy Development Agency (OREDA) is implementing this scheme. All off-grid applications are already commissioned and the 10 MW grid connected solar project is under implementation.

3.6. Setting up of grid-connected Solar PV Project of capacity 25 MW(AC)/50 MW (DC) with battery storage of 50 MWh under J&K Prime Minister Development Package (PMDP) – 2015

Ministry sanctioned this project of capacity 25 MWac/50 MWdc with battery storage of 50 MWh at Taru, Leh under J&K Prime Minister Development Package (PMDP) – 2015 on 08.11.2021 with a financial support of Rs. 250 crores. The project is being implemented by SECI under EPC mode and is under implementation.

3.7 One Sun One World One Grid

Hon'ble Prime Minister of India had called for connecting the global solar resources through the vision of 'One Sun One World One Grid' (OSOWOG) with the concept that 'The Sun Never Sets' and is always shining at some geographical location, globally, at any point of time.

MNRE is conducting a study for developing the long-term vision, implementation plan, road map and institutional framework for implementing the initiative of OSOWOG. The International Solar Alliance is the implementing agency of the study. The study is being conducted by a consortium of consultants; Électricité de France (EDF), Application Européenne de Technologies et de Services (AETS), and The Energy and Resources Institute (TERI). The Phase-I of the study is complete and the balance study is underway.

The Ministry of Power has also constituted a Task Force in November, 2021 to identify and study the aspects (technical, operational, legal, regulatory, commercial and institutional) of grid interconnection in South Asia, South East Asia, Middle East (GCC), Africa, Europe etc.

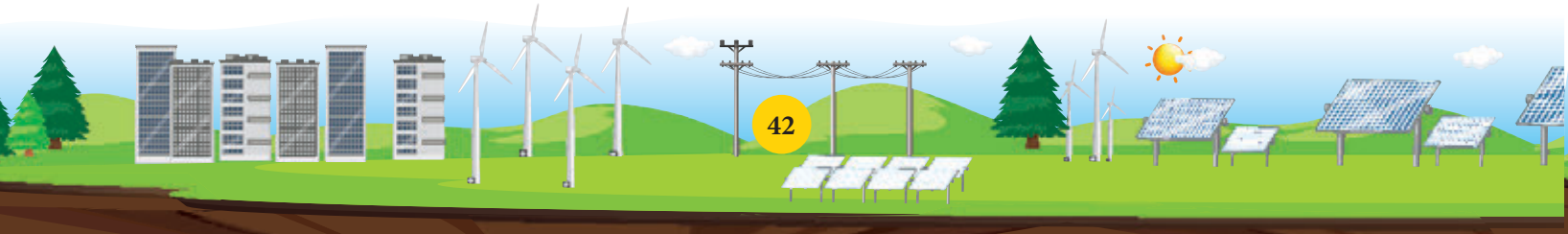
Table 3.5: Capacities allotted till 31.12.2025 under CPSU Scheme Phase-II

Sl. No.	Name of Government entity	Total Capacity of solar PV power plants allotted (MW)	Capacity Commissioned (MW)					
			FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26 (till 31.12.2025)	Total (MW)
1.	**NTPC Limited**	3682	200	1232	110	395	1523	3460
2.	**The Singareni Collieries Company Limited**	171	90	5		21.5		116.5
3.	**Delhi Metro Rail Corporation Limited**	3	3					3
4.	**Assam Power Distribution Company Limited**	30						Cancel led
5.	**NHDC Ltd.**	25						Cancel led
6.	**Nalanda University**	5			5			5
7.	**Indore Municipal Corporation**	100*						0
8.	**SJVN Limited**	1000				242	758	1000
9.	**NLC India Limited**	510			10		159	169
10.	**NHPC Limited**	1000					300	300
11.	**IRCON International Limited**	500				150	250	400
12.	**Solar Energy Corporation of India Limited**	1200						0
	TOTAL	**8226**	**293**	**1237**	**125**	**808.5**	**2990**	**5453.5**

**Note: 40 MW out of 100 MW awarded to Indore Municipal Corporation have been cancelled.*

3.8 Off Grid And Decentralised Solar Pv Applications Programme

Under the Off-Grid and Decentralized Solar PV Applications Programme, Ministry provided Central Financial Assistance (CFA) for the deployment of Solar Street Lights, Solar Study Lamps/ Lanterns, Solar Home Lighting Systems, Standalone Solar Pumps and Solar Power Packs to meet the electricity and lighting needs of local communities, institutions, and individuals mainly in



rural areas. The Phase-III of the Programme was closed in March 2021 and further continuation of the Programme was not agreed.

3.9 Framework For Promotion Of Decentralised Renewable Energy (Dre) Livelihood Applications

The Ministry issued a Framework on 14.02.2022 for the Promotion of Decentralized Renewable Energy (DRE) Livelihood Applications to facilitate the development of an enabling ecosystem for widespread access and to promote sustainable livelihoods through DRE in the country, including rural and remote areas.

3.10 Solarisation Of Forward Defense Locations (FDLS)

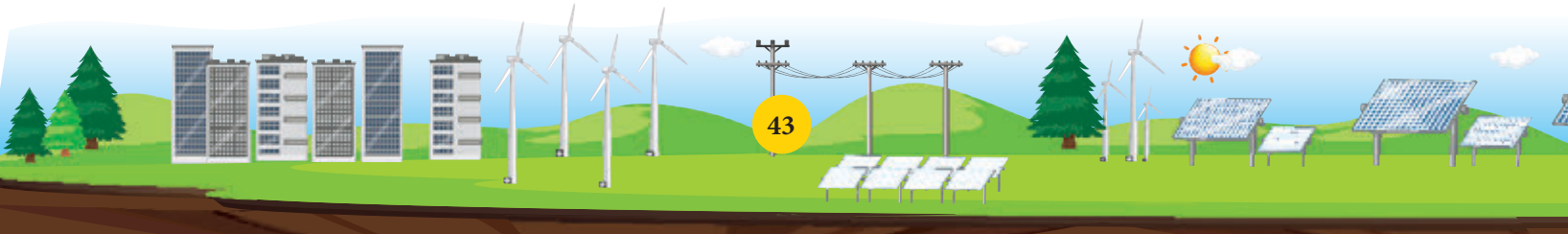
The Ministry in August 2022 had sanctioned a project for the Solarisation of 115 Forward Defense Locations (FDLs) of the Border Security Force (BSF) at Jammu & Kashmir Frontier with a total Off-grid Solar PV capacity of 1.21 MWp and Central Financial Assistance (CFA) of Rs.16.73 Cr. The BSF has completed the tender process and issued a Letter to Awards (LoA) to the selected vendors. The timelines for completion of balance FDLs have been extended up to August 2025. It has been reported that solarisation of 60 FDLs have been completed under the Project as on 31.12.2025.

3.11 New Solar Power Scheme (For Tribal And Pvtg Habitations/ Villages)

The Union Cabinet in November 2023, approved Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM JANMAN) to focus on eleven critical interventions through Nine-line Ministries for implementation. The Mission, inter-alia, covers implementation of New Solar Power Scheme (for Particularly Vulnerable Tribal Groups (PVTG) Habitations/Villages) for electrification of one lakh number of un-electrified households (HHs) in PVTG areas located in 18 States, by provision of off-grid solar systems where electricity supply through grid is not techno-economically feasible. In addition, the New Solar Power Scheme has a provision for providing solar lighting in 1500 Multi-Purpose Centers (MPC) in PVTG areas where electricity through grid is not available. The implementation guidelines were issued in January 2024.

The Union Cabinet in September 2024 approved Pradhan Mantri Janjatiya Unnat Gram Abhiyan for improving the socio-economic condition of tribal communities, by adopting saturation coverage for tribal families in tribal-majority villages and aspirational districts. The Mission will cover around 63,000 tribal majority villages in 549 districts and 2,740 blocks spread across 30 State/ UTs benefitting more than 5 crore tribal people. The mission was later renamed as Dharti Aaba Janjatiya Gram Utkarsh Abhiyan (DA JGUA). The mission inter-alia, provides scaling up of the New Solar Power Scheme covering:

- Electrification of One Lakh un-electrified households (HHs) in Tribal and PVTG areas identified by Ministry of Tribal Affairs (MoTA) by provision of off-grid solar systems.



- Providing off-grid solar lighting in 1500 Multi-Purpose Centres (MPCs) in PVTG areas as approved under PM JANMAN.
- Solarisation of 2000 public institutions through off-grid solar systems.

The off-grid solar systems shall be provided only where electricity supply through grid is not techno-economically feasible.

Accordingly, Ministry issued the guidelines for New Solar Power Scheme (for Tribal and PVTG Habitations/Villages) under PM JANMAN and DA JGUA in October 2024. The financial outlay approved for the scheme is given below:

Sl. No.	Components	Central Share (100%)	Approved Financial Outlay (in Rs. Crore)	Timeline
1	Provision of 0.3 kW Solar off-grid system for 1 lakh Tribal and PVTG HHs	Rs. 50,000 per HH or as per actual cost	500	FY 2023-24 to FY 2025-26
2	Solar street lighting and provision of lighting in 1500 MPCs of PVTG areas	Rs. 1 lakh per MPC	15	
3	Solarisation of 2000 public institutions through off-grid solar systems	Rs 1 lakh per kW	400	FY 2024-25 to FY 2028-29

Based on the proposals received from States under the Scheme (PM JANMAN Component), 8823 un-electrified PVTG households (HHs) (after cancellation of few households by the States as they were electrified through grid) have been sanctioned for electrification through off-grid solar PV systems in eight States namely Andhra Pradesh, Chhattisgarh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Telangana and Tripura. The State implementing agencies have reported electrification of 6154 households against sanctioned 8823 households as on 30.11.2025.

Based on the proposals received from States under the Scheme (DA JGUA Component), Ministry has sanctioned electrification of total 4099 un-electrified Tribal households (HHs) through off-grid solar PV in two states namely Arunachal Pradesh and Manipur and 8 nos. of Public Institutions in Assam.

3.12 Green Energy Corridor

3.12.1 Intra-State Transmission System Green Energy Corridor Phase-I

i. The InSTS GEC scheme with total target of approx. 9767 ckm intra-state transmission lines and approx. 22689 MVA sub-stations was approved by the Cabinet Committee on Economic Affairs (CCEA) in 2015. The InSTS GEC scheme is currently under implementation by the State Transmission Utilities (STUs) of 8 RE rich States, i.e. Andhra Pradesh, Gujarat,

Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan & Tamil Nadu. The project cost is Rs. 10,141.68 crore with funding mechanism consisting of 40% central grant from MNRE (Rs. 4056.67 crore), 40% loan from KfW Germany (EUR 500Million) and 20% equity by the STUs. The projects are being set up for evacuation of approx. 24 GW of RE power in the above 8 States.

ii. As on 31.12.2025, 9170 ckm of transmission lines have been constructed and 22116 MVA of substations have been charged. Out of the 8 States, 6 have completed all the projects, viz. Rajasthan, Madhya Pradesh, Tamil Nadu, Andhra Pradesh, Himachal Pradesh and Karnataka. The remaining two states viz., Maharashtra and Gujarat, have been given the extension up to March 2026. The delay is mainly due to forest clearances, right of way (RoW) and GIB issues. As on 31.12.2025, cumulative grant of Rs. 2839.104 crore has been disbursed to the States.

3.12.2 Intra-State Transmission System Green Energy Corridor Phase-II

i. The InSTS GEC-II scheme with total target of 10753 ckm intra-state transmission lines and 27546 MVA sub-stations (revised to 7919 ckm & 22448 MVA) was approved by the CCEA in January 2022. The InSTS GEC-II scheme is currently under implementation by the State Transmission Utilities (STUs) of 7 States, i.e. Gujarat, Himachal Pradesh, Karnataka, Kerala, Rajasthan, Tamil Nadu and Uttar Pradesh. The scheduled commissioning timeline for the projects under this scheme is March 2026.

ii. The project cost is Rs. 12031.33 crore with central financial assistance from MNRE of Rs. 3970.34 crore (i.e. 33% of project cost). The projects are being set up for evacuation of approx. 20 GW of RE power in the above 7 States. There are total 91 packages and currently, these are under various stages of tendering. As on 31.12.2025, a total of 75 packages have been tendered out of total 91 packages in which 73 have been awarded.

3.12.3 Green Energy Corridor - Inter-State Transmission System for 13 GW RE Projects in Ladakh

i. Ministry of New & Renewable Energy plans to set up 13000 MW RE (9000 MW Solar + 4000 MW Wind) along with 12000 MWh Battery Energy Storage System (BESS). An Inter-State Transmission System would be set up for power evacuation and grid integration of the 13 GW RE projects in Ladakh and despatch of power from the U.T. of Ladakh to other parts of the country. The project will also ensure reliable power supply to the Ladakh region as well as Jammu & Kashmir.

ii. POWERGRID is the implementing agency for this project. The project cost for this transmission project works out to Rs. 20,773.70 crore (excluding IDC of Rs. 2168.69 crore)

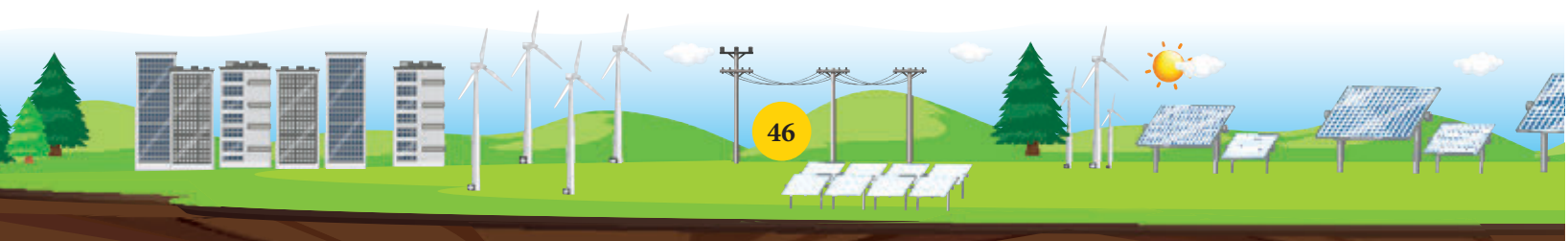
and the central grant will be 40% of project cost is Rs. 8,309.48 crore. The project is anticipated to be completed by FY 2029-30. Under this project, 1268 ckm transmission lines and 2 Nos. of HVDC terminals of 5000 MW capacity each would be setup.

iii. The transmission project has been approved by the Cabinet Committee on Economic Affairs (CCEA) on 18.10.2023. Sanction order along with project implementation guidelines has been issued on 15.02.2024.

iv. Current status of transmission infrastructure:

- Front End Engineering and Design (FEED-1) Study completed.
- NIT for HVDC Terminal Package (2-Stage bidding) in DCB Mode published on 18.07.2024 (Award by March 2025).
- No response received even after several bid submission extension.
- On the request of bidder, MoP allowed GCB on 27.12.2024
- NIT with GCB Mode published: 21.01.2025
- Stage-1 Technical Bid opened: 16.04.2025
- LIDAR Survey for Pang-Kaithal HVDC transmission line and 220kV Pang-Phyang transmission line corridor 50% completed.

v. The scheme is currently under review based on findings from FEED studies.





Wind: On-Shore And Off-Shore

4.1. Wind Energy

4.1.1. Introduction

India's wind energy sector is led by indigenous wind power industry and has shown consistent progress. The expansion of the wind industry has resulted in a strong ecosystem, project operation capabilities and manufacturing base of more than 20,000 MW per annum. The country currently has the fourth highest wind installed capacity in the world with a total installed capacity of 54.51 GW (as on 31.12.2025) of which 6.34 GW was added during January to December, 2025. The number of units generated from wind power projects from 01.01.2025 to 01.12.2025 was 104 billion units, which contributed 5.73% of total electricity generation in the country.

4.1.2. Potential of Wind Energy in India

Wind is an intermittent and site-specific source of energy and therefore, an extensive Wind Resource Assessment is essential for the selection of potential sites. Over a period of time, the Ministry, through National Institute of Wind Energy (NIWE), has installed about 916 wind-monitoring stations all over the country and issued wind potential maps at 50 m, 80 m, 100 m, 120 m and 150 m above ground level. The latest assessment indicates gross wind power potential of 1163.85 GW in the country at 150 m above ground level. Most of this potential exists in eight windy States as given in Table 4.1 below:

Table 4.1: Wind Power Potential in India at 150 meter above ground level (agl)

S. No.	State	Wind Power Potential at 150 mtragl (GW)
1	Andhra Pradesh	123.33
2	Gujarat	180.79
3	Karnataka	169.25
4	Madhya Pradesh	55.42
5	Maharashtra	173.86
6	Rajasthan	284.25
7	Tamil Nadu	95.1
8	Telangana	54.71
	Total (8 windy states)	1136.71

	Other States	27.14
	All India Total	1163.85

The wind atlas is available on the NIWE's website http://www.niwe.res.in and wind potential map at 150 m above ground level is given below in Fig. 4.1.

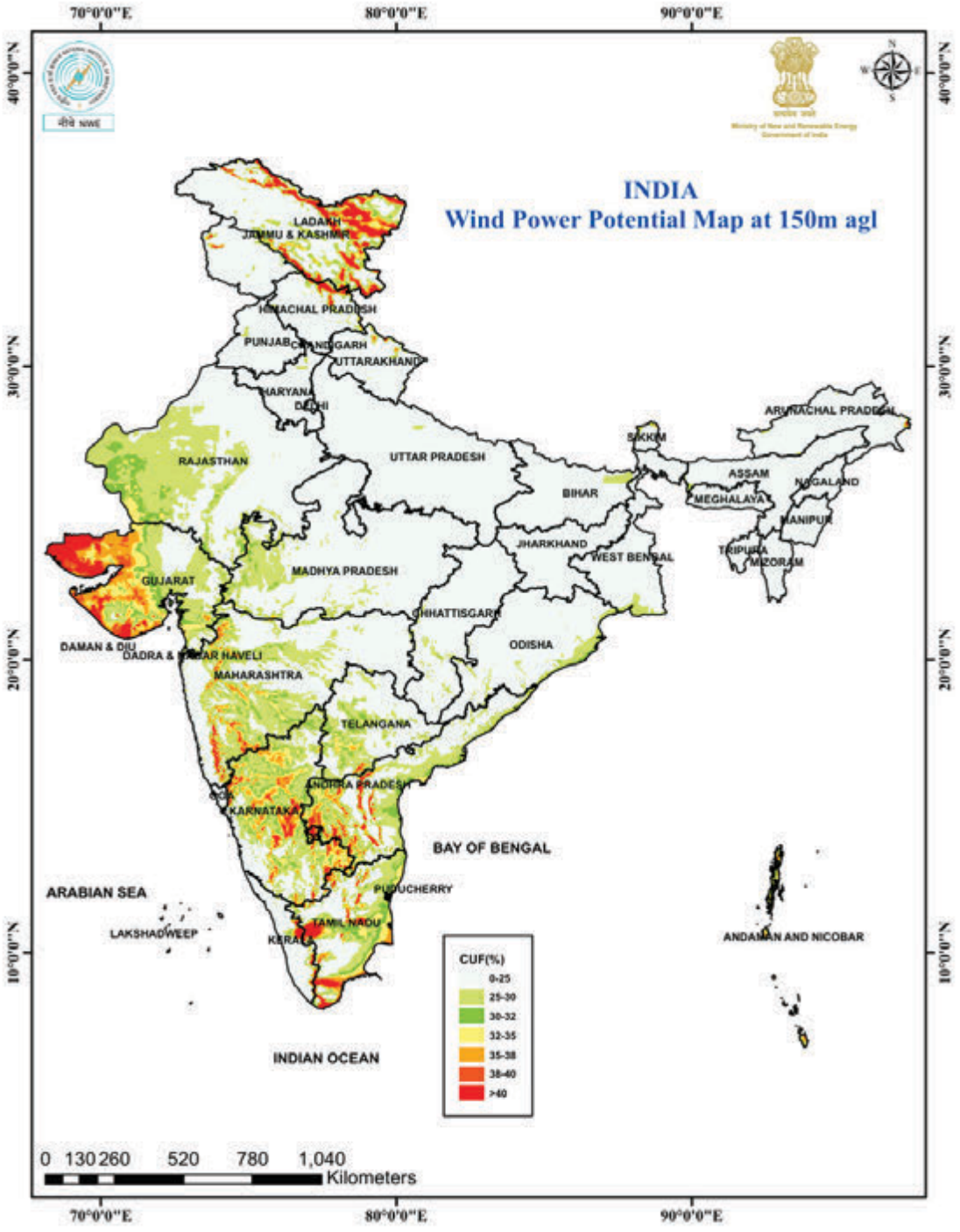


Fig. 4.1. Wind Potential Map at 150 meters above ground level

4.1.3. Installed Capacity of Wind Power in the country

The installed capacity of grid-interactive wind power in the country as on 31.12.2025 is 54.51 GW and state wise installed capacity (in MW) is shown in Table 4.2.

Table 4.2: State wise Wind Power Installed as on 31.12.2025

S. No.	State	Installed Capacity (MW)
1	Andhra Pradesh	4397.78
2	Gujarat	14820.935
3	Karnataka	8413.64
4	Kerala	71.525
5	Madhya Pradesh	3548.15
6	Maharashtra	5822.01
7	Rajasthan	5229.145
8	Tamil Nadu	12075.34
9	Telangana	128.1
10	Others	4.3
	Total (MW)	**54510.925**

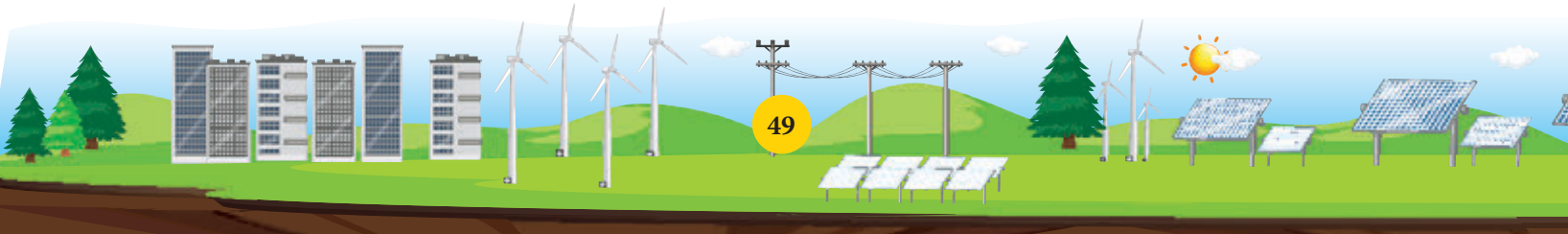
The year-wise electricity generation from wind energy source is shown in Table 4.3.

Table 4.3: Year wise Electricity Generation from Wind Energy Sources

S. No.	State	Generation (MU)
1	2015	32741
2	2016	43452
3	2017	52629
4	2018	60312
5	2019	63313
6	2020	60427
7	2021	68094
8	2022	70045
9	2023	82106
10	2024	81544
11	2025	104006

4.1.4. Technology development and manufacturing base for Wind Power

The Wind Turbine Generator technology has evolved and state-of-the-art technologies are available in the country for the manufacture of wind turbines. Around 70-80% localization has been achieved with strong domestic manufacturing capacity for wind energy turbines and its components in the country.



As per the guidelines for Development of Onshore Wind Power Projects, the Approved List of Models and Manufacturers (ALMM-Wind) enlisted turbines are eligible for installation in the country. Further, an amendment to the procedure for enlistment of wind turbines in ALMM (Wind) issued mandating sourcing of Major Wind Turbine Components like blade, tower, Gearbox, Generator and Special Bearings (Yaw, Pitch and Main Bearing) only from manufacturing facilities enlisted in Approved List of Models & Manufacturers (Wind Turbine Components). ALMM enlistment is done based on the recommendation of ALMM committee chaired by JS(Wind) which evaluates Type Certificate, ISO Certificate, Hub, and Nacelle manufacturing/assembly facility in India. The committee meetings are held on a monthly basis. During the period between 01.01.2025 and 31.12.2025, the committee has recommended 03 Nos of new wind turbine models for inclusion and 22 Nos of existing models for updation.

All the major global players in this field have their presence in the country and 34 different models of wind turbines are being manufactured by 15 different companies, through (i) joint ventures under licensed production (ii) subsidiaries of foreign companies, and (iii) Indian companies with their own technology. The unit size of the largest machine has gone up to 5.3 MW.

Wind turbines and components manufactured in India are also being exported to various countries. The current annual production capacity of wind turbines in the country is more than 20,000 MW.

Further, MNRE issued the Standard Operating Procedure (SOP) for ALMM-Wind and ALMM-WTC, detailing the end-to-end process for application, verification, factory inspection, component evaluation and model enlistment.

4.1.5. Tender/bidding in Wind Energy Sector

Government issued Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Wind Power Projects vide resolution notified on 08.12.2017. The Government revised its Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Wind Power Projects vide resolution notified on 26.07.2023. The Guidelines have also been further amended vide notifications dated 17.11.2023, 02.02.2024 and 12.02.2025.

The objectives of the guidelines were to facilitate renewable capacity addition and fulfilment of RCO requirements of distribution licensees; to provide a transparent and standardized procurement framework based on competitive bidding with appropriate risk sharing between stakeholders to enable power procurement at competitive prices; improve bankability while ensuring reasonable return to investors; provide a framework for inter-state/ intra-state, long-term, sale-purchase of power as a further measure to de-risk the sector.

The guidelines are applicable to wind power projects of minimum 10 MW capacity for intra-state projects and minimum 50 MW for inter-state projects. The salient features include capacity allocation through bucket filling method; consideration of already built-up untied capacity for

participation in bid; PPAs for 20 years with extension up to 25 years and generation compensation in case of grid unavailability or reduced offtake.

4.1.6. Status of tenders for Wind Power Projects

To enable DISCOMs of the non-windy States to fulfil their Wind Renewable Consumption Obligation (RCO), through purchase of wind power at a tariff determined by transparent bidding process, MNRE through Renewable Energy Implementation Agencies (SECI, NTPC, NHPC and SJVN) auctioned wind power capacity in various tranches. Further states like Gujarat, Maharashtra and Tamil Nadu have also auctioned wind power capacities.

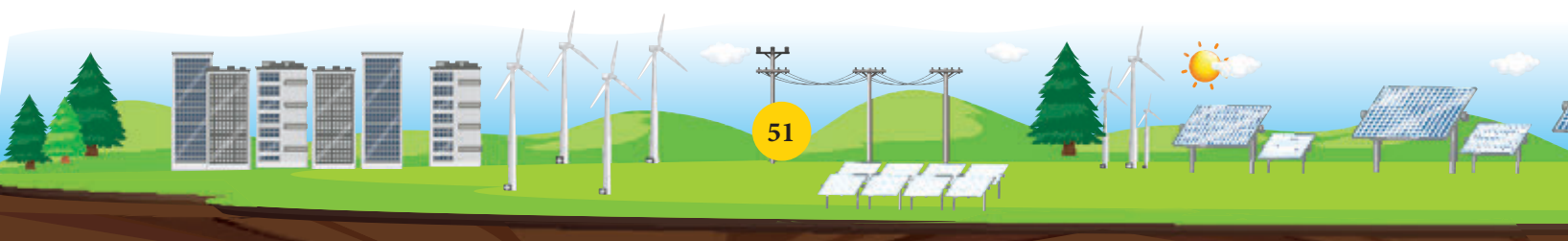
1. Cumulative commissioned capacity till 31/12/25: 54.51 GW
2. Capacity under implementation: 30.04 GW
3. Total ongoing bids: 1.8 GW

   Total (1+2+3): 86.355 GW

The details of capacity awarded under REIA wind bids are shown in **Table 4.4.**

Table 4.4: Details of REIA Tenders auctioned for Wind Power

S. No.	Bidding Agency	Awarded Capacity (MW) (A)	Cancelled Capacity (MW) (B)	Net Capacity (MW (C=A-B)	Capacity Commissioned (MW)	Bidding Agency Type	Minimum Tariff (Rs. / kWh)
1	SECI Wind-I	1049.9	50	999.9	999.9	Central	3.46
2	SECI Wind-II	1000	239.9	760.1	760.1	Central	2.64
3	SECI Wind-III	2000	1049.8	950.2	950.2	Central	2.44
4	SECI Wind-IV	2000	1276	724	724	Central	2.51
5	SECI Wind-V	1190	568.5	621.5	621.5	Central	2.76
6	SECI Wind-VI	1200	227	973	973	Central	2.82
7	SECI Wind-VII	480	300	180	180	Central	2.79
8	SECI Wind-VIII	440.8	0	440.8	250.71	Central	2.83
9	SECI Wind-IX Blended	970	0	970	862	Central	2.99
10	SECI Wind-X	1200	450	750	750	Central	2.77
11	SECI Wind-XI	1200	750	450	54.6	Central	2.69
12	SECI Wind-XII	1100	300	800	0	Central	2.89
13	SECI Wind-XIII	600	0	600	0	Central	2.9
14	SECI Wind-XIV	690	190	500	0	Central	3.18
15	SECI Wind-XVI	1175	0	1175	0	Central	3.6
16	SECI Wind-XVII	50	0	50	0	Central	3.81



17	NTPC Wind-I	1150	1150	0	0	Central	2.77
18	SJVN Wind-I	170	0	170	0	Central	3.41
19	SJVN Wind-II	312	0	312	0	Central	3.74
	Total	**17977.7**	**6551.2**	**11426.5**	**7126.01**		

4.1.7. Incentives available for Wind Sector

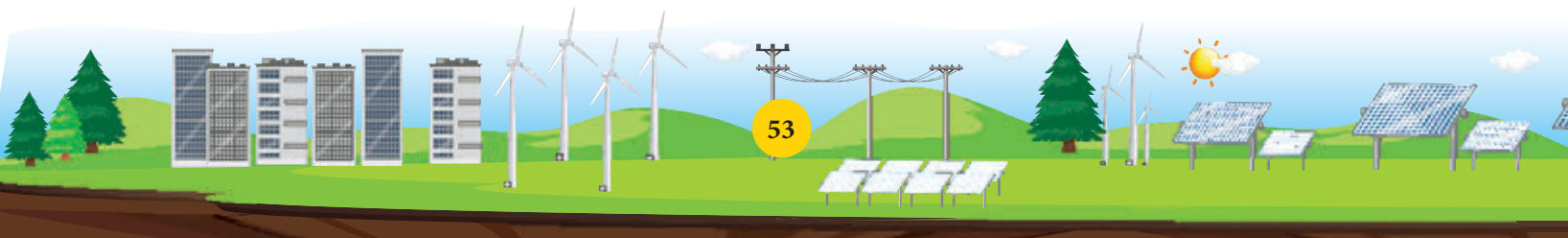
The Government has taken several steps to promote renewable energy, including wind energy, in the country. These, inter alia, include;

- 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.
- 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.
- 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.
- In addition to the above, the following steps have been taken specifically for promoting wind energy.
- Declaration of trajectory for Wind Renewable Consumption Obligation (Wind RCO) up to the year 2030.
- Concessional custom duty exemption on certain components required for manufacturing of wind electric generators. During the period 01.01.2025 to 31.12.2025, about 278 Nos of CCDC certificates issued.
- Generation Based Incentive (GBI) is being provided to the wind projects commissioned on or before 31.03.2017.
- "National Repowering and Life Extension Policy for Wind Power Projects, 2023" has been issued.
- Technical support including wind resource assessment and identification of potential sites through the National Institute of Wind Energy, Chennai,
- Issuance of 'Elevation Certificate' by NIWE for obtaining NOC from Ministry of Defense.
- Ministry also facilitated issuance of No Objection Certificate from Ministry of Defence. In the period between 01.012025 and 31.12.2025, 132 applications have been approved by MoD.
- Strategy for Establishment of Offshore Wind Energy Projects" has been issued indicating various business models for project development.
- The Offshore Wind Energy Lease Rules, 2023 have been notified to regulate the grant of lease of offshore areas for development of offshore wind energy projects.
- VGF Scheme for Offshore Wind Energy Projects" has been launched.
- Ministry also issued the revised guidelines for installation of prototype wind turbine models on 12.06.2025.

4.1.8. Offshore Wind Development in India

India's mainland is blessed with a coastline of about 7600 kms surrounded by seawater on three sides and has tremendous power generation potential from offshore wind energy. Considering this, the Government had notified the National Offshore Wind Energy Policy as per the Gazette Notification dated 06.10.2015. As per the policy, Ministry of New and Renewable Energy will act as the nodal ministry for development of Offshore Wind Energy in India and work in close coordination with other government entities for Development and Use of Maritime Space ithin the Exclusive Economic Zone (EEZ) of the country in an effective manner for production of enormous quantity grid quality electrical power for national consumption.



National Institute of Wind Energy (NIWE), Chennai has been designated as the nodal agency to execute various pre-feasibility activities relating to resource assessment, surveys and studies within EEZ (Exclusive Economic Zone), demarcation of offshore potential blocks and facilitating offshore wind energy project developers for setting up offshore wind energy farms.

Based on the preliminary assessment from satellite data and data available from other sources, potential zones off the coast of Gujarat and Tamil Nadu have been identified (Fig. 4.2 and Fig. 4.3).

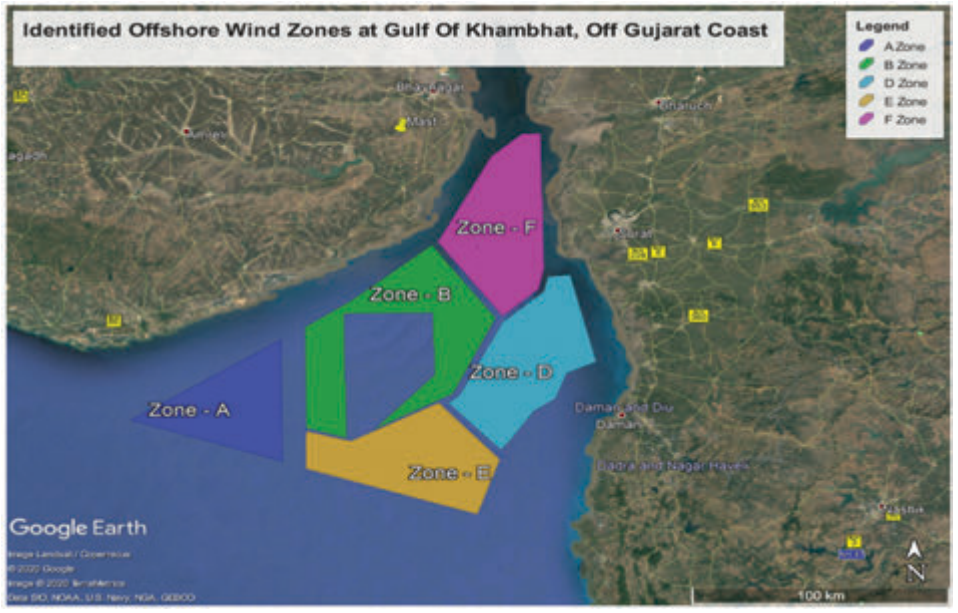


Fig. 4.2. Gujarat Offshore Wind Potential Zone

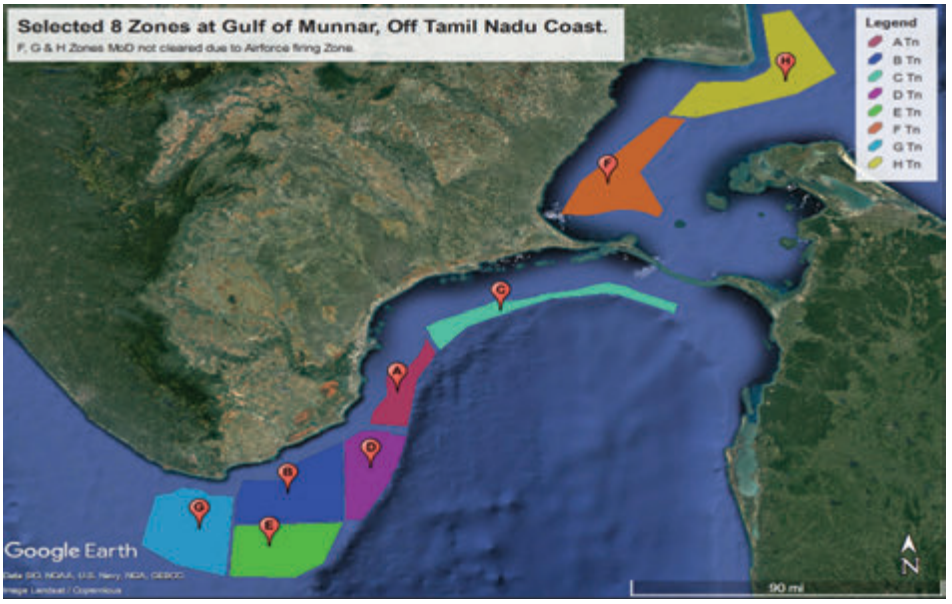


Fig. 4.3. Tamil Nadu Offshore Wind Potential Zone

4.1.9. Studies to Assess the Offshore Wind Potential

1. **Offshore measurements off Gujarat and Tamil Nadu coast**

   LiDAR based offshore wind potential measurements for 2 years have been completed at Gulf of Khambhat off Gujarat coast. The offshore LiDAR wind data measurement report for the first and second years have been published for benefit of stakeholder. Four more LiDARs have been procured by NIWE for carrying out offshore wind resource assessment off Gujarat and Tamil Nadu coast. The LiDARs have already been validated in the WTRS test station, Kayathar. 4 Nos of LiDAR off Tamil Nadu coast (2 at VOC port & 1 at Udangudi thermal coal jetty and one Floating LiDAR off Tamil Nadu coast) have been installed for wind resource measurement.

2. **Geophysical investigation at Gulf of Khambhat off Gujarat coast**

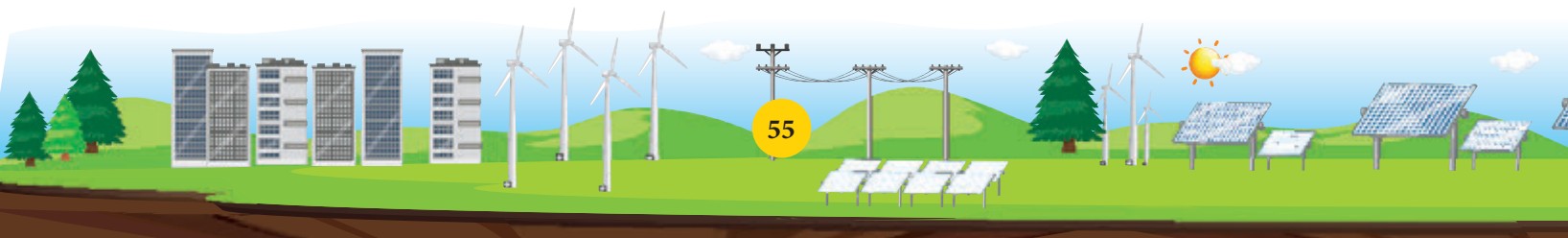
   In order to ascertain the nature of sub sea surface and soil profile available at recommended depths for the design of foundation for offshore structures, a detailed geophysical survey is required to be carried out. Onsite Geo-physical investigation (single beam bathymetry survey, side scan sonar, sub- bottom profiling, and magnetometer survey and sediment samples) covering an area of 365 sq. km for 1GW offshore project in Gulf of Khambhat off Gujarat Coast has been completed. Geophysical investigation for 500 MW site off Tamil Nadu coast has been completed.

3. **Geotechnical Investigation at Gulf of Khambhat and Gulf of Mannar off Tamil Nadu Coast**

   In order to understand the subsoil profile and load bearing capacity of the seabed geotechnical studies were carried out at five locations off the coast of Gujarat. The geotechnical investigations at three locations off the coast of Tamil Nadu have been completed.

4. **Marine Spatial Planning for offshore wind farms in Tamil Nadu**

   Marine Spatial Planning (MSP) for offshore wind projects off the coast of Gujarat and Tamil Nadu were carried out as joint initiatives between India and Denmark to acknowledge the marine traffic movements in the identified offshore zones. Under MSP, the screening of offshore zones was carried out considering various key factors such as wind speed, water depth, marine traffic, oil blocks, environmentally sensitive zones, etc. with an objective to prepare Levelized Cost of Energy (LCOE) Heat maps. The aim was to arrive at the best possible use of the offshore zones for offshore wind farm development in an efficient, safe and sustainable way. Based on the MSP report, the best suitable offshore sites for initial offshore wind projects have been demarcated (Fig 4.4).



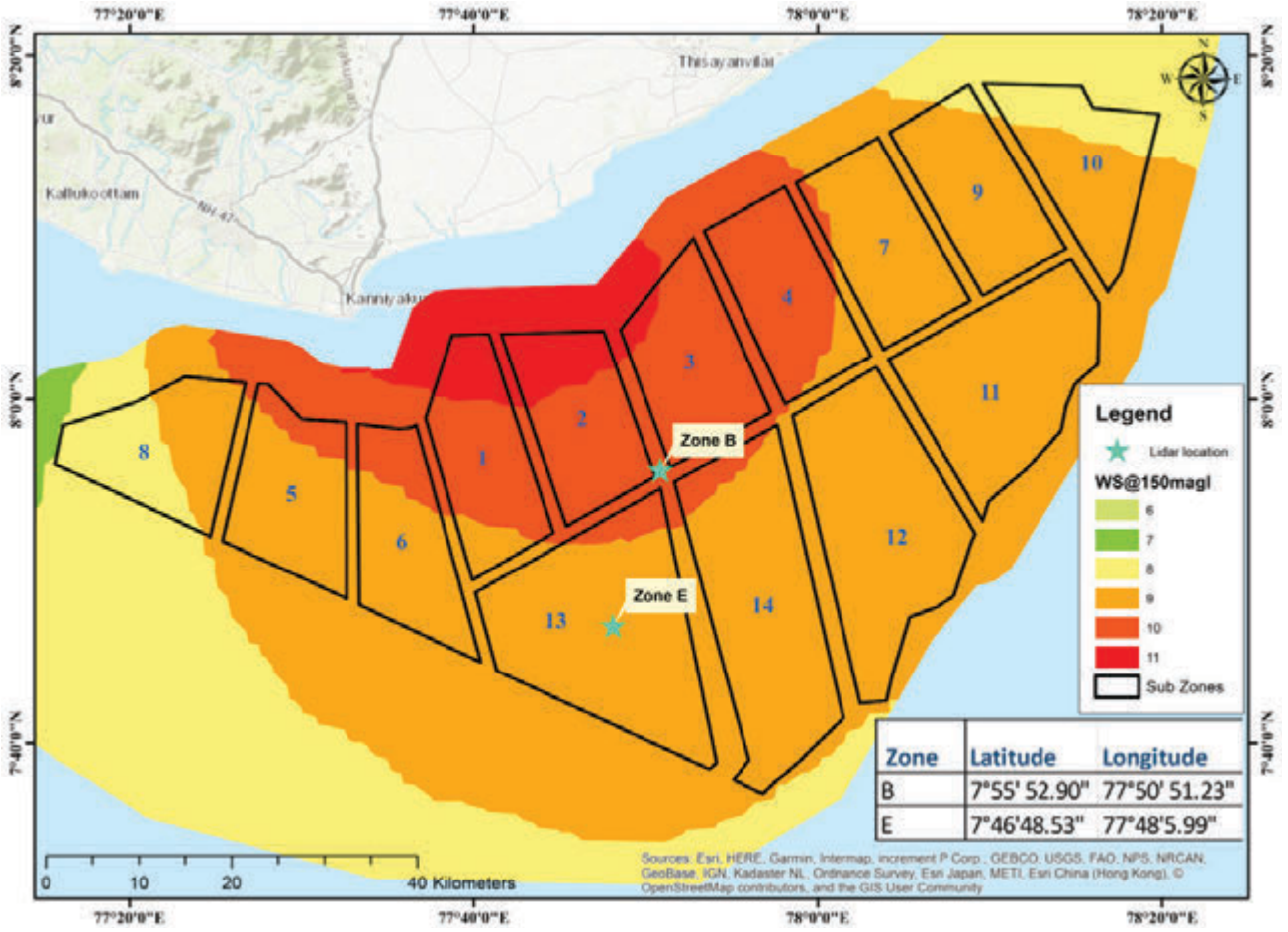


Fig. 4.4. Proposed Sites for Offshore Wind Projects off the coast off Tamil Nadu

4.1.10. Viability Gap Funding (VGF) scheme for offshore wind energy projects

The Union Cabinet has approved the 'Viability Gap Funding (VGF) scheme for offshore wind energy projects' on 19.06.2024 at a total outlay of ₹ 7453 crore, including an outlay of ₹ 6853 crore for installation and commissioning of 1 GW of offshore wind energy projects (500 MW each off the coast of Gujarat and Tamil Nadu), and grant of ₹ 600 crore for upgradation of two ports to meet logistics requirements for offshore wind energy projects.

The scheme guidelines for implementation of "VGF Scheme for Offshore Wind Energy Projects" issued on 11.09.2024.

The bid for development of a 500 MW offshore wind project off the coast of Gujarat was issued by Solar Energy Corporation of India Limited (SECI) in September 2024, and the pre-bid meeting was held on 06.12.2024. Subsequently, an amendment to the bid document was issued on 10.07.2025. The last date for bid submission was 31.07.2025. However, the tender was closed as no bids were received.

4.1.11. Offshore Wind Turbine Research and Test Centre at Dhanushkodi, Tamil Nadu

In order to strengthen the domestic capacity for design and development of new offshore wind energy turbines, a testing cum research facility was necessary and NIWE has already identified the suitable site at Dhanushkodi, Tamil Nadu for establishment of the testing cum research centre. The required land for the purpose has been allotted by Govt. of Tamil Nadu. The preliminary Detailed Project Report (DPR) Preparation for the test centre is under preparation by NIWE. Further, an EIA study has been completed for the site, and requisite clearances for establishment of the facility are under process.

4.1.12. Global Wind Day Celebration – 2025

MNRE organized a conference on 15.06.2025 on the occasion of Global Wind Day 2025 with support from WIPPA, NIWE, IWTMA & IWPA with the theme 'Pawan-Urja: Powering the Future of India'. During the conference, key issues faced by wind industry were discussed including India's wind growth trajectory, state-wise progress, and the strategic interventions required to meet national targets.

Shri Pralhad Joshi, Hon'ble Cabinet Minister for New and Renewable Energy, Shri Shripad Yesso Naik, Hon'ble Minister of State for New and Renewable Energy, Shri KJ George, Hon'ble Cabinet Minister of Energy, Government of Karnataka, Shri Santosh Kumar Sarangi, Secretary, MNRE and other key stakeholders from government, industry & academia were present at the event.



Figure 4.5. Global Wind Day Celebrations 2025

4.2. Energy From Wind-Solar Hybrid

4.2.1. National Wind-Solar Hybrid Policy

The Ministry issued National Wind-Solar Hybrid Policy on 14.05.2018 and amended on 13.08.2018. The main objective of the policy is to provide a framework for promotion of large-scale grid connected wind-solar PV hybrid systems for optimal and efficient utilization of wind and solar resources, transmission infrastructure and land. The wind-solar PV hybrid systems will help in reducing the variability in renewable power generation and achieving better grid stability. The policy also aims to encourage new technologies, methods and way-outs involving combined operation of wind and solar PV plants.

4.2.2. The Major Highlights of the Policy are as under:

i. A wind-solar plant will be recognized as hybrid plant if the rated power capacity of one resource is at least 25% of the rated power capacity of other resource.

ii. Both AC and DC integration of wind-solar hybrid project are allowed.

iii. The power procured from the hybrid project may be used for fulfilment of solar RCO and non-solar RCO in the proportion of rated capacity of solar and wind power in the hybrid plant respectively.

iv. Existing wind or solar power projects, willing to install solar PV plant or Wind Turbine Generators (WTGs) respectively, to avail benefit of hybrid project, may be allowed.

v. All fiscal and financial incentives available to wind and solar power projects will also be made available to hybrid projects.

vi. The Central Electricity Authority (CEA) and Central Electricity Regulatory Commission (CERC) shall formulate necessary standards and regulations including metering methodology and standards, forecasting and scheduling regulations, REC mechanism, grant of connectivity and sharing of transmission lines, etc., for wind-solar hybrid systems.

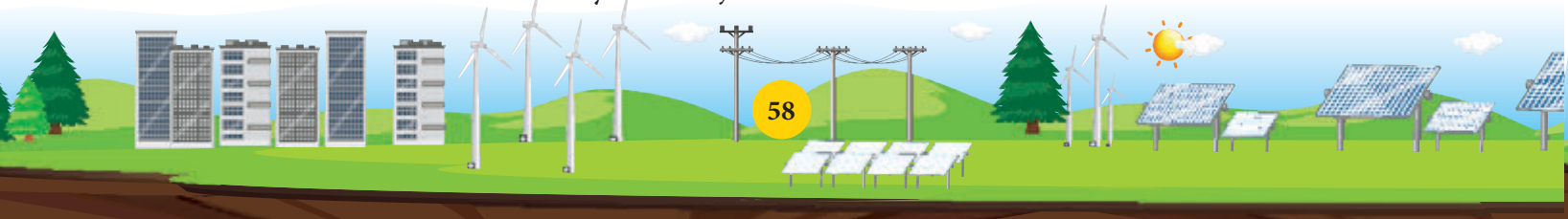
vii. Storage may be added to the hybrid project to ensure availability of firm power for a particular period.

4.2.3. Wind-Solar Hybrid Projects

The following are the Projects under the Wind-Solar Hybrid Programme

i. In order to implement the National Wind-Solar Hybrid Policy, a scheme for setting up of 2500 MW Inter State Transmission System (ISTS) connected wind-solar hybrid projects was sanctioned on 25.05.2018. The Solar Energy Corporation of India (SECI) was the nodal agency for implementation of the scheme through tariff based transparent competitive bidding process.

ii. Guidelines for Tariff Based Competitive Bidding Process for procurement of power from Grid Connected Wind Solar Hybrid Projects were issued on 14.10.2020 and further revised on

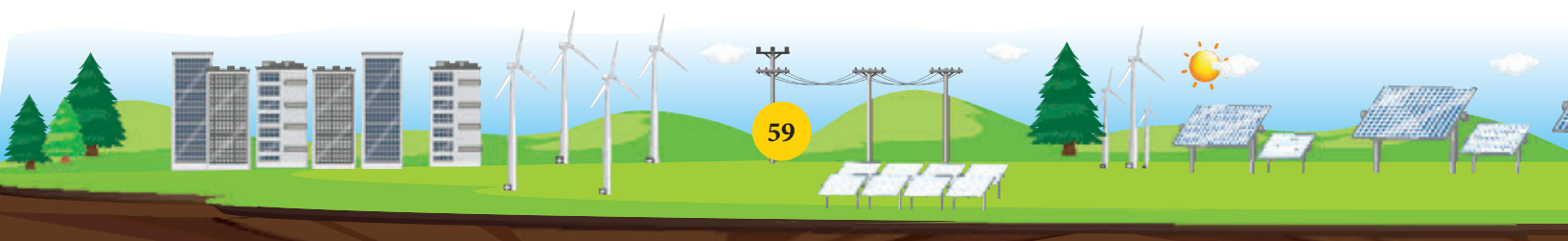


21.08.2023. The Guidelines also been further amended vide notifications dated 17.11.2023, 02.02.2024 and 12.02.2025. The objective is to promote renewable capacity additions and RCO fulfilment; facilitate a transparent and fair procurement of electricity through competitive means; provide for a standardized framework for an Intermediary Procurer as an Aggregator/Trader; and provide a risk-sharing framework between various stakeholders. Procurement shall be from hybrid power projects with a minimum bid capacity of 10 MW and 50 MW for projects connected to the intra-state transmission system and inter-state transmission system, respectively. The rated power capacity of one resource (wind or solar) shall be at least 33% of the total contracted capacity, and solar and wind components of the hybrid project can be located at the same or different locations. It has provisions for payment security mechanism, generator compensation for off-take constraints, adding storage to the hybrid power project, etc.

iii. The status of hybrid projects awarded under Wind-Solar Hybrid Policy are as given in Table 4.5.

Table 4.5: Details of REIA Tenders awarded under Solar-Wind Hybrid Policy

S. No.	Bidding Agency	Awarded Capacity	Capacity Commissioned (MW)	Minimum Tariff (Rs. / kWh)
1	SECI Hybrid-I	840	840	2.67
2	SECI Hybrid-II	600	600	2.69
3	SECI Hybrid-III	1110	546	2.41
4	SECI Hybrid-IV	1200	0	2.34
5	SECI Hybrid-V	1170	0	2.53
6	SECI Hybrid-VI	1200	0	4.64
7	SECI Hybrid-VII	900	0	3.15
8	SECI Hybrid-VIII	1200	0	3.43
9	SECI Hybrid-IX	600	0	3.25
10	NTPC Hybrid-I	1080	0	3.35
11	NTPC Hybrid-01/2024-25	1170	0	3.28
12	NTPC Hybrid-02/2024-25	1200	0	3.38
13	NTPC Hybrid-03/2024-25	1200	0	3.35
14	NTPC Hybrid-IV	1500	0	3.27
15	NTPC Hybrid-V	1000	0	3.41
16	NTPC Hybrid-VI	1000	0	3.43
17	NHPC Hybrid-I	960	0	3.48
18	NHPC Hybrid-II	2400	0	3.41
19	SJVN Hybrid-I	1500	0	3.43



20	SJVN Hybrid-II	1500	0	3.41
21	SJVN Hybrid-III	1200	0	3.19
	Total	**24530**	**1674**	

iii. In addition, the status of awarded hybrid projects through assured supply during peak hours, Firms & Dispatchable Renewable Energy (FDRE) and Round the Clock (RTC) bids are as given in Table 4.6.

Table 4.6: Details of REIA Tenders awarded under Assured Peak Power Supply, FDRE & RTC bids

S. No.	Bidding Agency	Awarded Capacity	Capacity Commissioned (MW)	Minimum Tariff (Rs. / kWh)
1	SECI Assured Peak Power-VII	1200	300	2.88
2	SECI RTC	400	0	2.9
3	SECI RTC-IV	420	0	5.06
4	SECI FDRE-IV	630	0	4.98
5	NTPC FDRE-I	1530	0	4.64
6	NTPC FDRE-01/2024-25	760	0	4.69
7	NHPC FDRE-I	1400	0	4.55
8	NHPC FDRE-II	2100	0	4.37
9	NHPC FDRE-III	1200	0	4.48
10	SJVN FDRE-I	2368	0	4.38
11	SJVN FDRE-II	2400	0	4.25
12	SJVN FDRE-III (RTC)	448	0	4.82
	Total	**14856**	**300**	

4.2.4. Concessional Custom Duty Exemption Certificates for manufacturing of Wind Turbines

Ministry is issuing concessional custom duty exemption certificates (CCDCs) to the manufacturers of wind operated electricity generators as per Ministry of Finance tariff notification no. 50/2017-customs dated 30.06.2017 as amended from time to time. To avail concessional custom duty benefits for essential imports of major components/sub-components/ part/ sub-parts of components of wind electric generators and raw materials for manufacturing in India, the eligible turbine and component manufacturers listed in ALMM (Approved list of Models & Manufacturers) are required to get the bill of material for turbine models approved and then apply in prescribed application formats to this Ministry for issue of CCDC (Concessional Custom Duty Certificates) for their import consignments. In order to make the entire process fast and transparent, an online portal was developed and is active since October, 2019. A total 278 nos. of CCDC have been issued in 2025.



National Green Hydrogen Mission (NGHM)

5.1 Introduction

The National Green Hydrogen Mission (NGHM), was launched in January 2023 with an outlay of ₹19,744 crore until 2029-30. This includes ₹17,490 crore for the Strategic Interventions for Green Hydrogen Transition (SIGHT) Programme, ₹1,466 crore for pilot projects, ₹400 crore for R&D, and ₹388 crore for outreach, skilling, and other initiatives. The objective of the Mission by 2030 is to produce at least 5 (MMTPA) Million Metric Tonnes per Annum of Green Hydrogen. The expected outcomes of the Mission include RE capacity addition of 125 GW, over Rs. 8 lakh crores in total investments, creation of over 6 lakh full time jobs and aversion of 50 MMT per annum of CO2 emissions. The key components of the Mission include incentives for Electrolyser manufacturing and Green Hydrogen production; pilot projects, R&D, regulatory frameworks, Green Hydrogen hubs, and skill development programs.

To implement the Mission, a flexible and result-oriented governance structure has been constituted. An Empowered Group (EG) chaired by the Cabinet Secretary, and an Advisory Group (AG) chaired by the Principal Scientific Adviser to the Government of India have been constituted. A Mission Secretariat headquartered at MNRE, headed by the Mission Director (serving as Secretary to the EG) and comprising of Programme Directors, and Subject Matter Experts have also been constituted to coordinate the program and facilitate the day-to-day activities of the Mission.

5.2 Strategic Interventions for Green Hydrogen Transition (SIGHT) programme

Under the Strategic Interventions for Green Hydrogen Transition (SIGHT) programme, a crucial component of the NGHM mission, with a total outlay of ₹17,490 crore, significant progress has been made. In 2025, following progress has been made.

5.2.1 4,50,000 MTPA of Green Hydrogen Production capacity awarded under Tranche II of the incentive scheme for GH2, taking the total awarded capacity to 8,62,000 MTPA.

5.2.2 Prices have been discovered by SECI for the production and supply of 7,24,000 MTPA of Green Ammonia (a derivative of Green Hydrogen) to various fertilizer units across the country. These are some of the lowest prices in the world with Weighted Average Price of Rs. 53.27 per kilogram.

5.2.3 Projects have been awarded for the production and supply of 20,000 MTPA of Green Hydrogen to IOCL, BPCL and HPCL Refineries. The prices discovered per kg of Green Hydrogen are ₹336/ kg for IOCL and ₹328/kg for HPCL and BPCL.

These initiatives aim to accelerate India's transition to a Hydrogen economy by scaling up domestic manufacturing and ensuring a steady supply of Green Hydrogen and its derivatives.

5.3 Pilot projects

Under the Mission, pilot projects are being implemented to replace fossil fuels and fossil fuel-based feedstocks with Green Hydrogen and its derivatives. These initiatives aim to demonstrate the feasibility and scalability of Green Hydrogen technologies, particularly in hard-to-abate sectors.

In 2025, The following projects have been implemented:

5.3.1 Four pilot projects were awarded for the use of hydrogen in steel sector. Funds sanctioned for these projects is about ₹106 Crore. The award of these four projects, took the tally of total awarded projects to five with total fund allocation of about ₹132 Crore.

5.3.2 A pilot project was awarded to deploy one hydrogen fueled truck and one hydrogen refueling station, taking the total projects count to five pilot projects awarded to deploy 37 hydrogen-fueled vehicles (comprising 10 buses and 27 trucks) along with 9 hydrogen refueling stations have been awarded across 10 different routes in the country. The total fund allocation for these projects is about ₹208 Crore.

5.3.3 A project has been awarded to develop bunkering and refueling facility at V. O. Chidambaranar Port Authority, that is at the Tuticorin Port in Tamil Nadu.

5.4 Green Hydrogen hubs & Hydrogen valley innovation cluster

The scheme guidelines for setting up Hydrogen Hubs has been revised to include setting up of Hydrogen Valley Innovation Clusters (HVIC) in India under National Green Hydrogen Mission (NGHM) that will provide learnings to scale up projects as Green hydrogen hubs. Accordingly, the scheme, now consists of two components:

5.4.1 **Component A: Hydrogen Valley Innovation Cluster –** Four projects have been awarded to be developed as Hydrogen Valley Innovation Clusters (HVICs), viz., JHV Innovation (Jodhpur), Odisha Hydrogen Valley (Bhubaneshwar), Pune Hydrogen Valley and Kerala HVIC. Funds sanctioned for these projects is about ₹170 Crore.

5.4.2 **Component B: Green Hydrogen Hubs -** This scheme supports the preparation of DPRs for Green Hydrogen Hubs in the state. Each DPR would be supported with a maximum funding of ₹3 Crore. To enable large scale export opportunities of Green Hydrogen derivatives Kandla, Paradip and Tuticorin ports have been identified to be developed as Green Hydrogen hubs.

5.5 Skill Development

For skill development in the Hydrogen value chain, as on December 2025, a total of 43 Qualification Packs (QPs) have been approved by the National Council for Vocational Education and Training (NCVET). 78 Master Trainers, 325 Trainers aligned. 6,541 trainees have been certified.

5.6 Green Hydrogen Certification Scheme of India

The Green Hydrogen Certification Scheme of India was launched in April, 2025 by the Hon'ble Minister of New and Renewable Energy, Shri Pralhad Venkatesh Joshi. This scheme, building upon the Green Hydrogen Standard launched in August 2023 ensures the integrity and global recognition of the Green Hydrogen produced in India. This will be a instrument to ensure the quality and sustainability of Green Hydrogen produced in India.

5.7 Testing Facilities

Five projects have been awarded for the funding of testing facilities, infrastructure, and institutional support for the development of Standards and Regulatory Framework. Funds sanctioned for these projects is about ₹114 Crore.

5.8 Research and Development

Under the Research and Development scheme, 23 projects have been awarded under different categories such as production, safety and integration, and applications. Funds sanctioned for these projects is about ₹115 Crore.

5.9 Regulations, Codes, and Standards (RCS)

For the development of Regulations, Codes, and Standards (RCS) in the sector in India, as on October 2025, 128 standards have been adopted / published by entities involved in developing standards for Green Hydrogen such as the Bureau of Indian Standards (BIS), Oil Industry Safety Directorate (OISD), Ministry of Road Transport and Highways (MoRTH), Petroleum and Explosives Safety Organization (PESO), Petroleum and Natural Gas Regulatory Board (PNGRB).

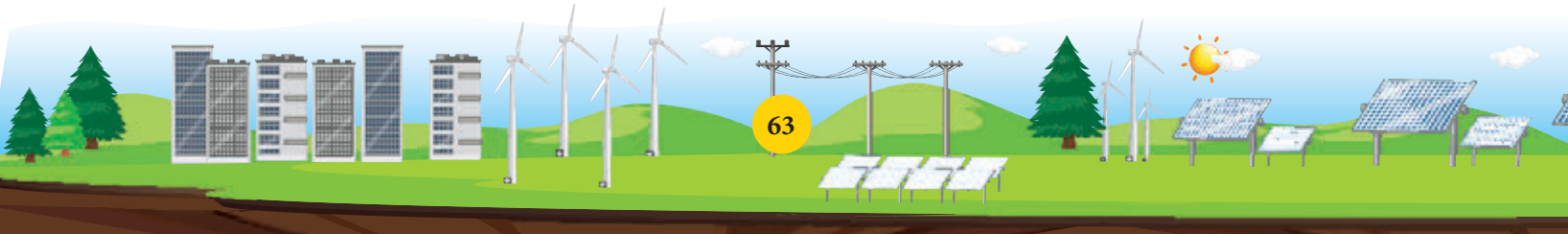
5.10 National Institute of Solar Energy (NISE)

National Institute of Solar Energy (NISE), Gurugram signed a MoU with Toyota Kirloskar Motors in December 2025 for a pilot project on the use of hydrogen in mobility sector.

5.11 Public Awareness and Outreach

In 2025, MNRE organized several events and actively participated in some key events, conferences, and workshops across the globe. All these were aimed at advancing the National Green Hydrogen Mission, and fostering international cooperation. Some of the major events include:

5.11.1 3rd International Conference on Green Hydrogen (ICGH 2025): The 3rd edition of the International Conference on Green Hydrogen was organized on 11th and 12th



November 2025 at the Bharat Mandapam, New Delhi. The event saw the participation of eminent speakers, and attendance by delegates, researchers, industrialists, associations, and students from both India and abroad.

5.11.2 **1st R&D Conference on Green Hydrogen (R&D Conference on Green Hydrogen 2025):** The inaugural R&D Conference on Green Hydrogen was organized on 11th and 12th September 2025 at the Dr. Ambedkar International Center, New Delhi. The event saw the participation of eminent speakers, and attendance by researchers, and students.



Fig. 5.1 *Shri Pralhad Joshi, Honourable Union Cabinet Minister, MNRE, inaugurating the Start-up Expo in the presence of Prof Ajay K Sood, Principal Scientific Adviser to the Govt of India, Mr Santosh Sarangi, Secretary, MNRE, Mr Abhay Bakre, Mission Director - National Green Hydrogen Mission, MNRE and Dr Mohammad Rihan, Director General, National Institute of Solar Energy.*

5.11.3 **Workshop on National Green Hydrogen Mission – Opportunities for MSMEs:** The Ministry of New and Renewable Energy (MNRE) organized the workshop on 29.04.2025 focusing on "Opportunities for MSMEs". The event brought together policymakers, industry experts, R&D institutions, financial institutions, and MSME stakeholders to deliberate on enabling frameworks, investment pathways, and innovation partnerships to embed MSMEs within India's Green Hydrogen value chain. Major Green Hydrogen plant components were identified for MSMEs.



Fig. 5.2 *Fig Shri Pralhad Joshi, Honourable Union Cabinet Minister, MNRE launching the Green Hydrogen Certification Scheme of India at the Workshop on National Green Hydrogen Mission – Opportunities for MSMEs.*

5.11.4 MNRE participated in the 43rd Steering Committee Meeting of the International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE) from June 9-13, 2025, at Santiago, Chile. The meeting brought together IPHE delegates from Austria, France, the European Commission, Japan, Germany, the Netherlands, the UAE, Saudi Arabia, the UK, the US, Singapore, Mauritania and South Korea, along with representatives from the host country, Chile. Discussions were held on a wide range of issues related to the deployment of Green Hydrogen and its derivatives.



Fig. 5.3 *IPHE 43rd Steering Committee Meeting, Santiago, Chile*

5.11.5 India set up its own pavilion, at the World Hydrogen Summit 2025, held in Rotterdam, Netherlands, during May 13 – 15, 2025. This pavilion was inaugurated by Secretary, Ministry of New and Renewable Energy, Shri Santosh Sarangi. The Indian delegation comprised nominees from Ministry of New & Renewable Energy, Department of Science and Technology, Ministry of Railways, Ministry of Petroleum and Natural Gas and representatives from private and public sector companies as well.



Fig. 5.4 *India Pavilion at World Hydrogen Summit 2025, Rotterdam*

5.11.6 World Hydrogen and Fuel Cell Day was celebrated on 08.10.2025 at MNRE Atal Akshay Urja Bhawan. This brought together Hydrogen experts from the industry, academia and government. A roundtable was organized as part of the event.

5.11.7 India participated in the European Hydrogen Week 2025 from 29.09.2025 to 03.10.2025 at Brussels, Belgium.



Fig. 5.5 *Shri Santosh Kumar Sarangi, Secretary, MNRE delivering his remarks at the High- Level Business Roundtable on 29.09.2025.*

5.12 National Hydrogen Safety Panel (NHSP)

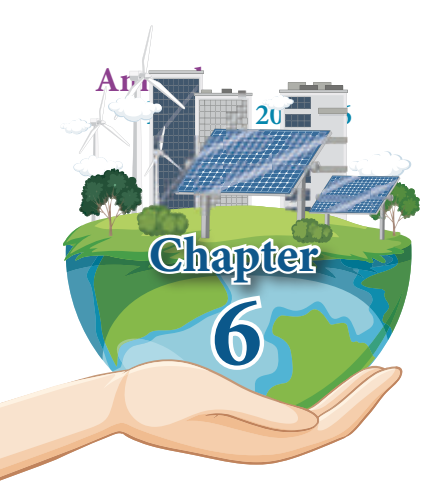
To ensure safe and robust quality and performance across hydrogen value chain, a National Hydrogen Safety Panel (NHSP) has been constituted in September 2025 consisting of experts from all domains of the hydrogen value chain. The safety panel will support the development and harmonization of hydrogen safety standards across value chain, suggest measures to promote awareness, training and knowledge sharing, identify gaps in safety practices, and recommend codes, standards, protocols and model guidelines for commissioning and operation of hydrogen projects.



Fig. 5.6 *Dignitaries on dais, Shri Pralhad Joshi, Hon'ble Minister, MNRE, Shri Ajay K Sood, Principal Scientific Adviser to the Government of India, Sri Santosh Kumar Sarangi, Secretary, MNRE, Shri Akash Tripathi, Managing Director, SECI, and Shri Jorgo Chatzimarkakis, CEO, Hydrogen Europe addressing the gathering at the event.*

NGHM
NATIONAL GREEN HYDROGEN MISSION

Fig. 5.7 *The logo for the National Green Hydrogen Mission was launched on 11th November 2025 by the Hon'ble Minister of New and Renewable Energy, Shri Pralhad Venkatesh Joshi during the International Conference on Green Hydrogen 2025.*



Bio-Energy and Small Hydro Power

6.1 Biogas Programme

6.1.1 The Ministry of New and Renewable Energy (MNRE) has been implementing Biogas Programme for the dissemination and deployment of biogas plants in remote, rural and semi-urban areas of the country since November 2022. The Biogas Programme continued under the umbrella National Bio-energy Programme (NBP) which was announced on 02.11.2022 for the period from 01.04.2021 to 31.03.2026.

The objectives of the Biogas Programme are to support setting up of biogas plants for clean cooking fuel, lighting, meeting thermal and decentralized power generation needs of users, which ultimately results in Green House Gas (GHG) emission reduction, improved sanitation, facilitating management and utilization of biogas plant produced slurry as an organically enriched Solid Biogas Fertilizer, Women Empowerment, and creation of Rural Employment etc.

The Biogas Programme is being implemented through the Agriculture Farmers Welfare and Rural Development Departments of the States, Dairy Co-operatives, State Nodal Agencies (SNAs), Biogas Development and Training Centers (BDTCs), Khadi and Village Industries Commission (KVIC), National Dairy Development Board (NDDB), Amul Dairy etc.

6.1.2 Achievements under the biogas programme

The State-wise installed number of biogas plants during Phase-I of National Bioenergy Programme is given as under:

Table 6.1: The State/UT-wise achievements for family type/small biogas plants, under the Biogas Programme.

Sl No	Name of the State	Number of small biogas plants
1.	Andhra Pradesh	88
2.	Arunachal Pradesh	200
3.	Assam	389
4.	Bihar	255
5.	Chhattisgarh	546
6.	Goa	11
7.	Gujarat	3668

8.	Haryana	439
9.	Jharkhand	11
10.	Karnataka	1398
11.	Kerala	637
12.	Madhya Pradesh	6260
13.	Maharashtra	14468
14.	Manipur	25
15.	Meghalaya	1
16.	Mizoram	1
17.	Nagaland	52
18.	Odisha	216
19.	Punjab	3220
20.	Rajasthan	567
21.	Tamil Nadu	124
22.	Telangana	23
23.	Tripura	161
24.	Uttar Pradesh	540
25.	Uttarakhand	1436
26.	West Bengal	159
27.	Dadra & Nagar Haveli	18
	Total	**34913**

Table 6.2: The details of medium sized the Biogas Programme sanctioned

Nos.	Installed Capacity (in MWeq)	CFA Sanctioned (in Rs. Crores)
38	4.02	16.06

6.1.3 Subsidy and other central financial assistance under biogas programme

6.1.3.1 The details of Central Financial Assistance (CFA) for different components under this programme are as follows:

A. For small biogas plants (1-25 cubic meter/day plant capacity): Rs. 9800/- to Rs.70,400/- per plant based on size of the plant in cubic meter; and

B. For Power generation and thermal application (capacity ranging from above 25 to 2500 cubic meter biogas generation per day), (3 to 250 kWe Power Generation capacity per day): 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 for Islands, NER States, SC/ST beneficiaries, and for biogas plant installed in registered Gaushalas, Govt registered Gothans.

C. The Ministry has also amended the guidelines for the 40% advance release of CFA against the annual allocated targets for small biogas plants to the designated state's PIA. Similarly, the provision has been made for advance release of 50% of the annual approved budget outlay for BDTCs activities under the Biogas Programme.

6.1.3.2 Benefits of MNRE's Biogas Programme on rural and environmental aspect:

MNRE's Biogas Programme plays a significant role in improving rural livelihoods while promoting numerous environmental benefits. In rural areas, household and community biogas plants provide a reliable source of clean cooking energy, reducing dependence on firewood, dung cakes, and fossil fuels. This lowers household energy costs, improves indoor air quality, and reduces health risks, particularly for women and children. The programme also supports local employment through plant construction, operation, and maintenance, while the use of digested slurry as organic manure enhances soil fertility and reduces reliance on chemical fertilizers, thereby supporting sustainable agriculture.

From an environmental perspective, the programme contributes to climate change mitigation and pollution control by capturing methane from animal dung and organic waste and using it as energy instead of allowing it to escape into the atmosphere. Reduced use of firewood helps curb deforestation and pressure on forest resources. Additionally, systematic management of organic waste through biogas plants improves sanitation and prevents land and water pollution. Overall, the biogas programme promotes a circular economy by converting rural waste into clean energy and bio-manure, aligning energy access with environmental protection and sustainable rural development.

6.1.4 PHOTOGRAPHS:








Fig. 6.1: Biogas Plant

6.2 Biomass Power

6.2.1 Ministry has been promoting Biomass Power with an aim to recover energy from biomass such as surplus agricultural residues, wood produced from energy plantation, wood waste from industrial operations, agro based industrial residue, forest residue, weeds, palm leaves, coconut shells and husk etc.

6.2.2 Biomass Potential available in the country

The potential for power generation from about 228 MMT (Million Metric Tonnes) surplus agricultural residue is estimated at about 28,446 MW. With progressive higher steam temperature and pressure and efficient project configuration in new sugar mills and modernization of existing ones, the potential of surplus power generation through bagasse cogeneration in sugar mills is estimated at around 13,866 MW. Thus, the total estimated potential for biomass power is about 42,312 MW.

6.2.3 Programme for promoting installation of Biomass based projects

The Ministry has notified Biomass Programme on 02.11.2022 with a budget outlay of Rs.158 crores under the umbrella of National Bioenergy Programme (Phase-I) for duration of FY 2021-22 to FY 2025-26 with an objective to harness the available biomass potential in the country. This programme has a provision of Central Financial Assistance (CFA) for setting up of Biomass Briquette/Pellet manufacturing plants and Biomass (non-bagasse) based cogeneration projects in the country. The details of CFA under this programme are as follows:

(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).

To facilitate ease of doing business for the stakeholders and to expedite timely disbursal of CFA, the guidelines of the Biomass Programme have been revised on 27.06.2025.

6.2.4 Achievements

More than 800 Nos. of Biomass IPP and Bagasse/non bagasse cogeneration-based power plants with aggregate capacity of 10757.307 MW have been installed in the country mainly in the states of Maharashtra, Uttar Pradesh, Karnataka, Tamil Nadu, Andhra Pradesh, Chhattisgarh, West Bengal and Punjab up to December 2025. This includes 7935.31 MW from Bagasse Cogeneration Sector, 1886.01 MW from Biomass IPP Sector and 935.987 MW from biomass (non-bagasse) cogeneration sector.

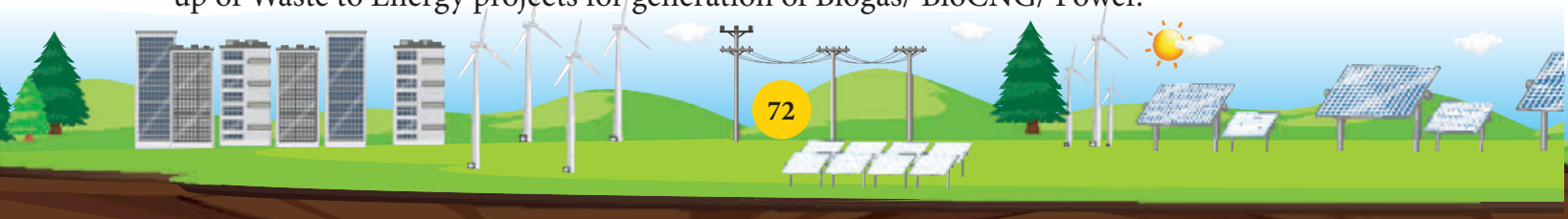
6.3 Waste To Energy

6.3.1 Programme on Energy from Urban, Industrial, Agricultural Wastes and Residues

The Ministry has been implementing the scheme "Programme on Energy from Urban, Industrial and Agricultural Waste/Residues" (Waste to Energy Programme) aimed at generation of biogas, BioCNG and Power from different wastes, such as vegetable and other market wastes, slaughterhouse waste, agricultural residues and industrial wastes & effluents. In addition to Bio-CNG/Biogas, biogas plants generate organic fertilizer as a by-product which is valuable for agricultural fields.

Such projects are being set up in a number of industry sectors namely distillery, paper and pulp solvent extraction, dairy, starch industries, sugar mills, pharmaceutical industries etc. and sewage treatment plants.

For the continuation of the above scheme for the period FY 2021-22 upto FY 2025-26, the Ministry has issued guidelines under the Phase-I of the umbrella of National Bioenergy Energy Programme on 02.11.2022 with an initial allotment of Rs 600 crores, which was later enhanced to Rs 637.5 crores. The Waste to Energy Programme provides Central Financial Assistance (CFA) for setting up of Waste to Energy projects for generation of Biogas/ BioCNG/ Power.



Moreover, the Ministry has revised the guidelines for Waste to Energy programme vide OM. NO. 300/1/2024-Waste to Energy dated 27.06.2025 for improving transparency, efficiency, and accountability in programme implementation. Moreover, the updated guidelines aims to address operational gaps, enhance compliance, and enable more effective utilization of resources under the programme.

6.3.2 Objectives of the Scheme:

- To promote setting up of projects for recovery of energy in the form of Biogas/ Bio-CNG/ Power from Urban, Industrial and Agricultural Waste and Captive Power and Thermal use through Gasification in Industries.
- To promote Biomass Gasifier for feeding power into the grid or meeting captive power and thermal needs of rice mills/other industries and villages.
- To create conducive conditions and environment, with fiscal and financial regime, to develop, demonstrate and disseminate utilization of wastes and residues for recovery of energy.

6.3.3 Subsidy/Grant/Incentive provided under the Scheme

The CFA pattern for Waste to Energy projects are as follows:

a. Biogas generation: Rs 0.25 crore per 12000 cum/day (Maximum CFA- Rs.5.00 crore/project).

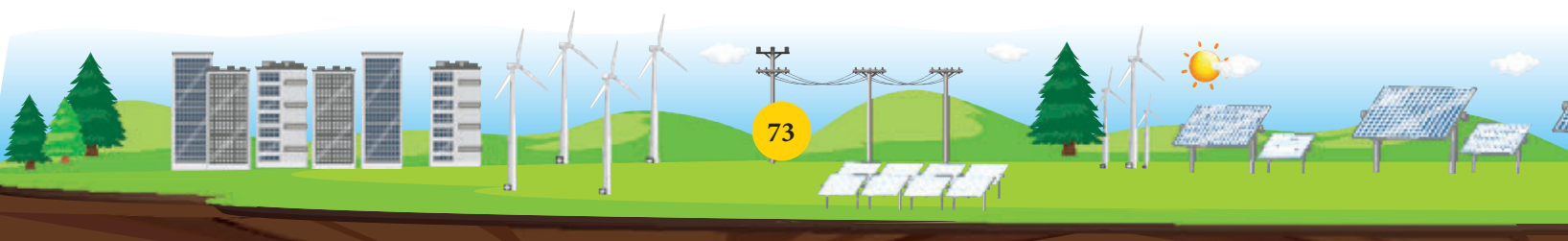
b. BioCNG/Enriched Biogas/Compressed Biogas generation: (Maximum CFA- Rs.10 crore/ project)
   i. BioCNG generation from new Biogas plant- Rs 4.0 Crore per 4800 Kg/day;
   ii. BioCNG generation from existing Biogas plant- Rs 3.0 Crore per 4800 Kg/day;

c. Power generation based on Biogas: (Maximum CFA- Rs. 5.00 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 / MW

d. Power generation based on bio & agro-industrial waste (other than MSW through incineration process): Rs. 0.40 crore/MW (Maximum CFA - Rs.5.00 Crore/Project).

e. Biomass Gasifier for electricity/ thermal applications:
   i. Rs. 2,500 per kWe with duel fuel engines for electrical application.
   ii. Rs. 15,000 per kWe with 100% gas engines for electrical application.
   iii. Rs. 2 lakh per 300 kWth for thermal applications.

Note: 20% higher CFA for special category states (NE Region, Sikkim, Himachal Pradesh and Uttarakhand, Jammu & Kashmir, Ladakh, Lakshadweep, Andaman & Nicobar Islands) and Gaushalas/Shelters.



6.3.4 Progress during the Financial year 2025-26

i. **Physical Achievement:** As on 31.12.2025, during the FY 2025-26, the capacities added in respect of various output products are given as under:

Progress of Installed Capacity Addition during FY 2025-26 (till 31.12.2025)				
Sl. No.	**Output Product**	**No. of plants**	**Capacity Addition in FY 2025-26 (MWeq)**	**States**
1.	Bio-CNG/CBG	6	7.81	Uttar Pradesh, Gujarat Rajasthan, Karnataka, Delhi, Uttarakhand
2.	Power	2	8.6	Maharashtra, Uttar Pradesh
	Total	**8**	**16.41**	

ii. **Biourja Application Portal:** The Ministry of New and Renewable Energy has revamped the Biourja Application Portal (www.biourja.mnre.gov.in) to facilitate submission and processing of applications for grant of CFA for Bioenergy projects. All communication with developers in respect of their applications is envisaged through this portal.

6.3.5 Cumulative Physical Achievement

As on 31.12.2025, the total installed capacity is 856.62 MWeq, including 309.34 MW capacity of Grid-interactive Waste to Power projects, and 547.28 MWeq capacity Off-grid Waste-to-Energy projects. The installed capacity details under the programme till 31.12.2025 is given as under:

The Cumulative Installed Capacity of Waste-to-Energy Projects		
Sl. No.	**Output product**	**Cumulative Installed capacity**
1	Biogas	8,80,698 m3 per day
2	Bio-CNG/CBG	12,48,602 kg per day
3	Power (Grid & Offgrid)	523.08 MW

6.3.6 Photographs:





Fig. 6.2: 10,000 kg/day BioCNG plant set up by M/s IOT Biogas Private Limited at Namakkal, Tamil Nadu

6.4 Small Hydro Power

6.4.1 The Ministry of New and Renewable Energy (MNRE) is vested with the responsibility of developing hydro power projects of capacity up to 25 MW, categorized as Small Hydro Power (SHP) Projects. These projects have the potential to meet power requirements of remote and isolated areas in a decentralized manner besides providing employment opportunity to local people. Small Hydro Power projects are further categorized into small, mini and micro hydel projects based on their capacity as follows:

Micro Hydel ≤ 0.1 MW

Mini Hydel> 0.10 MW to ≤ 2.00 MW / Small Hydel> 2.00 MW to ≤ 25.00 MW

6.4.2 The estimated potential of small / mini / micro Hydel projects in the country is 21133.61 MW from 7133 sites located in different States of India. The SHP projects in the country are being set-up both in public and private sectors. Setting up of SHP projects normally require about 3-4 years depending upon its size and location. An aggregate capacity of 5158.61 MW been achieved as on 31.12.2025 through 1196 Small Hydro Power projects. In addition, 96 projects of 437.49 MW are at various stages of implementation. Table 6.3 provides state-wise details of identified potential, projects completed and those under execution.

Table 6.3: State wise list of potential sites, installed projects and on-going projects in SHP sector (as on 31.12.2025)

(A fresh table provided below)

State wise list of potential sites, installed projects and on-going projects in SHP sector (as on 31.12.2025)											
S. No.	State	Total Potential		Projects Installed						Projects under Implementation	
		Nos.	Total Capacity (MW)	Upto 2024-25		2025-26		Total			
				Nos.	Capacity (MW)	Nos.	Capacity (MW)	Nos.	Capacity (MW)	Nos.	Capacity (MW)
1	Andhra Pradesh	359	409.32	46	164.51	0	0	46	164.51	1	1.20
2	Arunachal Pradesh	800	2064.92	158	140.61	0	0	158	140.61	5	6.05
3	Assam	106	201.99	6	34.11	0	0	6	34.11	0	0
4	Bihar	139	526.98	29	70.70	0	0	29	70.70	0	0
5	Chhattisgarh	199	1098.2	10	76	1	24.90	11	100.90	0	0
6	Goa	7	4.7	1	0.05	0	0	1	0.05	0	0
7	Gujarat	292	201.97	23	106.64	1	6.66	24	113.30	2	10.50

8	Haryana	33	107.4	9	73.5	0	0	9	73.5	0	0
9	Himachal Pradesh	1049	3460.34	204	1000.71	0	0	204	1000.71	50	241.19
10	UT of Jammu & Kashmir	103	1311.79	26	189.93	0	0	26	189.93	4	24.65
11	UT of Laddakh	199	395.65	34	45.79	0	0	34	45.79	2	3.30
12	Jharkhand	121	227.96	6	4.05	0	0	6	4.05	0	0
13	Karnataka	618	3726.49	171	1284.73	0	0	171	1284.73	5	12.45
14	Kerala	238	647.15	41	276.52	0	0	41	276.52	4	32.85
15	Madhya Pradesh	299	820.44	14	123.71	0	0	14	123.71	3	7.7
16	Maharashtra	270	786.46	74	384.28	0	0	74	384.28	6	6.10
17	Manipur	110	99.95	8	5.45	0	0	8	5.45	0	0
18	Meghalaya	97	230.05	6	55.03	0	0	6	55.03	1	3.0
19	Mizoram	72	168.9	20	45.47	0	0	20	45.47	0	0
20	Nagaland	98	182.18	14	32.67	0	0	14	32.67	1	2.4
21	Odisha	220	286.22	13	115.63	1	25.00	14	140.63	2	31.5
22	Punjab	375	578.28	59	176.10	0	0	59	176.10	5	4.05
23	Rajasthan	64	51.67	10	23.85	0	0	10	23.85	0	0
24	Sikkim	88	266.64	18	55.11	0	0	18	55.11	0	0
25	Tamil Nadu	191	604.46	21	123.05	0	0	21	123.05	0	0
26	Telangana	94	102.25	29	89.67	0	0	29	89.67	0	0
27	Tripura	13	46.86	3	16.01	0	0	3	16.01	0	0
28	A&N Islands	7	7.27	1	5.25	0	0	1	5.25	0	0
29	Uttar Pradesh	251	460.75	10	49.1	1	1.50	11	50.6	0	0
30	Uttarakhand	442	1664.31	104	233.82	0	0	104	233.82	5	50.55
31	West Bengal	179	392.06	24	98.5	0	0	24	98.5	0	0
	Total	**7133**	**21133.61**	**1192**	**5100.55**	**4**	**58.06**	**1196**	**5158.61**	**96**	**437.49**

6.4.3 For the year 2025-26, a target of commissioning of 100 MW small hydro projects was set. Further, during the period of 01.04.2025 to 31.12.2025, 04 projects of aggregate capacity of 58.06 MW have been synchronized to the grid (Table 6.4).

6.4.4 Under the 'Ladakh Renewable Energy Initiative (LREI)', Kargil Renewable Energy Development Agency (KREDA) and Ladakh Renewable Energy Development Agency (LREDA) are implementing Small/ Mini hydro projects in their respective regions. A total of 7 Hydro projects with aggregate capacity of 10.55 MW are being implemented

by KREDA, out of which 6 projects with aggregate capacity of 8.05 MW has been commissioned by KREDA till date. LREDA is implementing 6 nos. of projects with aggregate capacity of 3.65 MW, out of which 5 projects with aggregate capacity of 2.85 MW has been commissioned by LREDA till date.

Table 6.4: List of SHP projects commissioned during the period of 01.04.2025 to 31.12.2025

(A fresh table provided below)

S. No.	Name of Project	Capacity (MW)	Agency/State	Date of Commissioning
1	Khara SHP, Uttar Pradesh	1.50	Uttar Pradesh Jal Vidyut Nigam Ltd., Uttar Pradesh	April-25
2	Kachchh Branch Canal SHP-III, Gujarat	6.66	Sardar Sarovar Narmada Nigam Ltd., Gujarat	July-25
3	Rehar-I SHP, Chhattisgarh	24.90	M/s Chhattisgarh Hydro Power LLP, Raipur	July-25
4	Shaheed Lakhan Nayak SHP, Koraput, Odisha	25.00	M/s Meenakshi Odisha Power Pvt. Ltd.	August-25
	Total	**58.06**		



Accelerating the Clean Energy Ecosystem

7.1 Renewable Energy Research and Technology Development (RE-RTD) Programme

7.1.1 Introduction

Under the Renewable Energy Research and Technology Development (RE-RTD) Programme, the Ministry supports R&D projects on renewables by providing up to 100% financial support to Government/non-profit research organizations/ NGOs and up to 50% to 70% to industry. The Renewable Energy Research and Technology Development (RE-RTD) Programme has a budget allocation of Rs. 228 crores for the period FY 2021-22 to 2025-26.

7.1.2 Research Development and Demonstration (RD&D) Thrust Areas

The projects supported for Research, Development and Demonstration (RD&D) assistance are aligned with the R&D thrust areas of the Ministry, covering solar photovoltaic (SPV), solar thermal, bioenergy, wind, wind–hybrid systems, energy storage, small hydro power, hydrogen, fuel cells, geothermal energy, and allied sectors. Projects falling outside the identified thrust areas are also considered for financial support based on their technical merit, practical relevance, and potential for deployment. Participation of industry in RD&D projects is actively encouraged to facilitate technology validation, scale-up, and commercialization.

Within the solar energy domain, research and development efforts are directed toward the advancement of technologies for power generation and industrial process heat applications, encompassing thermal energy storage systems and hybrid configurations. Particular emphasis is being placed on next-generation perovskite solar technologies to achieve higher efficiencies and cost reduction.

Concurrently, focused R&D initiatives in geothermal energy generation aim to harness indigenous geothermal resources, enabling reliable, sustainable, and base-load renewable energy generation to strengthen national energy security.

A review of the Renewable Energy Research and Technology Development (RE-RTD) Programme was undertaken by a High-Level Committee chaired by Dr. Anil Kakodkar, Chancellor, Homi Bhabha National Institute, in its meeting held on 15.09.2025. After detailed deliberations on the

progress, outcomes, and overall evaluation of the Programme, the Committee offered its valuable recommendations and concluded that the RE-RTD Programme may be continued for the period 2026–27 to 2030–31 with an enhanced budgetary allocation, considering its strategic importance in strengthening indigenous research, innovation, and technology development in the renewable energy sector.

7.1.3 Institutional Mechanism

In order to accelerate the commercialization of indigenously developed technology, the Ministry supports the strengthening of R&D Programs of its 3 institutions, namely, the National Institute of Solar Energy (NISE), Gurugram, Sardar Swarn Singh National Institute of Bioenergy (SSS-NIBE), Kapurthala and National Institute of Wind Energy (NIWE), Chennai in various areas like resource assessment, testing, standardization, and certification in solar, bioenergy, and wind energy systems, etc.

7.1.4 R&D in Solar Energy

Solar Photovoltaics

Highlights of the progress achieved under the Solar Photovoltaic (SPV) R&D projects funded by the MNRE are listed below:

A. National Centre for Photovoltaic Research and Education (NCPRE)- Phase III.

This flagship project of the Ministry continued to function as a National Centre of Excellence, undertaking advanced R&D, testing, standardization, and capacity building in solar photovoltaics. The project has several work streams, and the main highlights of progress are briefly described below:

- **Research and Development Activities PV Deployment, Reliability and Standards:** NCPRE carried out focused studies on the field performance and reliability of PV modules and systems operating under Indian climatic conditions. A new characterization test was developed to detect latent insulation defects in field-deployed PV modules, which are not reliably captured through conventional dry or wet insulation resistance tests. The test demonstrated significantly improved detection capability and has potential application for plant safety assessment and module reuse decisions. NCPRE continued its leadership in international standardisation. During the year, the Centre led progress on a new IEC technical specification on bypass diode failures under high-temperature reverse bias conditions, representing a significant contribution from India to global PV safety and reliability standards.
- **Technology Development and Testing Infrastructure:** Construction of the joint NCPRE–IISc photovoltaic field test site at Challakere, Karnataka, was completed during

2025. The facility is designed for controlled assessment of fixed-tilt and tracking-based PV systems and is expected to support benchmarking of emerging PV technologies under field conditions. Advanced indoor accelerated testing facilities for durability evaluation of anti-soiling and anti-reflective coatings were operational during the year. These IEC-compliant facilities enable multi-stressor testing involving abrasion, thermal cycling, rainfall simulation, and UV exposure, and have been utilised for evaluation of coatings from PV manufacturers and developers.

- **Power Electronics for Grid Integration:** R&D activities during 2025 focused on reliable and efficient power electronic systems for grid integration of large-scale solar power. Work progressed (shown in Fig. 7.1.c) on SiC-based medium-voltage inverter architectures, addressing topology selection, insulation design, harmonic mitigation, and thermal stress management, in compliance with IEEE 519 and other applicable grid standards. A generalized harmonic model for an integrated three-phase dual active bridge (I3DAB) converter was developed to reduce component count and improve efficiency in cascaded H-bridge based medium-voltage PV systems, supporting future deployment of compact and reliable grid-connected inverters.
- **Solar Cells and Advanced Materials:** Significant progress was achieved during 2025 in next-generation solar cell technologies. NCPRE demonstrated four-terminal perovskite–silicon tandem solar cells with efficiencies exceeding 30 per cent, and four-terminal CdTe–perovskite tandem solar cells with efficiencies above 24 per cent, along with enhanced operational stability. Climate-specific modelling of perovskite–silicon tandem solar cells was undertaken to assess energy yield and levelized cost of electricity (LCOE) under Indian climatic conditions. The studies identified optimal perovskite bandgaps for minimising LCOE and provided inputs relevant for technology design and deployment. Research on durability of hydrophobic anti-soiling coatings under realistic cleaning loads generated guidance for operation and maintenance practices in utility-scale PV plants.
- **Education, Training and Capacity Building :** NCPRE organised multiple capacity-building initiatives. A three-day training programme on "Advanced Power Electronics for Solar PV Integration" was conducted in July 2025, covering inverter architectures, wide-bandgap devices, control strategies, and hands-on hardware demonstrations. The programme benefitted 41 participants from industry, academia, government organisations, and research institutions.



Fig. 7.1 (a) to (c) clockwise; (a) Shri Santosh Kumar Sarangi, Secretary, MNRE (second from Right) inaugurated the ART-PV India and Module Simulator Facility at NCPRE, Dr. Sangita M. Kasture, Advisor, MNRE (Right); (b) Hon'ble Minister Shri Prahlad Joshi (Second from Left), Shri Sudeep Jain, Add'l Secretary (Right), MNRE, and Dinesh Kabra (L) showing the in-house tool; (c) Prof. B. G. Fernandes, PI of NCPRE (Left) showing the prototypes in Power Electronics Lab.

- **Industry Interaction and Public–Private Collaboration:** NCPRE maintained active engagement with industry through collaborative research and testing support. The NCPRE-incubated start-up ART-PV India entered into a grant agreement with Waaree Energies Limited to enhance laboratory capabilities for characterisation and development of perovskite–silicon tandem solar cells, supporting translation of research towards commercial readiness.
- **National and International Engagement :** The Hon'ble Union Minister for New and Renewable Energy, Shri Pralhad Joshi, visited IIT Bombay in July 2025 to review NCPRE activities and perovskite–silicon tandem research, reaffirming MNRE's support for scaling up next-generation PV technologies. NCPRE also represented India in IEC TC82 / WG2 meetings during 2025. In addition, the Industrial Research and Consultancy Centre (IRCC), IIT Bombay, in collaboration with NCPRE, organised an Industry Day on "Empowering India's Solar Future (EISF): Innovation, Indigenisation, and Collaboration" on 08.11.2025. Shri Santosh Kumar Sarangi, Secretary, MNRE, graced the event as Chief Guest and inaugurated the ART-PV India facility (shown in Fig. 7.1.a) and the Module Simulator Facility at NCPRE. The event brought together academia, industry, and policymakers and included technical sessions, panel discussions, and laboratory visits, strengthening industry–academia collaboration.

B. National Primary Standard Facility for Solar Cell Calibration (CSIR-NPL) : National Primary Standard Facility for Solar Cell Calibration has been established at the CSIR–National Physical Laboratory (CSIR-NPL), the National Metrology Institute of India, with support from the Ministry of New and Renewable Energy (MNRE). The facility (shown in Fig. 7.2) is based on a Laser-based Differential Spectral Responsivity (L-DSR) Measurement System and enables rollout of primary reference solar cell calibration services in the country.



Figure 7.2 Dr. Jitendra Singh (Hon'ble Minister of State for Ministry of Science and Technology, and Vice President, CSIR) (Third from Right) inaugurated the National Primary Standard Facility for Solar Cell Calibration; Shri Santosh Kumar Sarangi, Secretary, MNRE (Right); Dr. (Mrs.) N. Kalaiselvi, DG-CSIR and Secretary, DSIR (Left)

The establishment of this facility marks a significant milestone in strengthening India's Photovoltaic Quality Infrastructure (PV-QI) by providing traceable, high-accuracy calibration services for solar cells under Standard Test Conditions (STC). Earlier, India depended on a limited number of overseas World Photovoltaic Service (WPVS) laboratories for primary calibration services. With the commissioning of the L-DSR facility, CSIR-NPL has emerged as the fifth internationally recognised WPVS laboratory, achieving the lowest reported uncertainty in short-circuit current (ISTC) measurements among peer laboratories.

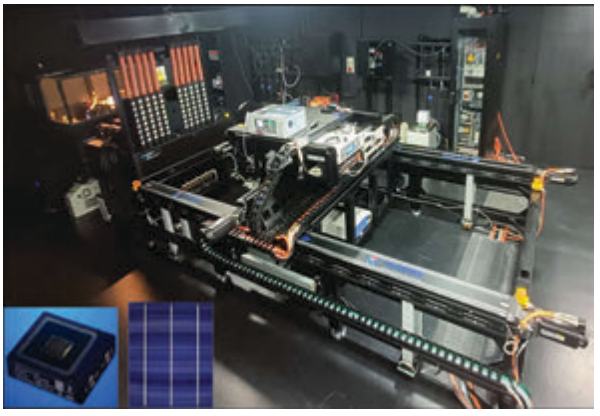


Figure 7.2 (b)

The facility is capable of measuring ISTC with an uncertainty of 0.35 % (k = 2) for WPVS reference solar cells and 0.6 % (k = 2) for industrial-scale (156 × 156 mm^2) solar cells. Such low measurement uncertainty is critical for accurate valuation of photovoltaic products and for avoiding large financial ambiguities across the solar value chain, particularly in large-scale solar deployment scenarios.

The L-DSR system operates over a wide wavelength range of 210 nm to 4000 nm, with substantially higher optical power compared to conventional lamp-based systems, ensuring improved spectral uniformity and measurement accuracy. The facility has been established in collaboration with PTB, Germany, in line with international best practices while ensuring national self-reliance.

The National Primary Standard Facility is expected to enhance transparency, investor confidence, and informed decision-making in the solar PV sector, while reducing dependence on overseas calibration services and may invite PV manufacturers, testing laboratories, and other stakeholders to avail these services and contribute to strengthening India's solar measurement and quality ecosystem.

C. **Scale-up of Perovskite Tandem Solar Cells (Phase-I):** The project is being implemented at the Indian Institute of Technology Bombay in collaboration with ART-PV India Pvt. Ltd (Start-up of NCPRE, IIT Bombay)., Waaree Energies Ltd., First Solar India, and Excel Instruments Pvt. Ltd. The objective is to develop commercial wafer-size (M10) perovskite tandem solar cell technologies for non-exclusive transfer to Indian manufacturers. IIT Bombay has earmarked about 4,800 sq. ft. for setting up a dedicated tandem solar cell laboratory, including an ISO Class-7 cleanroom, which is currently under construction.

Good technical progress has been achieved in the development of monolithic perovskite–silicon tandem solar cells. Heterojunction (HJT) silicon has been identified as the preferred bottom cell. Use of a thin tin oxide (SnO_x) interlayer deposited through Atomic Layer Deposition has helped reduce damage during electrode coating and maintain good electrical performance. Small-area tandem devices have achieved an efficiency of 13.25%. Larger-area perovskite solar cells have demonstrated efficiencies up to 19.8%, while bifacial near-infrared transparent cells have shown encouraging performance suitable for tandem applications. In addition, silver screen printing has been successfully demonstrated as a scalable and industry-compatible metallisation process, supporting future manufacturing readiness at M10 wafer scale.

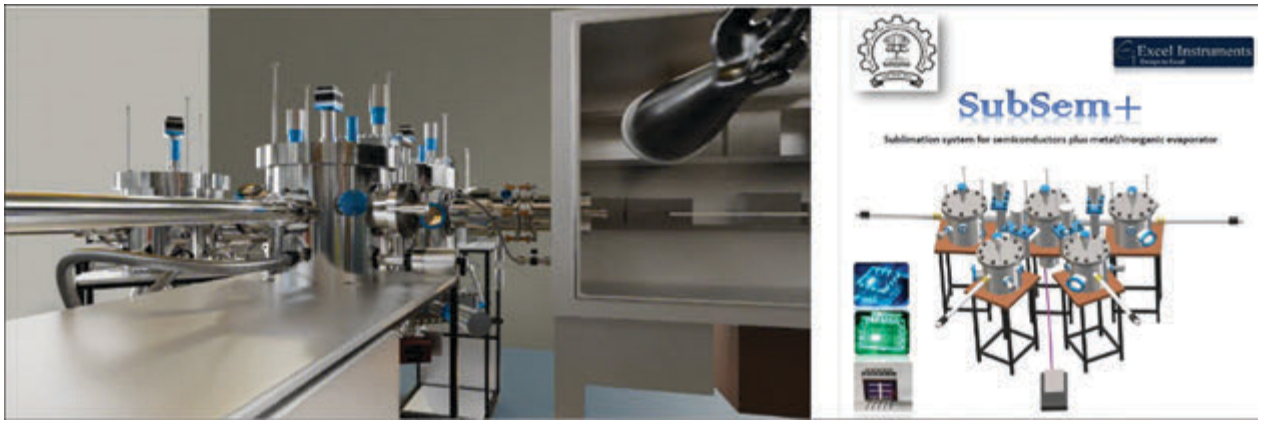


Figure 7.3 SUBSem+, a proprietary equipment for automated manufacturing of Perovskite, Perovskite-Silicon 2T Tandem Solar Cells

D. **Perovskite Solar Modules**

The project at IIT Bombay, focuses on improving the stability and scalability of perovskite solar technologies. The work addresses degradation mechanisms under ISOS and SETO

protocols through compositional engineering and aims to develop ~100 cm² perovskite solar modules using an AI-assisted robotic fabrication system. An indigenously designed automated platform integrating coating, annealing, inspection, and in-situ characterisation is under development, supporting scalable and manufacturing-ready perovskite module fabrication.

E. **Flexible Perovskite Solar Cells and Intermediate Modules:** The project implemented at IIT Bombay achieved significant performance milestones in flexible and scalable perovskite photovoltaics. Small-area devices (0.1 cm²) demonstrated efficiencies up to 26%, exceeding the target of 20%, with stable devices maintaining 25–25.5% efficiency. Large-area devices of 16 cm² achieved ~21% efficiency, while 100 cm² modules reached ~14% efficiency with a 94% geometrical fill factor. Flexible PET-based devices recorded 25.1% efficiency using low-temperature oxide processing. Roll-to-roll slot-die coated devices achieved ~23% efficiency, retaining >70% performance after 8,000 bending cycles and demonstrating stability of ~9,000 hours.

7.1.5 R&D in Small Hydro

Highlights of the progress achieved under the Small Hydro R&D projects funded by the MNRE are listed below:

A. **Research and development of ultra-low head and Hydrokinetic Turbines and performance prediction of small hydro turbine models**

The Ministry of New and Renewable Energy is supporting a **Centre of Excellence** for research, development, and performance assessment of ultra-low head and hydrokinetic turbine technologies relevant to small hydro applications in India. During the year, substantial progress has been achieved across all three approved components of the Centre, namely development of ultra-low head (ULH) turbines, development of hydrokinetic turbines (HKT), and formulation of computer-based guidelines for performance prediction of small hydro turbines and reversible pump storage systems.

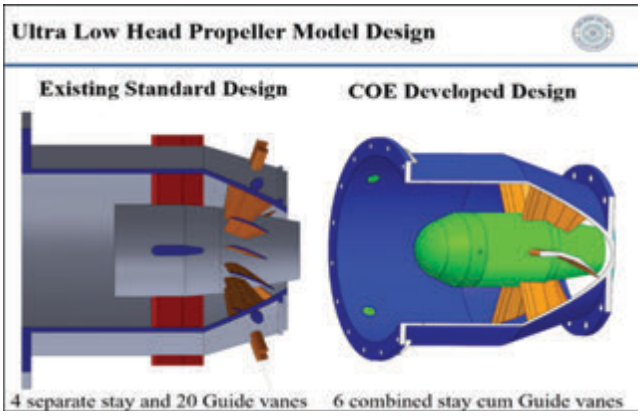


Figure 7.4 Ultra Low Head Propeller Model Design

Under the ULH turbine component, suitable vertical and horizontal propeller-type turbine technologies have been finalized. Hydraulic and mechanical designs have been completed using simplified configurations to reduce mechanical complexity and manufacturing costs. Major turbine components have been manufactured, and

development of laboratory infrastructure, including installation of overhead tanks and pipeline systems, is nearing completion. Performance analysis using computational tools has been initiated. In addition, design and analysis of a screw-type ULH turbine are also in progress.

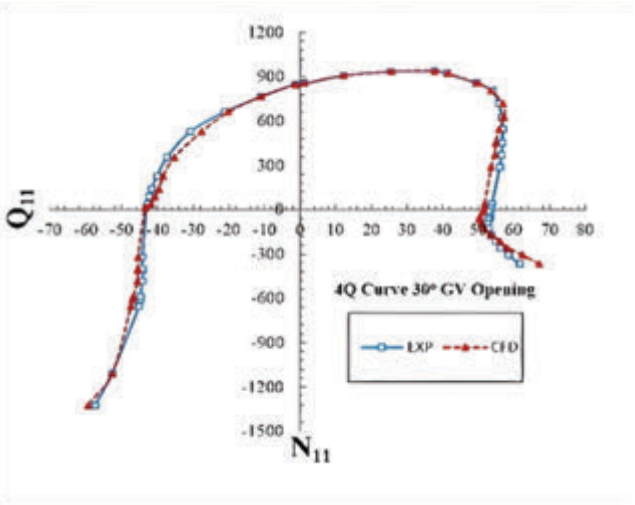


Figure 7.5 PSP Design Validation 4Q Curve_30 degree GVO

In the area of hydrokinetic turbines, performance simulations for multiple turbine configurations have been completed, and a dedicated testing facility has been fabricated, with installation and commissioning planned. Advanced flow measurement systems have been commissioned to support detailed performance evaluation.

For performance prediction guidelines, field data from operating turbines have been collected and validated through simulations and inter-laboratory studies. Grid convergence and validation exercises are underway to support development of standardized guidelines for small hydro and pump storage projects.



Figure 7.6 HPC Server for CFD at IIT Roorkee

7.1.6 R&D in Bioenergy: Highlights of the progress achieved under the Bioenergy R&D projects funded by the MNRE are listed below:

A. Biomass Gasification through Plasma Pyrolysis Technology for its application in gasifier

Under the MNRE-supported project, a laboratory-scale plasma pyrolysis and gasification system has been successfully fabricated and commissioned at IIT Roorkee. The system comprises a biomass feeding mechanism, plasma reactor equipped with plasma torches, gas cooling and wet scrubbing units, gas recovery arrangement, and an integrated control panel. The facility enables controlled experimental investigation of biomass gasification and plasma-assisted pyrolysis processes.

- **Experimental Activities and Process Development :** Thermo-chemical characterization and experimental gasification studies were conducted using a variety of biomass feedstocks including sugarcane bagasse, rice and wheat husk, wood sawdust, and pine needles. Producer gas (syngas) generated through plasma gasification was subjected to

firing tests and gas composition analysis using online gas analyzers. Systematic process optimization was undertaken by varying operational parameters such as heating rate, biomass feed rate, inlet gas composition, and reactor geometry.



Figure 7.7 Plasma Pyrolysis Unit at IIT Roorkee

- **Key Outcomes and Technological Advancements :** The experimental investigations resulted in successful synthesis of producer gas and generation of high calorific value biochar through plasma-based pyrolysis, demonstrating its potential as an alternative solid fuel. Based on the optimized reactor configuration and process parameters, the design patent process has been initiated. The outcomes of the study also provide a strong foundation for future scale-up and application of plasma gasification technology.
- **Future Scope and Relevance to MNRE Programs :** The developed system and experimental findings offer significant potential for future applications including plasma-assisted conversion of biomass for sustainable aviation fuel synthesis, mixed waste processing, utilization of pine needles to mitigate forest fire risks in the Himalayan region, and production of green hydrogen and biochar from agricultural and biomass residues.

B. Densification of Agro-Waste and Assessment for Its Application in the Gasifier : The project at NIBE, supported by Ministry of New and Renewable Energy (MNRE) was undertaken to enhance utilization of surplus agricultural residues for decentralized bioenergy applications. The project addresses critical challenges related to low bulk density, handling inefficiencies, and inconsistent gasifier performance of loose agro-residues by adopting pelletization and systematic fuel characterization.

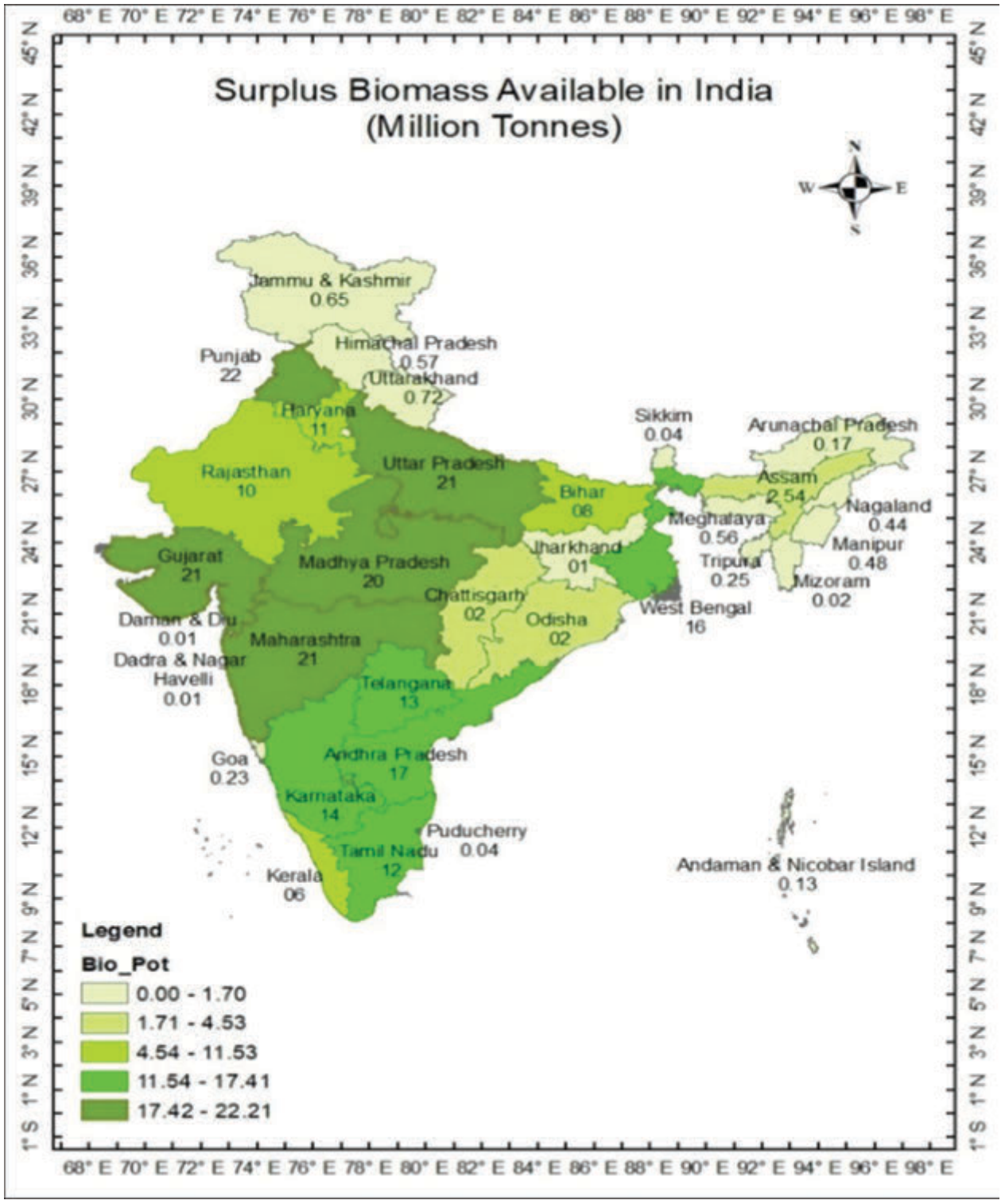


Figure 7.8 Surplus Biomass Available in India State-wise

Technical Progress and Findings: Six agro-residues—paddy straw, corn stover, sweet sorghum, pearl millet, cotton stick, and mustard residue were collected from Punjab and

characterized. Proximate analysis showed volatile matter ranging from 73.3–82.5%, while ash content varied significantly, with paddy straw recording the highest ash (18.1%) and cotton stick the lowest (5.4%). Ultimate analysis indicated carbon content between 36.8–42.5%. Gross calorific value ranged from 12.4 MJ/kg (paddy straw) to 17.6 MJ/kg (cotton stick), establishing cotton stick and sweet sorghum as high-energy feedstocks. These results are supported by characterization data and statistical ANOVA analysis.

Gasifier Performance Evaluation: Pelletized paddy straw was successfully tested in a 10 kVA downdraft gasifier (Figure 7.9). Stable producer gas combustion with a blue-yellow flame was observed. Gas composition analysis indicated CO + CH_4 > 44%, and electrical output of 6.5 kW, corresponding to ~65% generator capacity utilization, demonstrating technical feasibility for decentralized power generation.

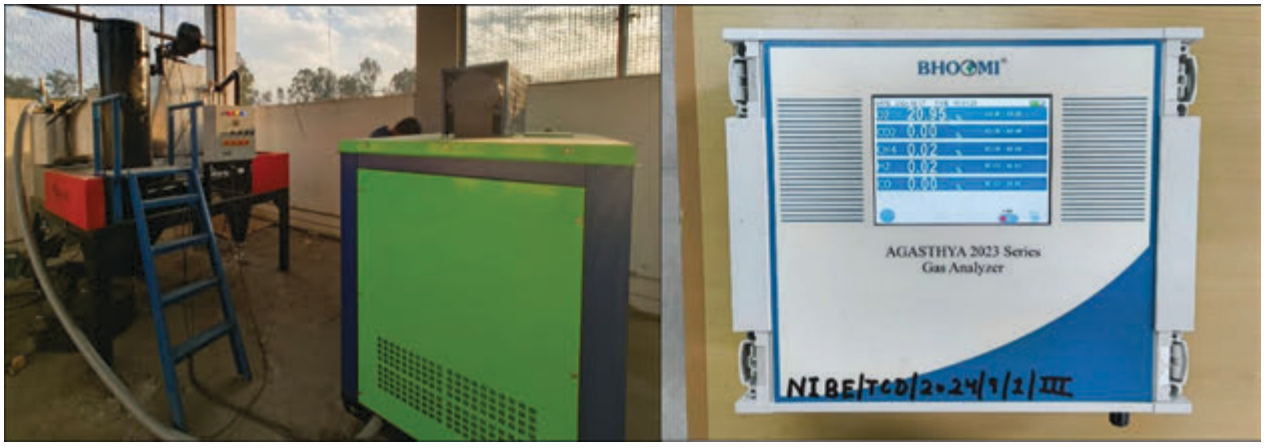


Figure 7.9 (Left) Biomass Downdraft gasifier with Gen set (10KVA); Producer gas analyser (Right)

7.1.7 R&D in Green Hydrogen

Highlights of the progress achieved under the Green Hydrogen R&D projects funded by the MNRE are listed below:

A. Green Hydrogen Mobility Project, Leh (Ladakh) : The Green Hydrogen Mobility Project at Leh, Ladakh, implemented by NTPC under MNRE support, demonstrates integrated production, storage, dispensing, and utilization of green hydrogen for public transport in extreme climatic conditions.



Figure 7.10 Takeover agreement signed between NTPC and SIDCO (UT owned) on 18.06.2025

Technical Configuration and Capacity: The project comprises a 1.70 MW solar plant spread over 7 acres, hydrogen generation capacity of 80 kg/day with 11 hours of operation, hydrogen storage at 450 bar (100 kg capacity), and dispensing at 350 bar with a flow rate of 1.7 kg/min. The

hydrogen is utilized in a fleet of five fuel cell electric buses (9 m length), each having a range of ~200 km, enabling operation of approximately 1,000 km/day under high-altitude and sub-zero temperature conditions.

NTPC H2 Leh Performance report	
H2 Generation data from 01/04/2025-31/08/2025	
Total H2 Generated (kg)	2419
Total H2 Dispensed(kg)	1311.4
Bus data from 26/06/2025-31/08/2025	
Total distance travelled(km)	14139
Total Hydrogen filled (kg)	939
Mileage(km/kg)	15.06
Solar Gen data from 06/06/2024-31/08/2025	
Total Gen (MWh)	2275

Figure 7.11 (a) Operational Data

Operational Performance: As per operational data from 01.04.2025 to 31.08.2025, total hydrogen generation was 2,419 kg, of which 1,311.4 kg was dispensed. Bus operations (26.06.2025–31.08.2025) covered 14,139 km using 939 kg of hydrogen, achieving an average mileage of 15.06 km/kg. Solar generation during the same period amounted to 2,275 MWh, confirming reliable renewable energy support for hydrogen production.



Figure 7.11 (b) Hydrogen Fuelling Station (altitude- 3650m MSL) & Hydrogen Fuel Cell Bus

B. Design and Development of 20 kW Low Temperature Polymer Electrolyte Membrane (LT-PEM) Fuel Cell with High Indigenous Content

The MNRE-supported project on development of a 20 kW Low Temperature PEM fuel cell system is being implemented at the ARCI – Centre for Fuel Cell Technology, Chennai. The project aims to establish indigenous capability for PEM fuel cell stack design, manufacturing, and testing.



Figure 7.12 Automated PEM fuel cell Assembly at ARCI-CFCT, Chennai

A 20 kW PEM fuel cell stack has been successfully developed as part of a modular 100 kW (5 × 20 kW) system. An automated PEM fuel cell assembly pilot line with a production capacity of 100 kW per year has been established. Indigenous manufacturing of key components has been demonstrated, including fabrication of ~700 bipolar plates and ~300 MEA/CCM units covering an electrode area of ~30 m^2. Imported component usage has been reduced to ~5% by value, excluding the membrane.

Performance evaluation indicates a specific power of 95–103 W/kg and geometric power density of ~133 mW/cm^2 at stack level. Long-duration durability testing of the stack was completed for 5,000 hours, with an observed voltage degradation rate of 25.2 mV per 1,000 hours, meeting project targets. Stack cost has been reduced to ₹2.31 lakh/kW using Nafion membranes and ₹1.98 lakh/kW using alternative membranes. The project has resulted in two patents granted, three under filing, and establishment of India's first automated PEMFC pilot manufacturing line.

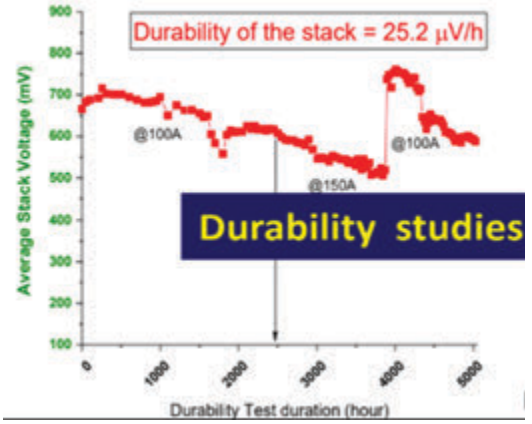


Figure 7.13 Durability Study on the stack

C. Setting up of a Centre of Excellence on Hydrogen Energy at NISE, Gwal Pahari, Haryana

The project aims to establish a Centre of Excellence (CoE) on Hydrogen Energy at the National Institute of Solar Energy (NISE) to strengthen indigenous capability in green hydrogen production, storage, dispensing, and mobility demonstrations. NISE hosts India's first Solar PV–based Green Hydrogen generating and dispensing station, serving as a national demonstration and training facility.

The facility comprises a 120 kWp solar PV plant powering two KOH-based alkaline electrolysers with a combined hydrogen production capacity of 15 Nm^3/hr (~1.35 kg/hr). Hydrogen is purified to 99.999% fuel-cell grade and stored at 500 bar in high-pressure tanks with a total storage capacity of ~60 kg. A dedicated H35 dispenser (350 bar) enables real-time refuelling and demonstration of hydrogen-fuelled vehicles.



Figure 7.14 Hands on training on Green Hydrogen Plant operation, instrumentation and controls of the new Electrolyser

Under the MNRE-funded CoE project, revival of the existing hydrogen station has been undertaken, including troubleshooting, repair, and replacement of critical components. A new 10 Nm^3/hr alkaline electrolyser was commissioned in February 2025, augmenting hydrogen generation capacity. NISE has also conducted hands-on training programmes on hydrogen production, storage, instrumentation, and safety during August 2024 and February 2025, contributing to national capacity building.

To advance hydrogen mobility, NISE has entered a MoU with Toyota Kirloskar Motor for evaluation and demonstration of the Toyota Mirai fuel-cell vehicle under Indian operating conditions, further strengthening applied research and demonstration objectives of the CoE.

7.1.8 R&D in Geothermal Energy

The Ministry of New and Renewable Energy (MNRE) notified the National Policy on Geothermal Energy on 15.09.2025, with the objective of establishing geothermal energy as an integral component of India's renewable energy portfolio in support of energy security and the national commitment to achieve net-zero emissions by 2070. The Policy provides a structured framework for research, exploration, resource assessment, and deployment of geothermal technologies, encompassing power generation, direct-use applications, and ground source heat pumps, while promoting indigenous R&D, risk mitigation, private sector participation, and international collaboration.

In furtherance of R&D-led implementation of the Policy, a stakeholder consultation meeting was held on 12.11.2025 under the chairmanship of Secretary, MNRE. The deliberations emphasized strengthening research and development through enthalpy-based resource classification, adoption of UNFC-aligned assessment standards, focused exploration in high-potential regions, creation of a centralized geothermal data repository, and enhanced inter-agency coordination. Stakeholders also highlighted the need for suitable tariff and viability gap funding mechanisms, collaboration with international leaders in geothermal technology, and differentiated R&D approaches for geothermal power generation and low-enthalpy direct-use applications.

Highlights of the progress achieved under the Geothermal Energy R&D projects funded by the MNRE are listed below:

A. Pilot Integrated Commercial Geothermal Energy of 450 kW by retrofitting unproductive oil and gas wells:

MNRE has recently sanctioned a pilot R&D project implemented by the Indian Institute of Technology Madras, aimed at commercializing geothermal power generation through repurposing of unused oil and gas reservoirs. The project focuses on reservoir classification, assessment of geothermal gradients and temperatures, and techno-economic evaluation of electricity generation using retrofitted wells. Key objectives include converting existing hydrocarbon wells into geothermal producers, estimating outlet temperatures and revenue potential, and establishing a 450 kW Organic Rankine Cycle (ORC) power plant with grid connectivity. Planned deliverables encompass well integrity assessment, reservoir data compilation, well retrofitting, system design, installation, commissioning, performance testing, environmental assessment, and initiation of commercial operation, supporting scalable geothermal deployment in India.

B. Harnessing of geothermal energy from Arunachal Himalaya

MNRE has sanctioned a project implemented by the Centre for Earth Sciences and Himalayan Studies (CESHS), Government of Arunachal Pradesh, to systematically assess and utilize geothermal resources in the Himalayan region. The project involves integrated geological, geochemical, geophysical, and geothermal investigations, including detailed

structural mapping and development of a 3-D geological model to estimate exploitable geothermal potential. It also evaluates the feasibility of geothermal energy for industrial use, electricity generation, and geothermal heating for Army base camps. Key deliverables include detection and delineation of geothermal sites, identification of geochemical thresholds, generation of deep heat-flow and geo-electrical data, and demonstration of geothermal heating applications, supporting strategic and energy security objectives.

C. Demonstration of power generation using integrated Solar-Geothermal energies

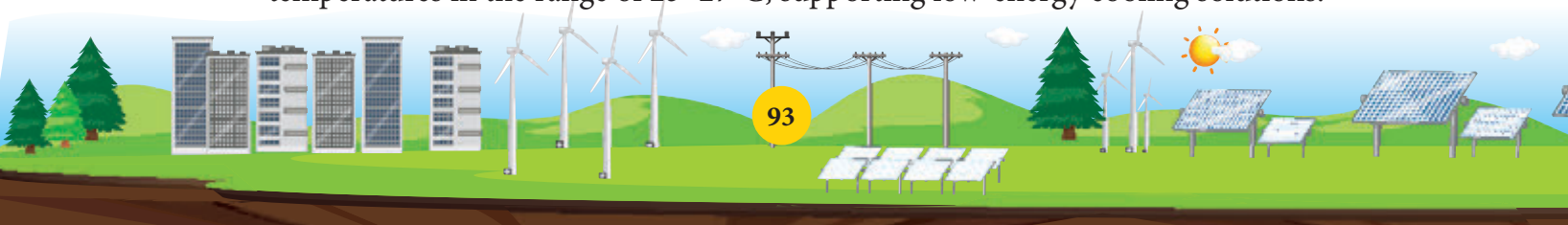
MNRE has sanctioned a R&D project implemented by the Pandit Deendayal Energy University, Gujarat, to demonstrate integrated solar–geothermal energy utilization. The project involves exploratory surveys to identify geothermal hotspots and detailed analysis of geothermal water quality for compatibility with power plant equipment. A small-scale Organic Rankine Cycle–based hybrid solar thermal and geothermal power plant is being set up to assess power generation potential. The project also focuses on designing and demonstrating direct-use applications of residual geothermal energy. Key deliverables include subsurface characterization of aquifer continuity, comprehensive water quality assessment, evaluation of hybrid power output, and implementation of direct geothermal applications.

D. A Pilot Project on Study and Testing of Shallow Geothermal Energy Potential in India

MNRE has sanctioned a R&D project implemented by the Indian Institute of Technology Delhi to assess the potential of shallow geothermal energy in India. The project focuses on preliminary national-level potential estimation, analytical and numerical evaluation of geothermal borehole designs, and field testing to validate model predictions. It also aims to develop standardized procedures for testing, installation, and design of ground source heat pump (GSHP) systems, including comparative cost–benefit analysis with other green technologies. Key deliverables include development of a national shallow geothermal potential map, comprehensive design and testing guidelines with economic analysis, and exploration of technology indigenization through patent filings.

E. Design and Development of Geothermal Cooling for Air Conditioning System in 20x20x10 ft Room

MNRE has sanctioned a R&D project implemented by the Osmania Technology Business Incubator, Osmania University, focusing on geothermal-based natural cooling for space conditioning. The project aims to utilize the low subsurface temperatures at shallow depths (1–3 m) to develop an energy-efficient geothermal cooling system for air-conditioning applications. Key objectives include reducing indoor temperatures to around 26°C with minimal electricity consumption and optimizing system parameters for different room sizes. Major deliverables include validation of the geothermal cooling concept, emulation of optimal design parameters, and demonstration of water circulation to achieve indoor temperatures in the range of 25–27°C, supporting low-energy cooling solutions.



7.1.9 R&D in Wind Energy

A. Met Ocean Measurement Project in Gulf of Khambhat and Gulf of Mannar

The Ministry supported a Met-ocean measurement project in the Gulf of Mannar to generate high-quality wind and oceanographic data for facilitating offshore wind energy development in India. The project aimed at establishing a robust, site-specific database covering wind, wave, tide, current, and water level parameters to support offshore wind resource assessment, zoning, and project planning.

Under the project, offshore LiDAR systems were installed at strategic locations, including VOC Port and Udangudi, and a comprehensive wind measurement campaign was completed. Real-time offshore wind data were generated at multiple heights up to 200 m, indicating favourable wind regimes with mean wind speeds exceeding 7 m/s at 150 m hub heights. Complementary oceanographic measurements were undertaken through a separate initiative. The project was completed in March 2025.

The project has resulted in the creation of a valuable offshore wind and met-ocean dataset, providing reliable validation of mesoscale offshore wind models through site-specific measurements, including floating LiDAR observations. The generated data enables accurate demarcation of offshore wind zones in the Gulf of Mannar, supports seabed leasing and bidding processes, and strengthens India's offshore wind programme by serving as a credible technical reference for offshore wind developers in feasibility assessments and project planning.

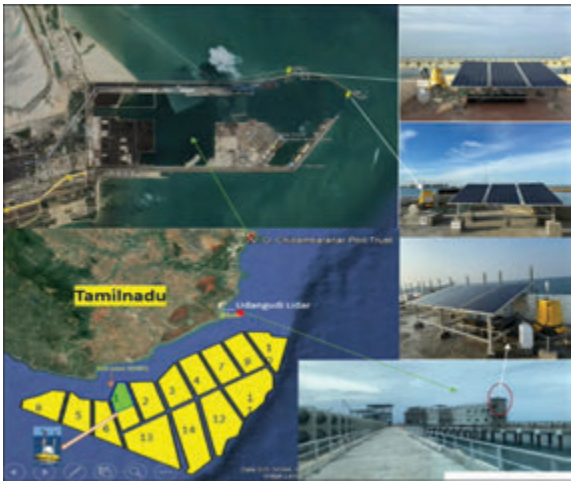


Figure 7.15 LiDAR installed at VOC port and Udangudi, Gulf of Mannar, Tamil Nadu

7.1.10 R&D to commercialization

MNRE's brainstorming consultation held on 08.08.2025 under the Chairmanship of Prof. Ashok Jhunjhunwala (IIT Madras) identified priority R&D actions for accelerating renewable energy commercialisation, with immediate focus on five domains in partnership with industry and R&D institutions. It was proposed that funding support be extended to start-ups along with loan provisions to scale up technologies. While silicon PV offers limited strategic advantage, Perovskite single-junction and tandem cells present strong TRL-5 opportunities requiring consortium-driven directed research. A national thrust on indigenous power-electronics and HVDC technologies can deliver TRL-7 products within two years. Grid-storage requires urgent pack-level indigenisation, with all grid-scale deployments mandated to use Indian battery-pack technology. Rooftop solar adoption can be unlocked through ToD-linked tariff reforms and domestically developed solar-

hybrid-UPS systems. A dual start-up support scheme—seed grants and subsidised venture debt—will help strengthen India's RE innovation pipeline. NITI Aayog has emphasized the development of pilot-scale plants and indigenous manufacturing for Long-Duration Energy Storage (LDES) technologies.

7.1.11 R&D Projects under Implementation

Given below is the list of R&D Projects under implementation during FY 2025-26:

Solar PV

S. no.	Title of the Project	Institution
1.	National Centre for Photovoltaic Research and Education (NCPRE) - Phase III	IIT Bombay
2.	National Primary Standard Facility for Solar Cell Calibration	CSIR-NPL, New Delhi
3.	Scale-up of Perovskite Tandem Solar Cells (Phase I)	IIT Bombay
4.	Perovskite Solar Modules	IIT Bombay
5.	Flexible Perovskite Solar Cells and Intermediate Module	IIT Bombay

Small Hydro

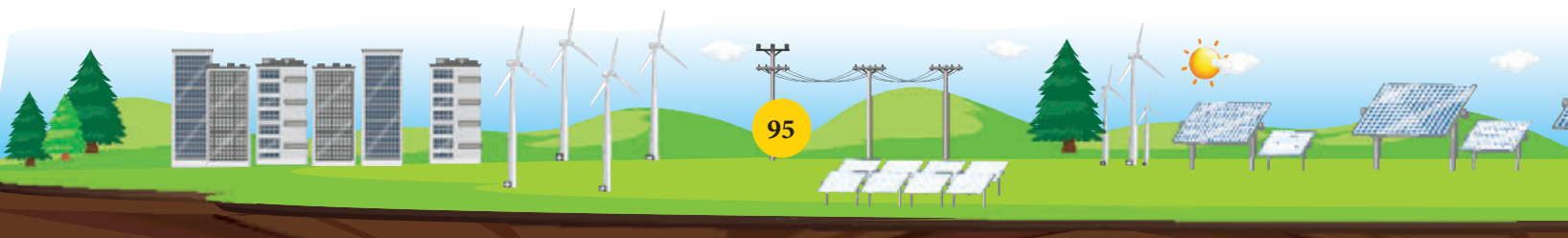
S. no.	Title of the Project	Institution
1.	Research and development of Ultra Low head and Hydrokinetic Turbines and performance prediction of small hydro turbine models	IIT Roorkee

Waste to Energy

S. no.	Title of the Project	Institution
1.	Biomass Gasification through Plasma Pyrolysis Technology for Chemical Production	IIT Roorkee
2.	Densification of agro-waste and assessment for its application in the gasifier	SSS-NIBE, Kapurthala

Green Hydrogen

S. no.	Title of the Project	Institution
1.	Green Hydrogen Mobility Project at Leh	NTPC
2.	Design and development of 20kW Low Temperature Polymer Electrolyte Membrane (LT-PEM) fuel cell with high indigenous content.	ARCI-CFCT, Chennai
3.	Setting Up of a Centre of Excellence on Hydrogen Energy at National Institute of Solar Energy	NISE, Gurugram



Geothermal Energy

S. no.	Title of the Project	Institution
1.	Pilot Integrated Commercial Geothermal Energy of 450 kW by retrofitting unproductive oil and gas well	IIT Madras
2.	Harnessing of geothermal energy from Arunachal Himalaya	CESHS, Govt. of Arunachal Pradesh
3.	Demonstration of power generation using integrated Solar-Geothermal energies	PDEU, Gujarat
4.	A Pilot Project on Study and Testing of Shallow Geothermal Energy Potential in India	IIT Delhi
5.	Design and Development of Geothermal Cooling for Air Conditioning System in 20x20x10 ft Room	Osmania University, Hyderabad

Wind Energy

S. no.	Title of the Project	Institution
1.	Met Ocean Measurement Project in Gulf of Khambhat and Gulf of Mannar	NIWE, Chennai

7.1.12 Recommendations by High Level Committee

A review of the Renewable Energy Research, Technology Development and Demonstration (RE-RTD) Programme was undertaken by a High-Level Committee chaired by **Dr. Anil Kakodkar**, Chancellor, Homi Bhabha National Institute, in its meeting held on 15.09.2025. After detailed deliberations on the progress, outcomes, and overall evaluation of the Programme, the Committee offered its valuable recommendations and concluded that the RE-RTD Programme may be continued for the period 2026–27 to 2030–31. Recommendations of Committee are mentioned below: -

- Strengthen industry–academia partnerships for TRL-based collaborative R&D.
- Establish dedicated national testing and validation facilities for wind, inverter, and storage technologies.
- Create a national R&D database for knowledge sharing and policy support.
- Enhance budgetary support and consider earmarking a fixed percentage of sectoral investment for R&D.
- Promote indigenization and supply-chain security through focused manufacturing R&D.
- Remodel the R&D scheme on ARPA-E/DARPA lines to drive innovation through competitive, goal-oriented projects.
- A detailed strategy and action plan which is aligned to national goals and strategy needs to be developed. There is a need to further scale the deployment of silicon-based solar cells, with active industry involvement in expanding domestic manufacturing capacity for solar as well as Inverters, Energy Storage &Power Electronics.

- The Ministry should provide support to start-ups in renewable energy to fast-track innovation, technology commercialization, and large-scale deployment of sustainable solutions and R&D budget should be increased by at least 3-4 times of existing budget.
- The Committee suggested that MNRE should identify thrust areas for R&D, adopt a staged TRL based pathway, allocate at least 5% of the renewable energy sector budget to R&D, and build a national database for policy support.
- To promote pan-India participation of industrial and academic research entities under the RE-RTD Programme, it is proposed that a structured framework for support, validation, and recognition of indigenously developed technologies and components be instituted. This framework shall facilitate collaborative development, encourage technology adoption, and enable scaling up of business opportunities across the renewable energy sector.

7.2 Production Linked Incentive (PLI) Scheme for High Efficiency Solar PV Modules

7.2.1 Introduction

Ministry of New and Renewable Energy, Government of India is implementing the Production Linked Incentive (PLI) Scheme for National Programme on High Efficiency Solar PV Modules, for achieving manufacturing capacity of Giga Watt (GW) scale in High Efficiency Solar PV modules with an outlay of Rs. 24,000 crores. This Scheme has provision for Production Linked Incentive (PLI) to the selected solar PV module manufacturers for five years post commissioning, on manufacture and sale of High Efficiency Solar PV modules.

7.2.2 Aims and Objectives

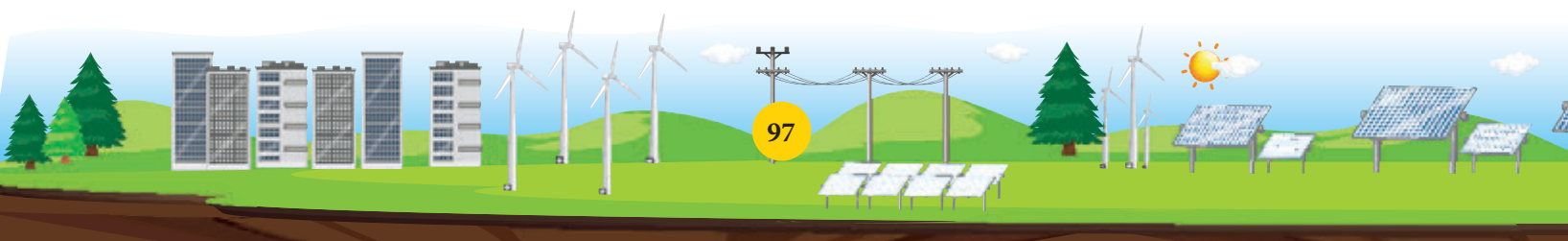
The scheme aims to build an ecosystem for manufacturing of high efficiency solar PV modules in India and thus reduce import dependence in the area of Renewable Energy. The objectives of the scheme include the following:

i. To build up solar PV manufacturing capacity of high efficiency modules.
ii. To bring cutting-edge technology to India for manufacturing high efficiency modules. The scheme will be technology agnostic in that it will allow all technologies. However, technologies which yield better module performance will be incentivized.
iii. To promote setting up of integrated plants for better quality control and competitiveness.
iv. To develop an ecosystem for sourcing of local material in solar manufacturing.
v. Employment generation and technological self-sufficiency.

7.2.3 The PLI Scheme is being implemented in two tranches as follows:

7.2.3.1 Tranche-I:

i. The Union Cabinet approved the Production Linked Incentive (PLI) Scheme for National Programme on High Efficiency Solar PV Modules, for achieving manufacturing capacity of



Giga Watt (GW) scale in High Efficiency Solar PV Modules on 07.04.2021. Ministry of New & Renewable Energy (MNRE) issued the Scheme Guidelines for Production Linked Incentive Scheme on 'National Programme on High Efficiency Solar PV Modules' on 28.04.2021, with an outlay of Rs. 4,500 crores.

ii. Under this tranche, Indian Renewable Energy Development Agency Limited (IREDA), the implementing agency on behalf of MNRE for the PLI Scheme (Tranche-I), issued the Bid Documents for selection of manufacturers for setting up manufacturing capacities for High Efficiency Solar PV Modules. Letters of Award were issued by IREDA in November and December, 2021 to three successful bidders for setting up of 8,737 MW capacity of fully integrated Solar PV Module manufacturing units within PLI scheme outlay of Rs. 4,500 crores. The aforesaid 8,737 MW solar PV manufacturing capacity is under implementation.

7.2.3.2 Tranche-II:

i. Subsequent to the Union Cabinet approval dated 21.09.2022, Ministry of New & Renewable Energy, on 30.09.2022, has issued Scheme Guidelines for implementation of Tranche-II of the PLI Scheme for High Efficiency Solar PV Modules, with an outlay of Rs. 19,500 crores.

ii. Under this tranche, Solar Energy Corporation of India (SECI), the implementing agency on behalf of MNRE for the PLI Scheme (Tranche-II), issued the tender document for selection of Solar PV manufacturers under Tranche-II of PLI Scheme for High Efficiency Solar PV Modules. Letters of Award (LoAs) have been issued by SECI to 11 bidders in April 2023 for setting up 39,600 MW of fully/partially integrated solar PV module manufacturing. Out of the awarded capacity, 4 GW of integrated capacity for solar cells and modules, has been declared commissioned in October 2025, and remaining capacity is under implementation.

7.2.3.3 In October 2025, the Government has allowed the successful bidders under tranche-I and tranche-II of PLI Scheme for high efficiency solar PV modules to avail the time extension in the scheduled commissioning date, up to a maximum of 2 years, subject to specified terms and conditions.

7.2.4 Expected Outcome/Benefits

The outcomes/benefits expected from the scheme are as follows:

i. It is estimated that about 48,337 MW per annum manufacturing capacity of fully and partially integrated, solar PV modules would be installed.

ii. The scheme will bring direct investment of around Rs.1,14,000 crore.

iii. Creation of manufacturing capacity for Balance of Materials like EVA, Solar Glass, Aluminium Frames, etc.

iv. Direct employment of about 35,000 persons.

v. Impetus to Research and Development to achieve higher efficiencies in Solar PV Modules.

7.3 Energy Storage

7.3.1 Renewable Energy sources are inherently variable and intermittent. Integrating a large share of such generation into the grid poses significant challenges to grid security, stability, and safety. Grid-scale Energy Storage Systems (ESS) play a crucial role in smoothing renewable generation output, enhancing power quality, and strengthening grid stability. Additionally, ESS helps reduce transmission network congestion and enables more efficient utilization of existing grid infrastructure.

7.3.2 Energy Storage Requirement

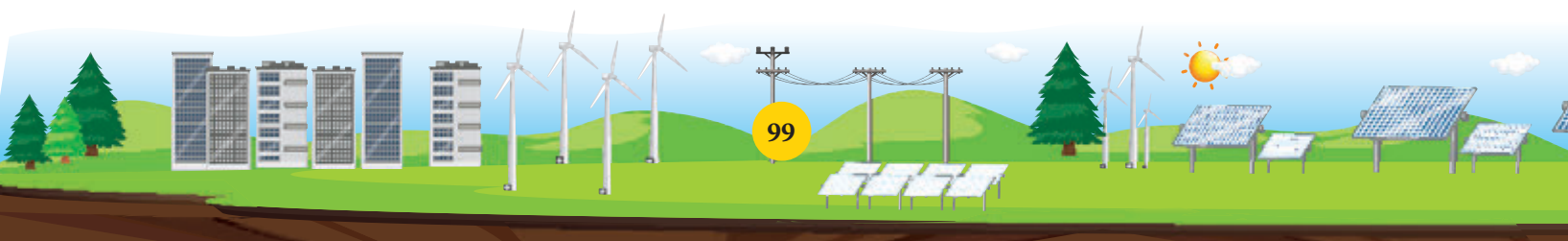
The Energy Storage requirements as per National Electricity Plan Vol.-1 and Optimal Generation Mix 2030 reports of CEA is as under:

Year/ Technology	2026-27	2029-30	2031-32	2047
BESS	8.68 GW / 34.72 GWh	41.65 GW / 208.25 GWh	47.24 GW/ 236.22 GWh	230 GW/ 1,840 GWh
PSP	7.45 GW / 47.65 GWh	18.98 GW / 128.15 GWh	26.69 GW/ 175.18 GWh	90GW/ 540 GWh
Total	**16.13 GW / 82.37 GWh**	**60.63 GW / 336.4 GWh**	**73.93 GW / 411.4 GWh**	**320 GW/ 2,380 GWh**

7.3.3 Installed/under tendering capacity

At present, around 505 MWh of BESS projects (≥1 MWh) have been installed in the country and about 75 GWh capacity is at various stages of tendering and construction.

Solar Energy Corporation of India Ltd (SECI), a CPSU under the Ministry of New and Renewable Energy (MNRE), is advancing innovative RE models by integrating solar, wind, and storage to enhance grid reliability and Capacity Utilization Factors (CUFs) through tender frameworks such as Round-the-Clock (RTC) RE, Assured Peak Supply, Standalone ESS, and Firm and Dispatchable RE (FDRE). The RE capacity awarded under such initiatives as on 30.09.2025 are as provided below:



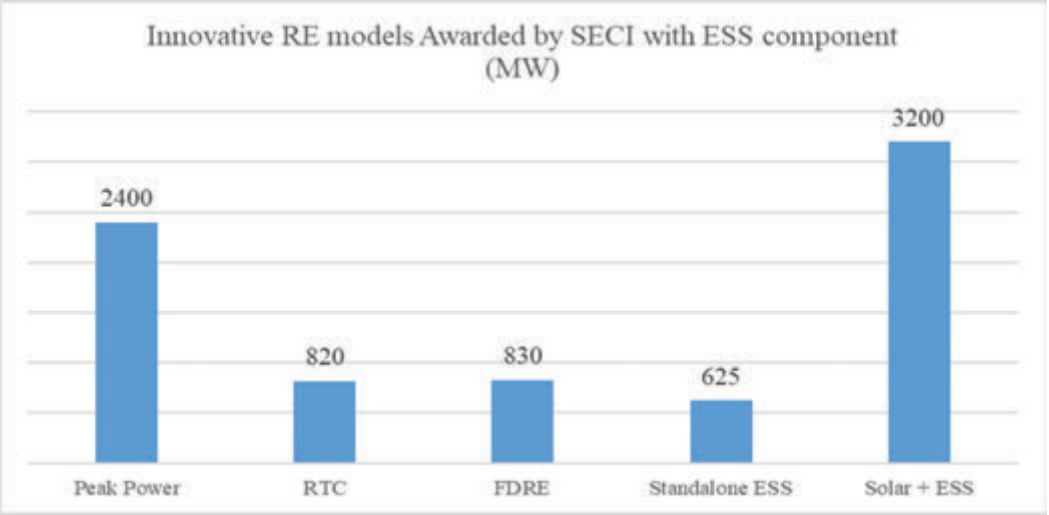


Fig. 7.16: *Further, the details of various projects operationalized and / or being implemented by SECI are as given below:*

7.3.4 In CAPEX Mode (Operational)

1. 100 MW (AC) Solar PV Power Plant (160 MWp DC capacity) along with 40 MW/120 MWh BESS at Rajanandgaon, Chhattisgarh. The project is India's largest Battery Energy Storage System (BESS) and the energy would be purchased by the state of Chhattisgarh, thus contributing to meeting the peak energy demand of the State.



Fig. 7.17: BEES Plant



Fig. 7.18: BEES Plant

2. 1.7 MWp Solar PV Power Plant with 1.4 MWh BESS in Kavaratti &Agatti Islands, Lakshadweep. The project is operational.



Fig. 7.19: BEES Plant

7.3.4.1 Under Implementation Projects

1. 25 MW Solar + BESS project in Leh, Ladakh. The project is under implementation.

7.3.5 Standalone BESS

- In March 2025, SECI issued a LoA for a standalone BESS project of 125 MW/500 MWh, with corresponding BESS. This takes SECI's cumulative awarded ESS capacity to 625 MW/1,500 MWh.

7.3.6 Key Battery Technologies

- The dominant battery technology currently being used for grid-scale storage application is based on Lithium-ion batteries technology, which have seen a significant scale-up in capacity.
- However, newer technologies such as sodium-ion batteries (SIBs) and flow batteries are garnering significant interest due to their suitability for grid scale applications. However, these technologies are under commercialization phase.

7.3.7 Trend in tariff discovered

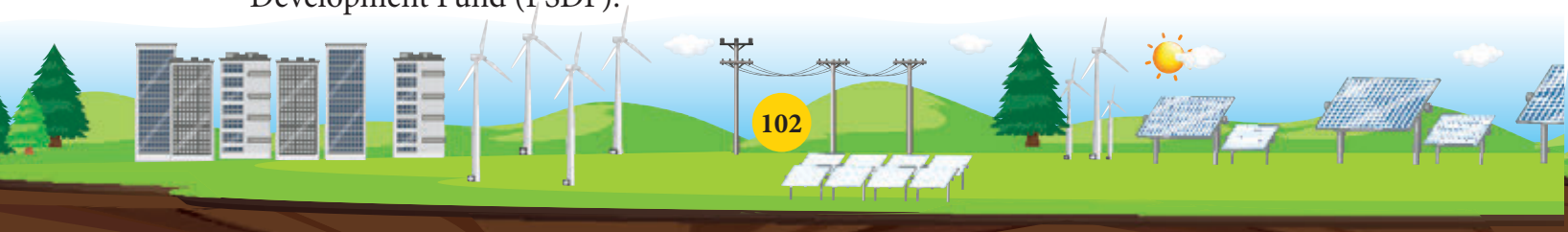
- The tariff for Solar + BESS projects has seen a gradual decline even with increasing penetration of BESS component in each project and storage duration. The tariff has come down from Rs. 6.99 / kWh in 2018 to Rs. 2.7 / kWh in 2025.
- The Standalone BESS tariffs have dropped by more than 75% in 2 years timeframe from Rs. 11.25 / kWh in 2022 to Rs. 2.54 / kWh in 2025.

7.3.8 Pump Storage Projects (PSP)

As on date, PSPs (above 25 MW) of cumulative capacity of approx. 6.7 GW has been installed in the country out of which around 5.2 GW is in operational. Further, around 12.1 GW capacity is under implementation.

7.3.9 Policies and incentives for promotion of Energy Storage Systems (ESS)

- The Government of India (GoI) is actively promoting the adoption of Battery Energy Storage Systems (BESS) across both the supply and demand sides of the power sector. Several policy measures and initiatives have been introduced to support large-scale deployment, encourage private participation, and create an enabling regulatory framework. The key policy interventions undertaken by the Government are as follows:
- Ministry of Power is having a Viability Gap Funding (VGF) scheme for development of 4000 MWh capacity of Battery Energy Storage Systems (BESS) in the country. The total outlay for this scheme is ₹9,400 crore including a budgetary support of ₹3,760 crore. Due to decline in BESS prices, the VGF support has been extended up-to 13,200 MWh BESS capacity, within the same sanctioned financial outlay.
- Ministry of Power further extended this scheme for development of an additional BESS capacity of 30,000 MWh with a total financial support of ₹5,400 crore through Power System Development Fund (PSDF).



- Ministry of Heavy Industries (MHI), in June, 2021 had come out with a Production Linked Incentive (PLI) scheme, 'National Programme on Advanced Chemistry Cell (ACC) Battery Storage' for implementation of giga-scale ACC manufacturing facilities in India, with an aim to establish a competitive domestic manufacturing ecosystem for 50 GWh with a total budgetary outlay of ₹18,100 crore. 40 GWh capacity has been allocated to bidders through Quality and Cost Based Selection (QCBS) process and remaining 10 GWh has been earmarked to Ministry of New & Renewable Energy for grid scale stationary storage applications .
- A 100% waiver on the inter-state transmission system (ISTS) charges for BESS and pumped hydro storage commissioned before 30.06.2028 (extended from original June 2025 deadline).
- Ministry of Power has also released the National Framework for Promoting Energy Storage Systems in 2023 for the development and deployment of ESS in India.
- Guidelines for Tariff Based Competitive Bidding Process for Procurement of Firm and Dispatchable Power from Grid Connected Renewable Energy Power Projects with Energy Storage System.
- Energy Storage Obligations (ESO) Target set to 4% of energy requirement by 2030, 10 states include the same in state RE policies.
- Ministry of Power in April, 2023 issued guidelines to promote development of Pump Storage Projects.
- Central Electricity Authority (CEA) has issued an Advisory on co-locating Energy Storage Systems with Solar Power Projects to enhance grid stability and cost efficiency. As per the Advisory, all Renewable Energy Implementing Agencies (REIAs) and State utilities are advised to incorporate a minimum of 2-hour co- located Energy Storage Systems (ESS), equivalent to 10% of the installed solar project capacity, in future solar tenders.
- Budgetary Support scheme for funding Enabling Infrastructure in Hydro Electric Projects, with an allocation of ₹12,461 crore to be implemented during FY 2024-25 to FY 2031-32, scheme will also be applicable to all Pumped Storage Projects (PSPs).

7.3.10 Event: World Energy Storage Day, 2025

To celebrate the World Energy Storage Day on 22.09.2025, the Ministry in association with NetZero Energy Transition Association (NETRA) as Knowledge Partner, hosted the Conference on Energy Storage – Driving the Clean Energy Transition at the Ministry premises. The high-level conference was graced by the presence of Hon'ble Minister for NRE and Hon'ble MoS for NRE and other senior officials from the Ministry. The event was attended by more than 200+ industry participants, researchers, and investors to deliberate on the role of energy storage in enabling India's clean energy transition.

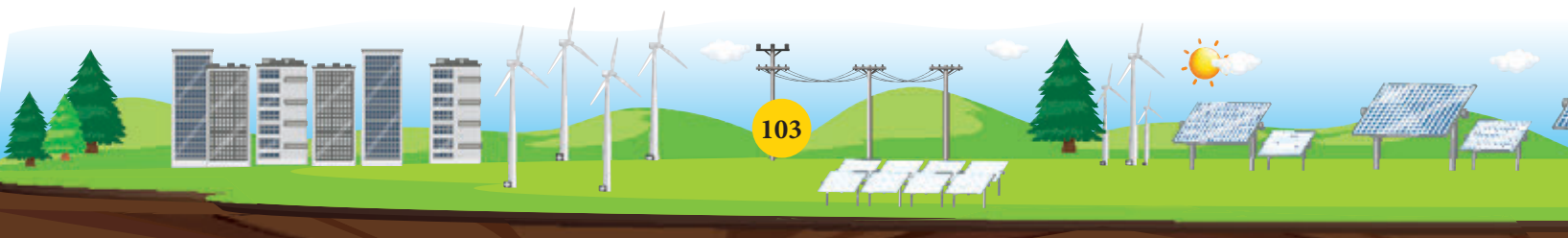




Fig. 7.20: World Energy Storage Day on 22nd September, 2025

7.4 Standards & Quality Control In Renewable Energy Sector

7.4.1 In continuation of MNRE's efforts to strengthen quality standards in the solar sector, the Ministry has notified the modified "Solar Systems, Devices, and Components Goods Order, 2025" (QCO 2025) vide Gazette Notification dated 27.01.2025 and this modified QCO become effective from 27.07.2025. This revised order supersedes erstwhile QCO, 2017 and incorporates the latest versions of Indian Standards for Solar PV Modules, Storage Batteries, and SPV Inverters. Additionally, QCO 2025 introduces further standards for the determination of efficiency of SPV Inverters. The respective Indian Standards for Solar PV Products are mentioned in table no. 7.1.

Table 7.1: Standards mentioned in QCO for SPV products

S. No.	Goods or articles	Indian Standard	Title of Indian Standard
1.	Crystalline Silicon Terrestrial Photovoltaic (PV) modules (Si wafer based)	IS 14286 (Part 1) : 2023/ IEC 61215-1 : 2021	Terrestrial Photovoltaic (PV) Modules - Design Qualification and Type Approval Part 1 Test Requirements
		IS 14286 (Part 1/Sec 1) : 2023/ IEC 61215-1-1: 2021	Terrestrial Photovoltaic (PV) Modules - Design Qualification and Type Approval: Part 1 Test Requirements: Sec 1 Special requirements for testing of crystalline silicon photovoltaic (PV) modules.
			Photovoltaic (PV) Module Safety Qualification Part 1 Requirements for Construction

		IS/IEC 61730-1 : 2016	Photovoltaic (PV) Module Safety Qualification Part 2 Requirements for Testing
		IS/IEC 61730-2 : 2016	Terrestrial Photovoltaic (PV) modules - Design qualification and type approval: Part 1 test requirements.
2.	Thin-Film Terrestrial Photovoltaic (PV) Modules [CdTe, a-Si, Cu(In,Ga)(S,Se)2]	IS 14286 (Part 1) : 2023/ IEC 61215-1 : 2021	Terrestrial Photovoltaic (PV) Modules - Design Qualification and Type Approval
		IS 14286 (Part 1/Sec 2): 2023/ IEC 61215-1-2: 2021 + Amd-1:2022	Part 1 Test Requirements Section 2 Special requirements for testing of thin-film cadmium telluride (CdTe) based photovoltaic (PV) modules
			Terrestrial Photovoltaic (PV) Modules - Design Qualification and Type Approval
		IS 14286 (Part 1/Sec 3) : 2023/ IEC 61215-1-3 : 2021 + Amd-1:2022	Part 1 Test Requirements Section 3 Special requirements for testing of thin-film amorphous silicon based photovoltaic (PV) modules
		IS 14286 (Part 1/Sec 4): 2023/ IEC 61215-1-4: 2021 + Amd-1:2022	Terrestrial Photovoltaic (PV) Modules - Design Qualification and Type Approval Part 1 Test Requirements Section 4 Special requirements for testing of thin-film Cu (In,Ga)(S,Se)2 based photovoltaic (PV) modules
		IS/IEC 61730-1: 2016	Photovoltaic (PV) Module Safety Qualification Part 1 Requirements for Construction
		IS/IEC 61730-2: 2016	Photovoltaic (PV) Module Safety Qualification Part 2 Requirements for Testing
3.	Storage Battery	IS 16270: 2023	Secondary Cells and Batteries for Solar Photovoltaic Application — General Requirements and Methods of Test
4.	Power inverters for use in photovoltaic power system	IS 16221 (Part 2): 2015/ IEC 62109-2: 2011	Safety of Power Converters for Use in Photovoltaic Power Systems Part 2 Particular Requirements for Inverters
		IS/IEC 61683: 1999	Photovoltaic systems - Power conditioners - Procedure for measuring efficiency
5.	Utility-Interconnected Photovoltaic Inverters	IS 16221 (Part 2): 2015/ IEC 62109-2: 2011	Safety of Power Converters for Use in Photovoltaic Power Systems Part 2 Particular Requirements for Inverters
		IS 16169: 2019/ IEC 62116: 2014	Test Procedure of Islanding Prevention Measures for Utility-Interconnected Photovoltaic Inverters.
		IS 17980: 2022/IEC 62891:2020	Maximum Power Point Tracking Efficiency of Grid Connected Photovoltaic Inverters

** In view of the availability of limited test facilities and providing more time for compliance, the implementation of "Solar Systems, Devices and Components Goods Order, 2025" for SPV inverters of the capacity more than 200 kW (i.e., >200kW) stands extended till 30.06.2026 or till further orders, whichever is earlier, based on self-certification,*

subject to the condition that such manufacturers have valid IEC certificates corresponding to Indian standards (IS 16221 (Part 2): 2015/ IEC 62109-2: 2011 & IS/IEC 61683: 1999 for item No. 4 and IS 16221 (Part 2): 2015/ IEC 62109-2: 2011, IS 16169: 2019/ IEC 62116: 2014 & IS 17980: 2022/IEC 62891:2020 for item No. 5), specified in the said order for these items and test reports from accredited test labs, for smooth implementation of the order.

7.4.2 BIS Registration of Products

The nos. of registration granted by Bureau of Indian Standards (BIS) for SPV Modules, SPV inverters and Storage Battery as per standards specified in MNRE Quality Control Order till 31.12.2025 is given in Table 7.2. Out of 772 nos. manufacturers who were granted registration for SPV Products, 492 Nos. are domestic manufacturers (63.73%). The MNRE has decided that only SPV Products with BIS Mark will be used in SPV Power Projects in the country. Thus, the Quality Control Order has given boost to not only quality control of SPV Products but also domestic manufacture of SPV Products with quality at international level, hence fulfilling the objective of Atmanirbhar Bharat.

Table 7.2: Registration nos. granted by BIS under MNRE Quality Control Order till 31.12.2025

S. no.	Product Name	No. of Registrations		
		Domestic	Foreign	Total
1	SPV Modules	316	156	472
2	SPV Inverters	162	124	286
3	Storage Batteries	14	0	14
	Total	**492**	**280**	**772**

7.4.3 Quality Control Order on Solar Thermal Systems, Devices and Components (Quality Control) Order, 2024

The Ministry of New and Renewable Energy also notified a Quality Control Order Solar Thermal Systems, Devices and Components (Quality Control) Order, 2024 vide gazette notification dated 8th October 2024. It came into force on the expiry of one hundred and eighty days from the date of its publication in the Official Gazette (i.e., 06.04.2025). The respective Indian Standards for Solar Water Heaters are mentioned in table no. 7.3:

Table 7.3: Standards mentioned in QCO for Solar Thermal Systems, Devices and Components (Quality Control) Order, 2024

S. No.	Goods or articles	Indian Standard	Title of Indian Standard
(1)	(2)	(3)	(4)
1.	Solar Flat Plate Collector for Solar Water Heating Systems	IS 12933 (Part 1): 2003	Solar Flat Plate Collector - Specification Part 1 Requirements
		IS 12933 (Part 2): 2003	Solar Flat Plate Collector- Specification Part 2 Components

2.	All Glass Evacuated Tubes Solar Water Heating System	IS 16544: 2016	All Glass Evacuated Tubes Solar Water Heating System
3.	Storage Water Tank for All Glass Evacuated Tubes Solar Water Heating Systems	IS 16542: 2016	Direct Insertion Type Storage Water Tank for All Glass Evacuated Tubes Solar Collector-Specification

7.5 Circular Economy

7.5.1 India has emerged as a global leader in promoting the circular economy and sustainable development. Initiatives like Mission LiFE, launched at COP26, encourage mindful resource use and environmental preservation. In 2021, NITI Aayog formed 11 inter-ministerial committees to drive the transition from a linear to a circular economy—focusing notably on the solar industry and lithium-ion batteries. Their action plans prioritise research, development, and demonstration (RD&D) of strategies such as designing, manufacturing, reuse, refurbishing, and recycling to enhance resource efficiency. Under India's G20 Presidency, the Resource Efficiency Circular Economy Industry Coalition (RECEIC) was launched, reaffirming commitments to reduce waste generation and promote zero-waste initiatives. Achieving these goals, however, depends on advancing technological and process innovations across the value chain.

7.5.2 To encourage research, development, and demonstration (RD&D) in the circular economy, the Ministry launched a "Call for Proposals on Innovation Challenge for Circularity in Renewable Energy Technologies – Batteries and Solar Photovoltaic" on 23.06.2025. The announcement was published on the MNRE R&D portal, with the deadline for proposal submission set for 1st August 2025.

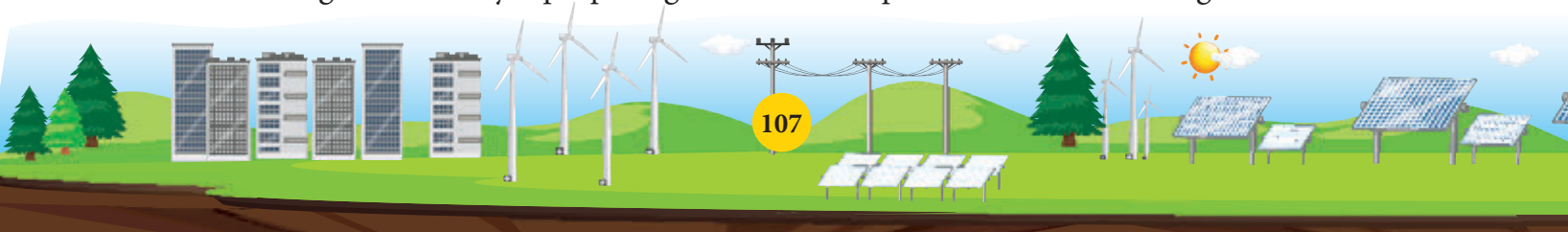
7.5.3 Participation:

7.5.3.1 A total of 202 proposals were received under the following three themes as envisaged in the "Call for Proposals":

i. **Theme 1:** Design and manufacturing innovations.
ii. **Theme 2:** Second-life use and recycling innovations.
iii. **Theme 3:** Operational management innovations.

7.5.3.2 Proposals were received from several academic, research institutions and start-ups across the country. Leading institutes such as IIT Bombay, IIT Delhi, IIT Hyderabad, IIT Roorkee, IIT Patna, IIT Kharagpur, and various NITs submitted innovative project proposals on circularity aligned with the specified themes in the areas of batteries and solar photovoltaics.

7.5.3.3 Several start-ups and private companies working in solar and battery technologies participated with scalable and commercially viable innovations submitted proposals focused on reverse logistics, battery repurposing, and AI-based performance monitoring.



7.6 PM Gati Shakti - National Master Plan (PMGS-NMP)

7.6.1 The PM Gati Shakti National Master Plan (PMGS-NMP) was launched by the Hon'ble Prime Minister in Oct 2021. This Ministry has been identified as one of the Ministries whose projects are to be uploaded on the NMP portal. This is a digital platform for integrated and coordinated infrastructure planning across ministries. It aims to provide seamless multi-modal connectivity for the movement of people, goods, and services, making Indian businesses more competitive.

7.6.2 Progress / Status:

- A Gati shakti cell has been created in the Ministry for all the works related PM Gati Shakti.
- Standard Operating Procedure (SOP) of MNRE finalized & Shared with DPIIT and Bhaskaracharya Institute for Space Applications and Geoinformatics (BISAG-N) for mapping of projects in PM Gati Shakti (National Master Plan) NMP.
- RE-Projects of capacity 50 MW or more being mapped on Gati shakti Portal.
- The Solar and Wind potential already mapped into the PM Gati Shakti portal. Data of projects from REIAs and NIWE of around 84 GW also obtained. 64 GW data mapped on PM Gati shakti Portal and balance data mapping activity is in progress
- A portal for Solar, Wind and Hybrid Projects developed by MNRE, to send data from developers to the NMP portal through an Application Programing Interface (API) integration.
- MNRE Portal has been updated and live. Portal can be accessed through the link: https://gatishakti.mnre.gov.in/home.
- Login credential and User manual have been shared with REIA's for mapping activity on MNRE Portal, a meeting with REIA has been scheduled for training on portal.
- The 13 GW Transmission Project from Ladakh under GEC has been approved by Network Planning Group (NPG) & subsequently by the Union Cabinet, which is also mapped in the portal.

7.6.3 State Resource Adequacy Planning

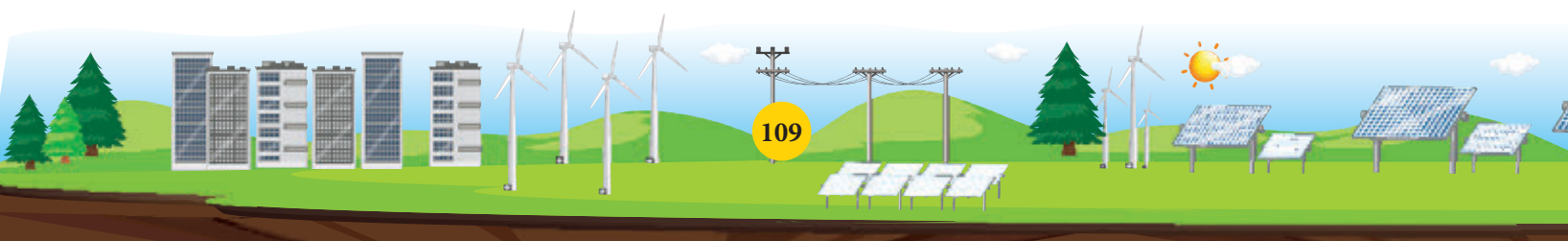
7.6.3.1 In exercise of the powers conferred under Rule 16 of the Electricity (Amendment) Rules, 2022, the Ministry of Power, Government of India, in consultation with the Central Electricity Authority (CEA), has issued the Guidelines for Resource Adequacy for the Indian Electricity Sector. These guidelines are to be complied with by all relevant institutions and stakeholders, as specified therein.

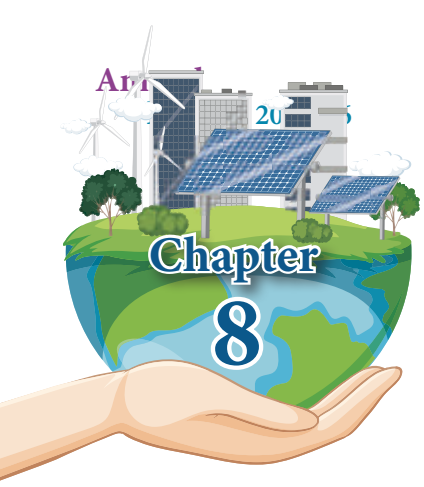
7.6.3.2 Further, the Ministry of Power has issued the Guidelines for the Resource Adequacy Planning (RAP) Framework for India in June 2023. In parallel, the Forum of Regulators (FoR) has

also issued Model Regulations for the Resource Adequacy Framework in June 2023. The objective of the RAP Framework is to ensure the availability of adequate generation capacity in line with the pace of demand growth, thereby preventing electricity shortages that could potentially impede the economic growth of the country.

7.6.3.3 The State Resource Adequacy Planning (SRAP) process facilitates that each State and Union Territory (UT) possesses sufficient energy resources to meet future electricity demand in a reliable and sustainable manner. This strategic and comprehensive planning process encompasses all 28 States and 08 UTs, and supports long-term planning for generation, transmission, and distribution infrastructure thereby enhancing energy security, grid reliability, and sustainable power sector development across the nation.

7.6.3.4 As of date, out of the 28 States, State Electricity Regulatory Commissions (SERCs) of 15 states and 07 UTs have notified their State Resource Adequacy Frameworks Regulations while 04 have issued draft notifications. Timely planning and monitoring of the SRAP is also important to achieve the targeted renewable energy capacity edition in the country. Therefore, MNRE is following up with the states and the state regulators for preparation, approval and monitoring of the SRAP.





Special Focus On North-East

8.1 Introduction

Special attention is being given to the development of renewable energy in the entire North Eastern Region (NER) through a separate budgetary allocation of 10% under various renewable energy programme.

The estimated potential of Renewable Energy in the NER, is about 113341.42 MW, out of which only about 5446.02 MW capacity has been harnessed cumulatively till 31.12.2025 as given in Table 8.1.

Table 8.1: Renewable Energy Potential and Capacity Installed in NER (31.12.2025)

(Capacity in MW)

	Solar	Wind Power	Small Hydro Power	Bio-Energy	Large Hydro	Total
Potential	46772.15	760	3261.49	567.08	61980.7	113341.42
Installed	490.76	0	384.46	15.8	4555	5446.02

Table 8.2: State Wise Renewable Energy Potential in NER

(Potential in MW)

Sl. No.	STATES / UTs	Solar	Wind Power @150m	Small Hydro Power	Bio-Energy	Large Hydro	Total including Large Hydro
1	Arunachal Pradesh	467.52	246	2064.92	18.46	50394	53190.9
2	Assam	19173.13	459	201.99	321.89	643	20799.01
3	Manipur	2293.92	0	99.95	62.31	615	3071.18
4	Meghalaya	14674.1	55	230.05	68.54	2026	17053.69
5	Mizoram	612.21	0	168.9	2.90	1926.7	2710.71
6	Nagaland	190.96	0	182.18	53.90	325	752.04
7	Sikkim	254.46	0	266.64	4.73	6051	6576.83
8	Tripura	9105.85	0	46.86	34.35	0	9187.06
	Total	**46772.15**	**760**	**3261.49**	**567.08**	**61980.7**	**113341.42**

The State Wise detail of Renewable Energy Capacity installed as on 31.12.2025, in the NER is given in Table 8.3.

Table 8.3: State Wise Renewable Power capacity Installed in NER as on 31.12.2025

(MW)

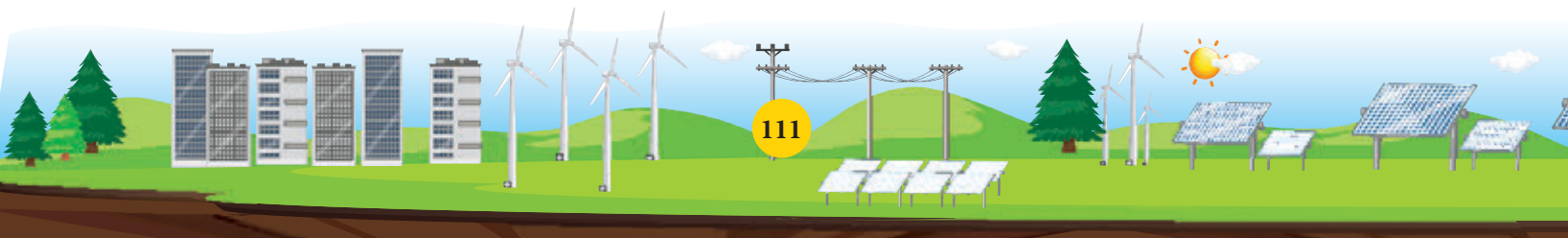
		Small Hydro Power	Bio Power	Solar Power	Large Hydro	Total RE Capacity
1.	Arunachal Pradesh	140.61	0	15.44	1365.00	1521.05
2.	Assam	34.11	2	375.91	346	758.02
3.	Manipur	5.45	0	17.52	105	127.97
4.	Meghalaya	55.03	13.80	4.28	322	395.11
5.	Mizoram	45.47	0	31.69	60.00	137.16
6.	Nagaland	32.67	0	3.34	75	111.01
7.	Sikkim	55.11	0	7.56	2282	2344.67
8.	Tripura	16.01	0	35.02	0	51.03
	Total (MW)	**384.46**	**15.8**	**490.76**	**4555**	**5446.02**

8.2 Small Hydro Programme

NE States have fairly good potential to develop small Hydro-power projects. Among the NE States, Arunachal Pradesh has the highest potential followed by Sikkim, Meghalaya and Assam. MNRE has been giving special emphasis to the development of small hydro projects in the NER. Small hydropower projects can provide energy almost uninterrupted without any major maintenance or dependence on weather. Small Hydro Power projects can generate sufficient electricity to power domestic households, schools and clinics in rural areas and trigger entrepreneurship activities. The details are given in Table 8.4.

Table 8.4: State-wise Small Hydro Potential and total installed in the NER States as on 31.12.2025

		Total Potential (MW)	Total Installed capacity (MW)
1.	Arunachal Pradesh	2064.92	140.61
2.	Assam	201.99	34.11
3.	Manipur	99.95	5.45
4.	Meghalaya	230.05	55.03
5.	Mizoram	168.9	45.47
6.	Nagaland	182.18	32.67
7.	Sikkim	266.64	55.11
8.	Tripura	46.86	16.01
	Total (MW)	**3261.49**	**384.46**



8.3 PM Kusum Scheme

PM KUSUM (Pradhan Mantri Kisan Urja Suraksha Evam Utthaan Mahabiyan) scheme to promote small Grid-Connected Solar or Other Renewable Energy Power Plants, installation of stand-alone solar-powered agricultural pumps and solarization of existing grid-connected agricultural pumps including feeder-level solarization (FLS).

For the North East Region States, Jammu & Kashmir, Ladakh, Himachal Pradesh, Uttarakhand, Lakshadweep and A&N Islands, the CFA is provided as follows: -

i. Under Component A, Performance Based Incentives (PBI) @0.40 per unit purchased or Rs. 6.6 lakh per MW of capacity installed, whichever is less, for a period of five years will be provided to DISCOMs.

ii. For all the individual farmers installing/solarizing the agriculture pumps up to 7.5HP capacity under both the Component-B and Component-C, will be provided with Central Financial Assistance (CFA) of 50% of the benchmark cost or the tender cost, whichever is lower. Further, the CFA will be available for pump capacity up to 15HP, however, it will be restricted to 10% of total installations in the state. The State Government will provide a subsidy of at least 30% and the remaining up to 20% is to be provided by bank loan/farmer.

iii. Moreover, components- 'B' and 'C' can also be implemented without State share of 30%. The CFA will continue to remain at 50% and the rest 50% will be borne by the beneficiary farmer.

iv. Under component-C (FLS), the CFA is calculated considering the cost of the solar power plant as Rs. 3.5 Crore/MW. Therefore, the CFA of Rs. 1.75 Crore/MW will be provided to States.

Table 8.5: Status of installation under PM KUSUM Scheme in the NER as on 31.12.2025

S. No.	State Name	Component-A (MW)		Component-B (Nos)		Component-C (Nos) (Individual Pump Solarization)	
		Sanctioned	Installed	Sanctioned	Installed	Sanctioned	Installed
1.	Arunachal Pradesh	0	0	700	682	0	0
2.	Assam	2	0	4000	151	0	0
3.	Manipur	0	0	450	150	0	0
4.	Meghalaya	0	0	2735	98	0	0
5.	Mizoram	0	0	1700	40	0	0
6.	Nagaland	0	0	265	149	0	0
7.	Tripura	5	0	11114	6810	3600	788
	Total	**7**	**0**	**20964**	**8080**	**3600**	**788**

8.4 Solar Parks

Ministry is implementing a Scheme for "Development of Solar Parks and Ultra Mega Solar Power Projects" with an objective to set up at least 50 nos of Solar Parks with an aggregate capacity of 40000 MW of solar power projects. All the States and Union Territories are eligible for getting benefit under the scheme.

Under the Scheme, Ministry have approved 55nos of Solar Parks in 13 States including one Solar Park of capacity 20MW in Vankal, Champhai District, Mizoram. The Solar Park at Vankal in Mizoram has been successfully commissioned.

8.5 PM-Surya Ghar: Muft Bijli Yojana

The PM Surya Ghar: Muft Bijli Yojana (PMSG:MBY) has been launched with an aim to increase the share of solar rooftop capacity in the country and empower residential households to generate their own electricity. The scheme targets to achieve rooftop solar installations for one crore households in residential sector by FY 2026-27 with an outlay of Rs 75,021 crore. The Scheme provides 10% higher CFA for NER States as compared to the other general category States. The CFA is capped at 3KW and details are given at Table 8.6:

Table 8.6: CFA to Residential Consumers of NER

Sr. No.	Type of Residential Segment	CFA (NER States)
1.	Residential Sector (first 2 kWp)	Rs 33000/kWp
2.	Residential Sector (additional 1 kWp)	Rs 19800/kWp
3.	Residential Sector (above 3 kWp)	No additional CFA
4.	GHS/RWA etc, for common facilities for up to 500 kWp (@3 kWp per house)	Rs 19800/kWp

Moreover, following three North East States have announced additional State subsidies apart from CFA as given at Table 8.7:

Table 8.7: Additional Subsidy by NER states under PMSG:MBY

State	Additional Subsidy by State
Assam	Rs. 15,000/kW up to 3kW; capped at Rs. 45,000
Mizoram	Within AMC Area: Rs 12,000/kW, up to 100 KM: Rs 14,000/kW, up to 200 KM: Rs 16,000/kW, Beyond 200 KM, Rs 18,000/KW. Subsidy up to 10 kW for all cases.
Nagaland	Rs 50000/- upto 3 KW

The progress in the NER states under PMSG:MBY as on 31.12.2025 is given in Table 8.8.

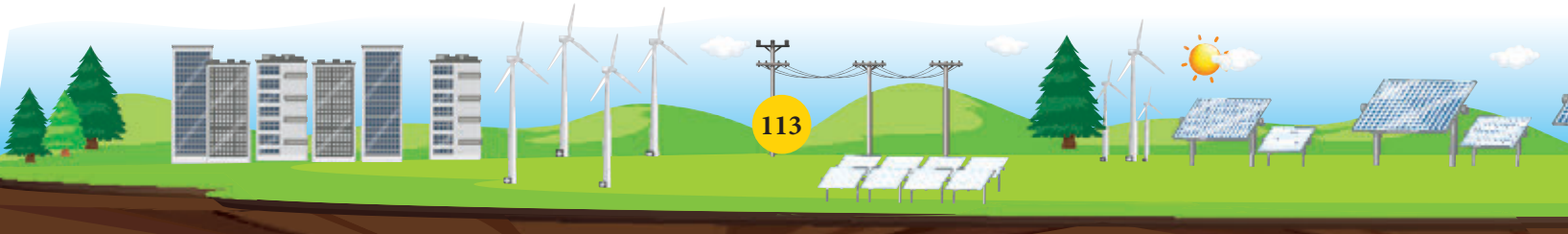


Table 8.8: Progress in the NER states under PMSG:MBY

State	State Target	Application	Households Benefitted	Subsidy Released (in Cr.)	Active Vendor (Nos.)
Arunachal Pradesh	9,970	88	1	0.01	1
Assam	2,18,000	4,76,703	72,604	494.28	1015
Manipur	25,000	1,434	711	5.66	16
Meghalaya	833	1,929	34	0.17	4
Mizoram	13,000	940	775	5.97	12
Nagaland	10,938	549	132	1.03	9
Sikkim	25,000	261	26	0.13	3
Tripura	3,667	7,704	1,859	12.72	33
Total	**3,06,408**	**4,89,608**	**76,142**	**520**	**1,093**

8.6 New Solar Power Scheme (for Tribal and PVTG Habitations/Villages) under PM JANMAN

MNRE initially issued approval for New Solar Power Scheme (for Tribal and PVTG Habitations/ Villages) under PM JANMAN on 04.01.2024, which was later revised on 18.10.2024 to also include other tribal habitations/villages and renamed as 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).

The Scheme will cover electrification of One Lakh un-electrified households (HHs) in Tribal and PVTG areas identified by Ministry of Tribal Affairs (MoTA) by provision of off-grid solar systems. The scheme includes a provision for providing off-grid solar lighting in 1500 Multi-Purpose Centres (MPCs) in PVTG areas as approved under PM JANMAN. Similarly, the scheme also includes provision for solarization of 2000 public institutions through off-grid solar systems as approved under DA JGUA. The off-grid solar systems shall be provided only where electricity supply through grid is not techno-economically feasible.

As on 31.12.2025, the details of sanctioned and electrified households/ Public Institutions are as under:

S. No.	State	Scheme Component	HH/Public Institutions (PIs)	HHs/PIs Sanctioned in number	HHs reported Electrified as on 31.12.2025
1	Tripura	PM JANMAN	Households	1703	1460
2	Manipur	DA JGUA	Households	100	65
3	Arunachal Pradesh	DA JGUA	Households	3999	46
4	Assam	DA JGUA	Public Institutions	8	-

8.7 Biogas Programme

MNRE has been implementing the Biogas Programme during FY 2021-22 to FY 2025-26, under the Phase-I of National Bioenergy Programme, in the country including North East Region (NER) States for providing clean gaseous fuel mainly for cooking, lighting, decentralised power generation, including production of by products in the form of organic manure for households and dairy, poultry sector, agro/food-based industries, through the Programme Implementing Agencies (PIAs) under the Biogas Programme. Moreover, under the Biogas Programme, 20% of additional CFA over and above the standard CFA, is applicable for all the biogas plants installed in NER.

A Biogas Development and Training Centre for providing training and technical support under the Biogas Programme for all the NER States is functional at Department of Mechanical Engineering, Indian Institute of Technology, Guwahati, Assam.

8.8 Capacity Building & Skill Development in NER

(A) Human Resource Development (HRD) Programme

HRD Programme of MNRE aims to institutionalize renewable energy education and training to meet the requirement of qualified and trained manpower in the country. HRD Programme supports trainings for manpower including promoting higher studies and research courses by providing Fellowships to students and research scholars in R&D and academic institutions in Renewable Energy. Ministry also provides Support to educational and other training organizations for conducting short-term trainings on various aspects of Renewable Energy with focus on skill development at all levels. Under short-term training programmes of HRD scheme, Ministry is implementing Skill Development Programmes namely Solar PV Technician (Suryamitra), Solar Water Pumping Technician (Varunmitra), Wind Power Plant Technician (Vayumitra) and Small Hydro Power Plant Technician (Jalurjamitra) through NISE, NIWE and IIT Roorkee to train workforce for installation, commissioning, operation and maintenance of renewable energy projects.

The Ministry is creating skilled manpower in various technologies of Renewable Energy in NER. Under the Suryamitra Programme, initiated in 2015, a total of 2398 Suryamitras were trained, under Varunmitra programme, 71 Varunmitras were trained and 59 Jalurjamitras were trained under Jalurjamitra programme launched in March, 2022 in NER. The State-wise progress of trained manpower in NER under these Programmes are given in Table 8.9.

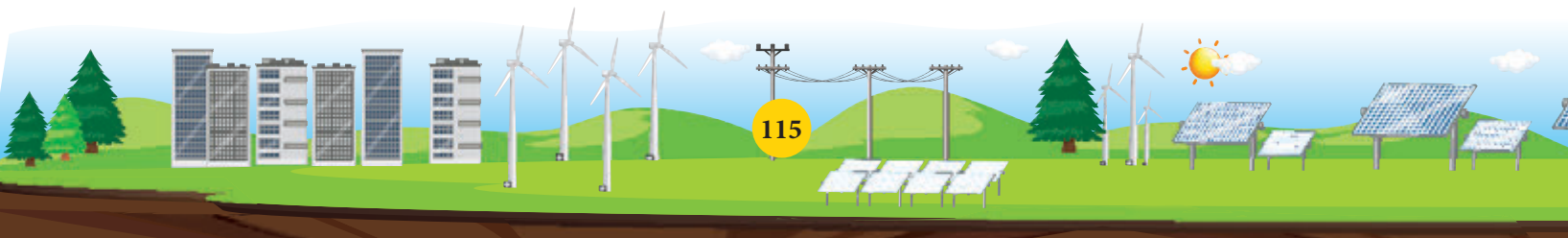


Table 8.9: State-wise progress of trained manpower in NER under HRD Programme as on 31.12.2025

SI. No.	State	Manpower trained		
		Suryamitras	Jalurjamitras	Varunmitras
1	Arunachal Pradesh	150	59	-
2	Assam	1710	-	71
3	Manipur	150	-	-
4	Meghalaya	60	-	-
5	Mizoram	0	-	-
6	Nagaland	60	-	-
7	Sikkim	30	-	-
8	Tripura	238	-	-
	Total	2398	59	71
	Grand Total	**2528**		

(B) Capacity building & skill Development under PM Surya Ghar Muft Bijli Yojana (PMSGMBY)

Ministry is aiming to create more than three (3) lakh skilled manpower through skilling, upskilling under PMSGMBY. Trainings for the Technicians/ Electricians/ Installers/ Engineers/ supervisors / vendors / DISCOM officials / trainers are undergoing for installation/design/O&M for solar roof top systems. A total of 6800 no. of candidates were trained under Capacity building component of PM Surya Ghar Muft Bijli Yojana.

Table 8.10: State-wise progress of trained manpower in NER under PMSGMBY as on 31.12.2025

SI. No.	State	No. of Manpower trained			
		Solar Technicians/ Installers	Solar PV helper	Vendors	DISCOM officials
1	Arunachal Pradesh	20	0	0	0
2	Assam	970	1118	1154	1000
3	Manipur	45	0	426	116
4	Meghalaya	88	0	0	149
5	Mizoram	20	0	0	154
6	Nagaland	20	0	0	96
7	Sikkim	85	0	0	233
8	Tripura	540	0	0	566
	Total	1788	1118	1580	2314
	Grand Total	**6800**			



MNRE'S Growth Pillars: Allied Institutes

9.1 National Institute Of Solar Energy (NISE)

9.1.1 National Institute of Solar Energy (NISE) is an autonomous specialized institute of Ministry of New and Renewable Energy (MNRE), Government of India, mandated for research and development, solar component testing, capacity building, and development of solar products and applications. The technical support of NISE complements the requirements of MNRE to become a self-reliable renewable power producing nation. During FY 2025–26, NISE continued to support the Ministry in implementing key national initiatives, including Approved List of Models & Manufacturer (ALMM) of Module and Cell, Production Linked Incentive (PLI) scheme, Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan Yojana (PM KUSUM), PM Surya Ghar initiative, and Suryamitra, Varunmitra Skill Development Programs and schemes under the National Green Hydrogen Mission (NGHM).

9.1.2 NISE serves as a premier research and testing institution dedicated to advancing solar energy and allied technologies in India. To support its mission, NISE has developed a comprehensive infrastructure featuring state-of-the-art laboratories equipped with advanced testing and characterization tools. These facilities enable cutting-edge research in photovoltaic cells and modules, solar thermal systems, battery storage, power electronics, and green hydrogen applications.

9.1.3 Research, Development and Demonstration

During the year, NISE has taken up Research, Development and Demonstration (RD&D) activities in various solar energy technologies through in-house, externally funded, and collaborative projects. These projects are identified in line with the mandate of NISE and have current relevance in catering to the changing needs of the energy sector. Key research outcomes from various projects undertaken by NISE during the year are detailed below:

9.1.3.1 Solar Potential Map of India 2025 (Ground Mounted)

Under the aegis of Seva Parv (17th – 22nd October 2025), the MNRE marked a significant institutional milestone with the formal release of the report titled "Solar PV Potential Assessment of India (Ground-Mounted)" on 23.09.2025 at New Delhi. The report was released by the Hon'ble

Union Minister for New and Renewable Energy, Shri Pralhad Venkatesh Joshi, in the presence of senior officials of the Ministry. The study has been undertaken by NISE and represents the most comprehensive and updated scientific assessment of India's ground-mounted solar photovoltaic potential.



Fig. 9.1: Release of the Solar Potential Map of India 2025 (Ground Mounted)

India is endowed with abundant solar resources, with average solar irradiance ranging from 3.5 to 5.5 kWh/m²/day across large parts of the country. Recognizing this potential, NISE has undertaken a spatially resolved and methodologically advanced assessment of ground-mounted solar PV potential. The present study substantially builds upon the earlier 2014 assessment, which estimated a potential of 749 GWp, by adopting high-resolution geospatial analysis, satellite-derived solar datasets, refined land-use and land-cover classifications, terrain and slope filters, and realistic technical design assumptions. The assessment integrates key infrastructure and engineering considerations, including inter-row spacing, shading losses, proximity to road networks, and availability of transmission substations, thereby ensuring that the estimated potential is technically feasible and implementation oriented. Such an approach enables the translation of theoretical resource availability into practical, deployable capacity.

Based on this comprehensive methodology, the report estimates a feasible ground-mounted solar PV potential of approximately 3343 GWp, utilizing only about 6.69% of the identified feasible wasteland area. While high potential continues to be observed in the desert regions of Rajasthan and Gujarat, the assessment highlights that a wide range of other states also exhibit significant potential owing to favorable solar geometry, improved land-use efficiency, and enhanced system design parameters. Importantly, the potential is well distributed across the country, reinforcing the scope for geographically balanced solar development. The findings of the report provide a policy-aligned and investment-ready framework to support national and state-level solar planning, transmission and infrastructure development, and enhanced private sector participation.

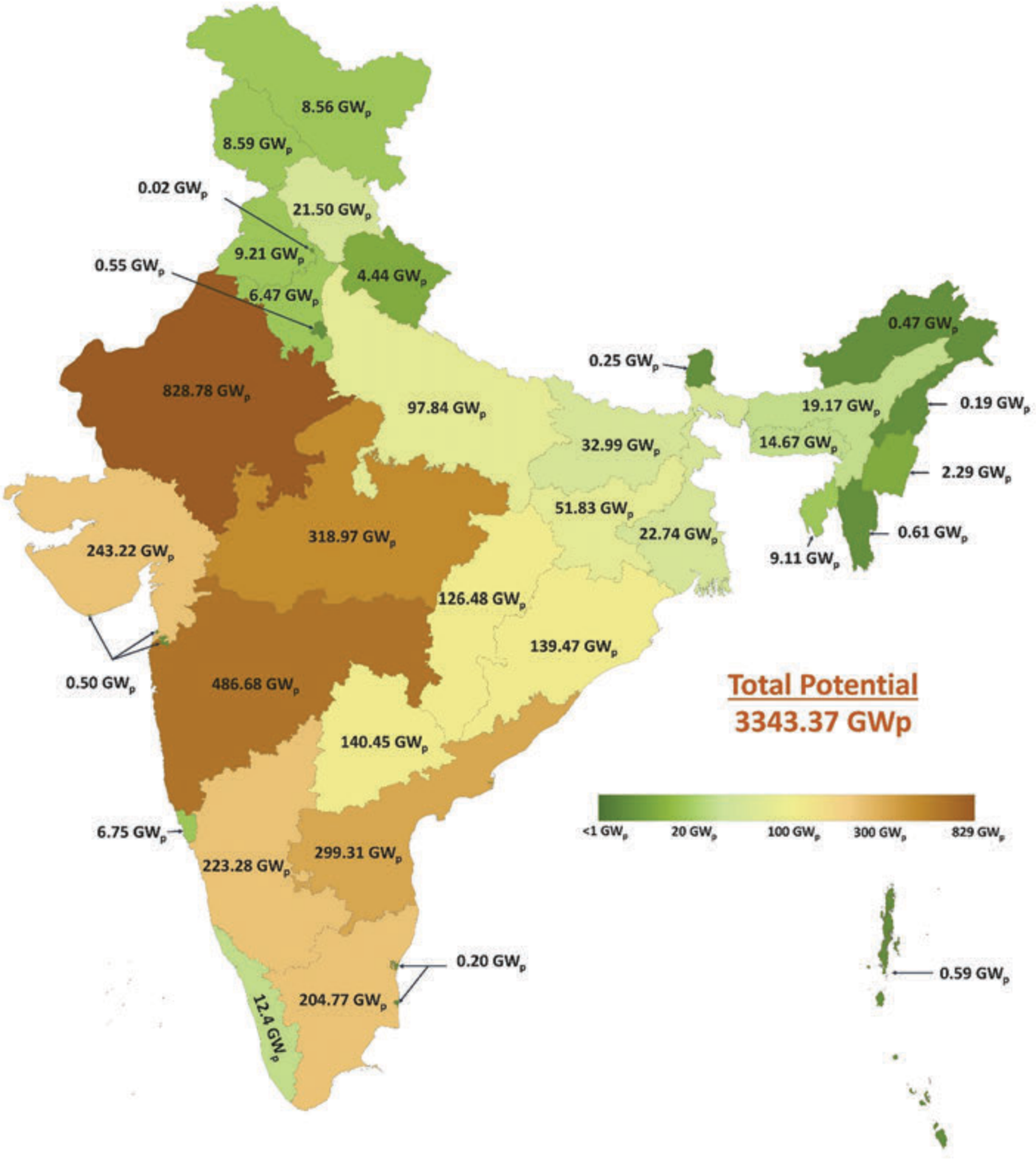


Fig. 9.2: Solar Potential Map of India 2025 (Ground Mounted) assessed by NISE

9.1.3.2 Green Hydrogen Mobility study

On 11.12.2025, NISE & Toyota Kirloskar Motor (TKM) exchanged MoU to Advance Green Hydrogen Mobility in India, in the august presence of Shri. Pralhad Joshi, Hon'ble Union Minister for New & Renewable Energy and Shri. Shripad Yesso Naik, Hon'ble Minister of State for New & Renewable Energy. The collaboration directly supports India's long-term vision under the National Green Hydrogen Mission by demonstrating real-world feasibility of Toyota's Fuel-Cell Electric Vehicles (FCEVs) 'Mirai' in Indian conditions-climate, driving cycles, traffic, and fuel-quality variations.



Fig. 9.3: MoU exchange between NISE and Toyota

9.1.3.3 Limitations of indoor characterization for estimating outdoor power generation of bifacial PV modules

Field-level performance assessment of bifacial PV modules is challenging due to variability in albedo and the lack of standardized performance metrics. Energy yield of bifacial PV modules is often estimated from indoor STC measurements. However, if key real-world factors are not accounted for, these estimates carry significant uncertainty. This study aims to identify and quantify the parameters that drive inaccuracies when outdoor energy prediction relies on indoor measurements. Currently, IEC TS 60904–1-2:2024 provides two standardized indoor measurement methods: dual side illumination and the equivalent irradiance (GE) method. In this study, the performance of a bifacial PV module was measured in outdoor conditions with various simultaneous front and rear irradiance, and the outdoor measured power was compared with the estimated power as per the GE method. It was found that there is a deviation in the measured and estimated power of around 26% at low irradiance and around 15% at high irradiance. Efforts were made to identify the key reasons for the deviation, and it was found that the direct-to-diffuse irradiance ratio, angle of incidence (AoI), temperature and the difference in spectrums of the front and rear illumination significantly impact bifacial PV module performance under outdoor conditions. Considering all the factors influencing the performance of bifacial PV modules, the GE formula is modified to GE_Modified. By using GE_Modified, the deviation in the measured and estimated power was reduced to around 15% in the low irradiance region and around 7% in the high irradiance region. A detailed sensitivity analysis of influencing parameters was also performed, where the impact of individual parameters was demonstrated. The research will support the solar PV community for accurate estimations of bifacial PV module performance under outdoor operating conditions, using data derived from indoor measurements.

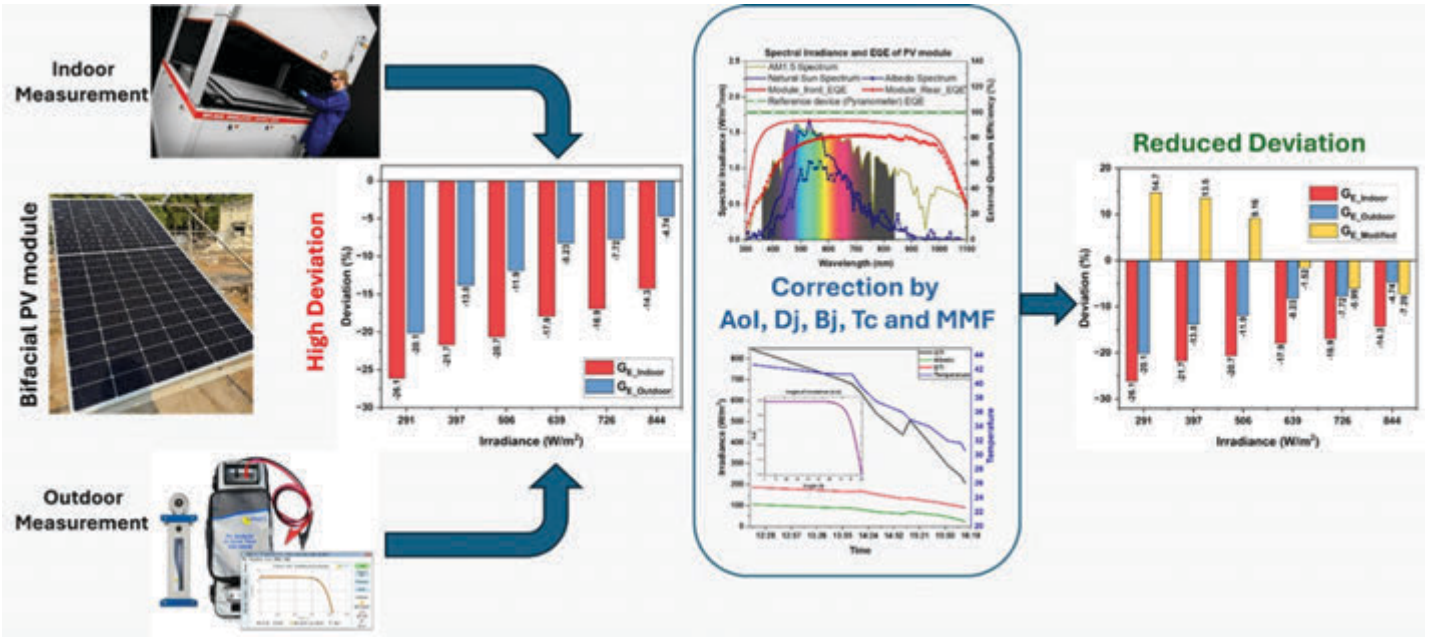


Fig. 9.4: Reduction of deviation in outdoor and indoor measurement by incorporating various factors

9.1.3.4 Test Setup for Reliability & Performance Evaluation



Fig. 9.5: Reliability test set up at NISE

NISE has established a state-of-the-art test and R&D facility to evaluate the reliability, durability, and performance of AC/DC solar water pumping systems from 1 HP to 10 HP, simulating total dynamic heads up to 200 meters under controlled yet realistic conditions representative of diverse Indian field environments, including saline and muddy water. The facility features two dedicated test slots (2" and 3") as shown in Fig. 9.5 equipped with pressure transmitters, actuator valves, digital flow meters, and an integrated agitator (pH 7.5–8.4) to ensure standardized performance verification, long-term reliability assessment, and comparative evaluation of Cast Iron and Stainless Steel pump materials. Testing of 5 HP cast iron pumps has been completed, and comparative analysis of 10 HP systems is currently in progress.

9.1.3.5 Inclusion of Solar-Based Reciprocating Pumps in PM KUSUM Scheme

For the PM KUSUM scheme and for the promotion of Innovative Solar Pumps, NISE has aligned its initiatives with MNRE's testing guidelines dated 22.03.2023, which now include positive

displacement (reciprocating/piston) pumps, and a proposal incorporating these technology updates is under internal review to support diversification of pump technologies and improved irrigation efficiency. The draft specifications suggested IP68 protection for submersible SPV pump controllers, reduced PV array capacity requirements for positive displacement pumps compared to centrifugal systems across 3 HP to 10 HP ratings. Field evaluations at eight operational sites in Mysore, with systems in service for over two years, confirmed reliable performance across drip, flood, and sprinkler irrigation, including efficient operation at low irradiance levels (~160 W/m^2), with no major O&M issues reported. The PDP field inspection in Rajasthan was completed in September 2025; however, re-testing is currently in progress following manufacturer upgrades to replace sub-19% efficiency PV modules with ≥19% compliant modules, after which the final test results and performance outcomes will be documented.

9.1.3.6 Solar-Powered Micro-Irrigation: Field Study and Outcomes

To promote sustainable water management and climate-resilient agriculture, NISE has taken up a study to evaluate the feasibility and functional reliability of a portable, solar-powered micro-irrigation systems utilizing surface water sources such as shallow ponds or farm tanks. A solar-powered water distribution unit was integrated with a drip irrigation network. System operated effectively with a single solar panel, delivering consistent water output for drip irrigation under real-world field conditions. The facility is currently demonstrating winter crops such as spinach, fenugreek, peas, etc., as illustrated in Figure 9.6. The site is being utilized for stakeholder engagement, capacity building, and on-field validation of solar water pumping and micro-irrigation systems under real farming conditions. A comprehensive draft report documenting system performance, outcomes, and operational insights has been prepared and is currently under review for finalization and dissemination.



Fig. 9.6: Solar Micro-Irrigation Demo Farm at NISE

9.1.3.7 Techno-Economic and Impact Assessment of Solar Cold Storage integrated with Thermal Energy Backup

An MoU was signed between NISE and CLASP India, an international nonprofit organization, on 27.08.2025, for taking up techno-economic and impact assessment studies of Solar Cold Storage integrated with thermal energy backup. NISE and CLASP jointly initiated policy research activities and engaged various stakeholders for field inputs, including UNDP, AEEE, IDCG, Ckinetics,

GIZ, CLEAN, ADB, WRI, E4A, and representatives from industry. This work will subsequently be published as a research report on sectoral mapping of solar cold rooms, including policy recommendations for the Government of India.

9.1.3.8 Experimental Studies on RDF Drying Using Low Temperature (<100°C) Solar Thermal Collectors- in collaboration with NCB

NISE and National Council for Cement and Building Materials (NCB) have jointly undertaken an experimental study on drying of Refuse Derived Fuel (RDF) using low-temperature solar thermal collectors, with the objective of improving fuel quality for cement kilns. The study was designed as a high-impact pilot demonstration project of national importance, focusing on energy efficiency, waste-to-energy integration, and reduction of fossil fuel consumption in the cement sector.

9.1.4 Testing and Standardization Activities

NISE has established the NISE Testing and Calibration Facility (NTCF) offering evaluation and testing services for Solar Cells, PV Modules, Solar Water Pumping System, Inverters, Charge Controllers, Batteries, Advanced Lighting System and calibration services for Pyrheliometer and Pyranometer. The facility is maintained as per ISO 17025:2017 and is also by BIS for PV Module Testing as Type 2 category facility. The lab is also offering calibration of reference PV module as per IEC 60904 and other relevant standards. It is one of the premier facilities which can provide spectral response data of full size PV module. The Module Testing and Calibration Facility of NISE was inaugurated by Shri. Pralhad Joshi, Hon'ble Union Minister for New & Renewable Energy on 22.04.2025.



Fig. 9.7: Inauguration of Solar PV Module Testing and Calibration Facility at NISE

Solar Radiation Calibration Laboratory (SRCL) at NISE calibrate solar radiation measuring sensors from the National solar radiation network of MNRE. The absolute cavity radiometer at NISE has recently participated in the international pyrheliometer comparison event at World Radiometric Centre Davos organized during the month of September 2025 in Switzerland, facilitating its traceability to the World Radiometric Reference (WRR).

9.1.5 Industrial Research and Technical Consultancy

Industrial Research and Technical Consultancy division at NISE stands as a cornerstone for advancing solar technology implementation across industry, private and government sectors. As a dedicated knowledge hub, we are committed to fostering widespread adoption of high-quality solar technologies through our tailored consultancy services. Our expert team is ready to support solar industry professionals, developers, and technology users in various technical aspects, ensuring the best outcomes for projects. NISE has offered consultancy services on technical vetting, field inspection and field testing for solar projects in the year 2025-26. NISE is also providing technical support to Solar Energy Corporation of India (SECI) for the testing and verification under the implementation of PLI scheme. NISE technical team was also engaged in the technical audit of solar photovoltaic power parks implemented by Rewa Ultra Mega Solar, Madhya Pradesh. NISE team was also involved in the testing of solar power plants installed by Industry and other Government Departments.

9.1.6 Capacity Building and Outreach Activities

The Skill Development Division of the National Institute of Solar Energy (NISE) plays a pivotal role in addressing this demand by designing and conducting training programs for a wide array of stakeholders including industry professionals, government officers, public sector units, academic institutions, and international participants. In FY 2025–26, NISE strengthened its role as a Centre of Excellence by delivering a total of 15 training programs catering to the needs of both national and international stakeholders. These training sessions were conducted in various formats—offline, online, and hybrid—ranging from introductory to advanced level. A total of 927 participants (including 694 international participants under ITEC programs and 233 national participants) benefited from the training initiatives of NISE.

During the year, NISE also facilitated exposure visits for a total of 1,058 visitors, comprising of 207 international visitors, 251 Government officials, 337 students, and 263 private-sector officials. During these visits, participants were exposed to NISE's latest research, testing facilities, and ongoing initiatives in solar and renewable energy, gaining first-hand insights into India's advancements in solar energy sector.

9.1.7 NISE Incubation Support Program for Start-ups in Renewable Energy (RE) Sector

In order to support Start-Ups in RE sector, NISE established an Incubation Cell on 23.05.2025. NISE collaborated with Atal Incubation Centre (AIC), IIT Delhi and National Solar Energy Federation of India (NSEFI) and issued a Call for Proposals on 25.06.2025, seeking proposals for incubation Start-Ups at NISE. Out of 82 proposals received across different RE categories, NISE evaluated each through a multi-stage scrutiny process, following which 20 start-ups were selected for incubation at NISE. These Start-Ups will be provided access to state-of-the-art testing facilities, technical mentorship and co-working and incubation space at NISE.

9.1.8 Implementation of Government Schemes and Programmes

9.1.8.1 Suryamitra Skill Development Programme

The Suryamitra Skill Development Programme, launched by MNRE in 2015, is a flagship initiative aimed at building a skilled workforce for the solar energy sector. The programme provides comprehensive training in the design, installation, operation, and maintenance of solar PV systems through a decentralized network of Training Centres, with strong outreach in rural and semi-urban areas. Currently operational across 30 States, the programme has trained 5,666 Suryamitras during April–December 2025, with 4,077 additional candidates presently undergoing training, supporting India's renewable energy transition and quality assurance objectives.

9.1.8.2 Solar Water Pumping Training (Varunmitra Skill Development) Programme

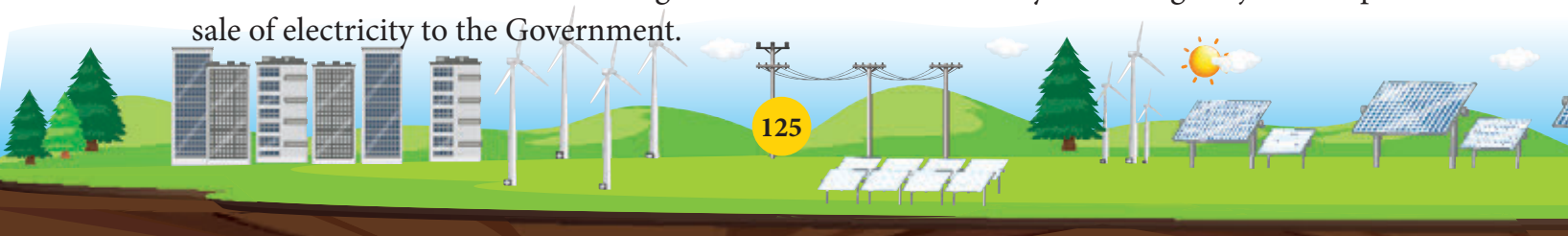
Solar PV water pumping systems play a vital role in promoting sustainable and energy-efficient irrigation under the PM KUSUM scheme. To support large-scale deployment and ensure reliable installation and maintenance, the Varunmitra Programme was introduced as a complementary initiative to the Suryamitra Skill Development Programme, focusing on skill development in the design, installation, commissioning, operation, safety, and maintenance of solar water pumping systems. Currently operational across 16 States, the programme has trained 90 candidates during April–December 2025, with 420 additional candidates presently undergoing training, contributing to India's renewable energy transition and quality assurance objectives.

9.1.8.3 Upskilling and Reskilling (PM Surya Ghar: Muft Bijli Yojana)

To support the ambitious objectives of the PM Surya Ghar: Muft Bijli Yojana and meet the growing demand for a skilled residential solar workforce, NISE developed a structured training programme, which was officially approved by MNRE for implementation. During the period April - December 2025, the programme successfully trained 2,601 Solar PV Installers, while 2,871 additional candidates are currently undergoing training, thereby strengthening workforce capacity, ensuring quality rooftop installations, and supporting India's Residential Solar Adoption transition.

9.1.8.4 Approved List of Models and Manufacturers

To ensure reliability of Solar PV products and to protect the consumer interests and ensure better energy security of the country, MNRE on 02.01.2019, has issued "Approved Models and Manufacturers of Solar Photovoltaic Modules (Requirements for Compulsory Registration) Order, 2019". The order provides for the enlistment of eligible models and manufacturers of solar PV cells and modules complying with the BIS Standards and publishes the same in a list called the "Approved List of Models and Manufacturers" (ALMM). Only the models and manufacturers included in this list will be eligible for use in Government/ Government assisted Projects/Projects under Government Schemes & Program, installed in the country, including Projects setup for the sale of electricity to the Government.



NISE has been designated as an implementation support agency for processing applications and carrying out inspections, verifications, and quality checks on behalf of MNRE. During the year, 88 inspections (which includes New Application, Renewal, Model Addition, & Capacity Addition) of various PV module manufacturing plants have been conducted by NISE and about 70 GW/year of module manufacturing capacity has been added to the ALMM list. During the same period, NISE carried out 12 inspections of PV cell manufacturing plants, adding a capacity of 24 GW/year to the ALMM list.

As on 31.12.2025, a total of 137 PV module manufacturing plants are enlisted in ALMM (ALMM List-I) with a cumulative installed manufacturing capacity of about 144 GW/Year (144,289 MW/Year) and a total of 12 PV cell manufacturing plants are enlisted in ALMM (ALMM List-II) with a cumulative installed manufacturing capacity of about 24 GW/Year (23,954 MW/Year).

9.1.8.5 Production Linked Incentive (PLI) Scheme: National Programme on High Efficiency Solar PV Modules

Under this Scheme, NISE extends technical support to Solar Energy Corporation of India (SECI) for verification and validating the qualitative and quantitative requirements of setting up of solar PV cell and PV module manufacturing facility in India under the PLI (Tranche II) scheme. In 2025-26, NISE has initiated the technical visits to PLI manufacturers, and testing of PV modules as a part of the requirements of the PLI scheme.

9.1.8.6 National Green Hydrogen Mission Testing Scheme

NISE is the Scheme Implementing Agency (SIA) for the National Green Hydrogen Mission (NGHM) Testing Scheme notified by MNRE on 04.07.2024, titled "Funding of testing facilities, infrastructure, and institutional support for development of Standards and Regulatory framework under the National Green Hydrogen Mission," with a total cost outlay of Rs 200 crores for 2024-2026. During the first round, NISE floated Call for Proposal (CfP) on 15.08.2024 and based on technical merit and strategic relevance, five leading institutions were selected for establishing advanced hydrogen testing and validation facilities: Gujarat Energy Research and Management Institute (GERMI), Bharat Heavy Electricals Limited (BHEL), National Metallurgical Laboratory (NML), Sardar Swaran Singh National Institute of Bio-Energy (SSS-NIBE), and The Automotive Research Association of India (ARAI).

To further expand the testing network across additional regions and application domains to address the growing demand for hydrogen testing infrastructure, NISE has issued the 2nd CfP on 11.08.2025. The review and evaluation of applications received under the 2nd CfP are currently underway.

9.1.8.7 National Green Hydrogen Mission Start-Up Scheme

NISE is the Implementing Agency for the NGHM Start-Up Scheme for supporting Pilot Project in innovative Green Hydrogen production/utilization technologies. The Call for Proposal for the Scheme was launched by Hon'ble Union Minister of New and Renewable Energy, Shri Pralhad Joshi during the 1st Annual Green Hydrogen R&D Conference on 11.09.2025, with a total outlay of Rs. 100 Crores and a maximum support of 5 Crores per Start up. NISE has received more than 100 applications against the call and are being evaluated.



Fig. 9.8: Launch of NGHM Start Up Scheme

9.1.9 Administration and Finance

The Government of India has sanctioned 41 regular posts for NISE, including the post of Director General. The affairs of NISE are managed by a Governing Council (GC), chaired by Secretary, MNRE (ex-officio President, NISE), in accordance of rules, regulation and bylaws of the society, which are duly approved by administrative Ministry i.e. MNRE. Secretary MNRE is president of Society (NISE) and Director General is Principal Executive Officer of the Society (NISE).

The funds of the Society are managed by following Sources:

i. Core Grants made by Government of India for furtherance of the objects of Society.
ii. Contribution from other Sources like various projects.
iii. Income from Investments.
iv. Receipts of the society from revenue generation activities like ALMM, Testing, Consultancy, Skill development activities etc.

NISE is following the General Financial Rules 2017, Fundamental and Supplementary Rules and such other rules (mutatis mutandis) as applicable to Central Government.

9.2 National Institute Of Wind Energy (NIWE)

9.2.1 NIWE is a technical arm of the Ministry for fostering the growth of wind energy development in the country. The main technical activities include Measurement and Mapping of wind resource assessment; preparation of Indian Standards; Testing and Certification of wind turbines and associated components and sub-systems; information dissemination; human resource development. In addition, NIWE offers various consultancy services and support to the wind stake holders for promoting healthy and orderly growth of wind turbines installation in India.

9.2.2 Offshore Wind Development

A. Met-Ocean measurements in Gulf of Khambat and Gulf of Mannar

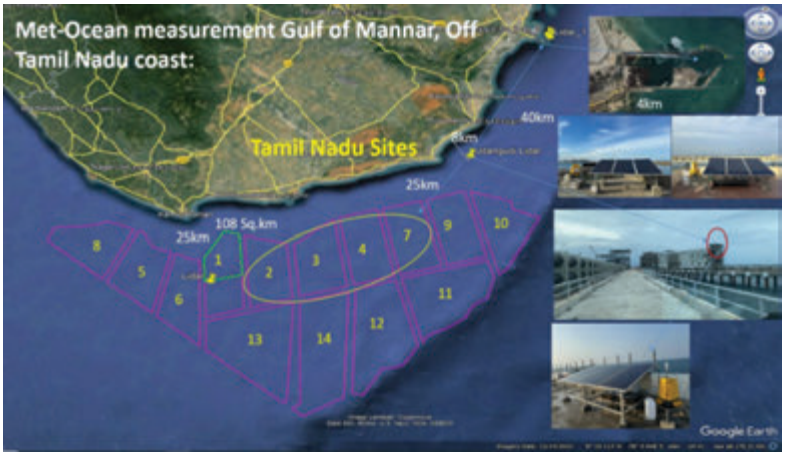


Fig. 9.9: LiDAR installed at VOC port and Udangudi, Gulf of Mannar, Tamil Nadu

The MNRE has sanctioned project Met-Ocean Measurements at Gulf of Khambat and Gulf of Mannar for Fostering the Growth of Offshore Wind in the Country to NIWE with the objective of quantifying the wind potential of such regions towards demarcating the offshore wind energy blocks. Under the project, as per the approval of the Project Monitoring Committee directions, 3 sites have been identified to map offshore wind resource in Gulf of Mannar, Tamil Nadu coast. NIWE has identified suitable locations for deploying the Offshore Lidar at VOC port (4 to 5 km from the sea shore) and Udangudi Thermal Coal jetty (8 to 9 km from the sea shore) which together with the measurements at sub-zone 1 will cover wind profile of the Tamil Nadu coast. The one year wind measurement campaign has been completed.

B. Offshore studies/ survey in Sub-Zone 1 in Gulf of Mannar off Tamil Nadu coast

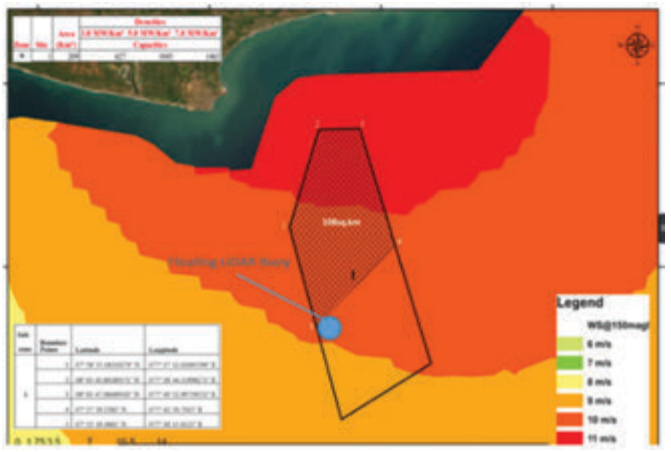


Fig. 9.10: Location for Floating LiDAR Buoy at Gulf of Mannar, Tamil Nadu

NIWE has initiated the offshore wind resource assessment and geophysical & geotechnical investigation for development of offshore wind farm of 500 MW at sub zone 1 Gulf of Mannar off Tamil Nadu coast under Model A. The floating buoy system first of its kind in India was successfully deployed at Sub-zone-1 Gulf of Mannar, Off Tamil Nadu coast during October 2024.The data collection for Wind together with Oceanographic Measurements are underway. The Geophysical survey including bathymetry, side scan sonar and sub-bottom profiler has been carried out during February 2025 over an area of approximately 108 sq.km at sub zone 1 Gulf of Mannar off Tamil Nadu coast.

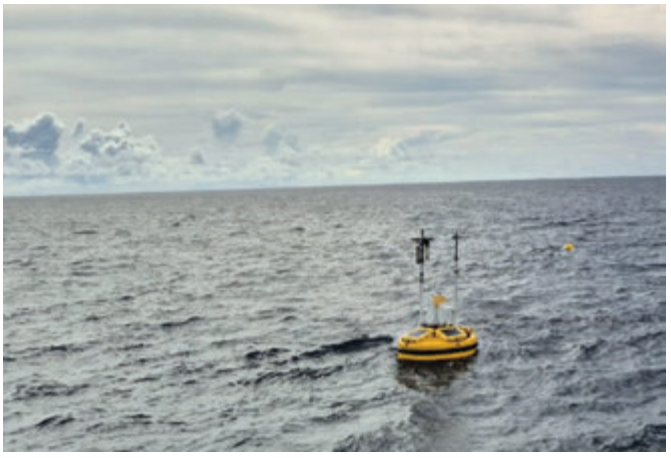


Fig. 9.11: Floating Buoy deployed at Gulf of Mannar, Tamil Nadu



Fig. 9.12: Grab sampling at 15 locations

9.2.3 Wind & Solar Resource Measurements

a. **Wind Resource Assessment Studies in Andaman & Nicobar Islands:** Under the National Wind Monitoring Programme, NIWE has installed and commissioned 4 nos of wind monitoring stations at Bharatpur, ShaheedDweep in South Andaman and Sigmundera, Long Island in North & Middle Andaman and at Mangluthkhaman in Port Blair in Andaman and Nicobar Islands. The one-year data has been successfully collected and analyzed for benefit of the Wind stake holders.



Fig. 9.13: 100m WMS installed at Bharatpur

b. **LiDAR based Offshore Wind Measurement at Kadamat Island, Lakshadweep:** As a step towards greening of Island, NIWE has installed LiDAR (Light Detection and Ranging) to carry out Offshore measurement at Kadamat Island in Lakshadweep. The data collected will provide useful pointers in promoting two weather driven renewables (wind & solar) for replacing the diesel generating sets thereby minimizing the cost of energy generation.

c. **Wind & Solar Resource Assessment Studies at Ladakh:** NIWE has also installed 4 nos of 100-meter wind monitoring stations and two solar Radiation Resource Assessment (SRRA) at Leh, Ladakh. The measurements have been completed and provides useful insights in better understanding the site-specific locations for estimating the energy generation.

Consultancy Project

The Wind Resource Assessment has been completed for 13 projects for estimating the Energy Yield Assessments for grid connected wind turbines. The wind resource team is also providing technical due diligence to GRIDCO for promoting the wind energy technology in the State of Odisha.

9.2.4 Wind Turbine Testing Station (WTTS)

NIWE has successfully cleared the Desktop Surveillance Audit in June 2025 pertaining to wind turbine type testing assignments strictly in accordance with ISO/IEC 17025:2017 (for the disciplines of Electrical and Mechanical testing as per the existing scope of accreditation).

- Presently, testing assignment on Acoustic Noise Measurement as per IEC 61400-11:2018 (CSV) for the wind turbine model INOX DF/3000/145 – 3.0 MW Power Booster Mode (3.3 MW) with Rotor Blade Type SR71 V2 (T-Bolt), Hub Height 100 m, IEC WT Class IIIB, located in Gujarat. Measurements for the same is underway.

9.2.5 Standards And Certification

Certification

- NIWE has obtained International Accreditation for the certification services as per the requirements of ISO/IEC 17065 standard from the National Accreditation Board for Certification Bodies (NABCB), Quality Council of India (QCI) which is valid up to 2027.
- NIWE has issued accredited Type Certificates for 6 Wind Turbine models of 5 Indian wind turbine manufacturers.
- NIWE has obtained International Accreditation for Inspection Services from NABCB as Type 'A' Inspection Body as per the requirements of ISO/IEC 17020 which is valid up to 2027.
- The Accredited Services of both Type Certification and Inspection offered by NIWE will benefit the wind industry to obtain such services within India in line with International best practices.

Standards & Regulation

NIWE is involved in the preparation of Indian standards on wind turbines by supporting Bureau of Indian Standards (BIS). BIS ETD 42 committee till date has finalized Thirty-Two Indian standards on wind turbines.

Revised List of Models and Manufacturers of Wind Turbines (RLMM) renamed to –Approved List of Models and Manufacturers ALMM (Wind):

Standards and Regulation division, which is part of the ALMM (Wind) committee, has been providing support to MNRE in verification of documentation submitted along with application

and in handling ALMM (Wind) related works. During the period (from 01.04.2025 to 30.09.2025), the review of documentation has been completed for 17 ALMM (Wind) applications of various wind turbine models and the review comments have been submitted to MNRE / ALMM (Wind) Committee.

Prototype Wind turbine Models:

NIWE is implementing MNRE guidelines on installation of prototype wind turbine models in India which facilitates the installation of Prototype wind turbine models to carry out the Type Testing for obtaining type certificate. NIWE has formulated a committee to take a suitable decision on issuing the recommendation letters in connection with grid synchronization. During the period (from 01.04.2025 to 30.09.2025), NIWE has issued the recommendation letter in connection with grid synchronization for one prototype wind turbine model, with a rated capacity 4200 kW for the purpose of Type Testing and also issued the revised recommendation letter in connection with grid synchronization for one modified prototype wind turbine model, with a rated capacity of 3300 kW for the purpose of Type Testing.

9.2.6 Research And Development

NIWE, in association with the University of Massachusetts Amherst (UMass), Ocean Energy Pathway (OEP), completed a draft study on Best Practices for Community Engagement in Offshore Wind Projects in Tamil Nadu for establishing mutually beneficial research projects and other activities of mutual interest and benefit with an objective to develop a practical guide for Indian planning authorities with focus on effective community engagement (throughout offshore wind project phases) for fostering the growth of offshore wind in India.

9.2.7 Skill Development And Training

NIWE has conducted one National Training Course and 2 Special Courses on “Wind Energy Technology”, wherein 40 participants from 9 States and 1 Union Territory were trained in National Training Course.

9.2.8 Vayumitra Skill Development Programme (VSDP)

MNRE has sanctioned the Vayumitra Skill Development Programme (VSDP) Phase-II project with a new QP "Wind Farm Engineer" to NIWE wherein it is planned to train about 1125 no. of trainees (900-Participants, 210 Trainers & 15 Master trainers). The programme is scheduled to be conducted in 38 batches (30+7+1); covering eight windy States (Rajasthan, Gujarat, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, Telangana, Madhya Pradesh & Kerala) by the end of March, 2026.

9.2.9 Student Visit To NIWE Campus

NIWE has arranged and coordinated the campus visits to create awareness and to motivate towards research on wind energy, achieving the indigenization and also to create awareness about

the activities and services of NIWE among the students. 266 students were benefitted during the period April to September 2025.

9.2.10 NIWE-Academic Associate Programme (NIWE-AAP)

The NIWE-AAP aims to encourage students and provide an opportunity to choose renewable energy as their career option. To create awareness in the field of renewable energy research among the young talented Sciences, Management and Engineering students NIWE invites applications for the NIWE-AAP. The duration of the Internship is two weeks to six months. About 182 applications were received. Of those, 62 students had enrolled and 38 students successfully completed their internships. Currently, 6 students are undergoing the internships.

9.3 Sardar Swaran Singh National Institute Of Bio-Energy (SSS-NIBE)

9.3.1 SSS-NIBE Kapurthala, an autonomous institution under MNRE, is dedicated to advanced research, development, and training in the bioenergy sector, actively contributing to policy and technology promotion. The institute is pioneering the production of Sustainable Aviation Fuel (SAF) through the hydrothermal cracking of used cooking oil (UCO) NIBE team is also working on Microalgal Biofilm Bioreactor (MBB) for integrated wastewater treatment and biohydrogen conversion, and valorizing Paddy Straw (PS) through Hydrothermal Liquefaction (HTL) to produce bio-oil using silica-rich ash as a catalyst.

9.3.2 Ongoing R&D focuses on several key areas across its divisions. The Biomass Division completed the Livestock-waste energy atlas of India and is developing a Smart Hybrid Biogas Plant (SHBP), which uses priority-based algorithms and integrated heat sources (solar, biomass, waste heat) to maintain constant digester temperature. The Biochemical Conversion Division is focused on upgrading biogas via Microbial Electro methanogenesis (ME), biologically converting CO_2 into CH_4 using electroactive microbes under external potential. They are also optimizing Second-Generation (2G) bioethanol production from sugarcane bagasse using ammonia-based pre-treatment and Simultaneous Saccharification and Co-Fermentation (SSCF). Furthermore, research is being conducted on CO_2 sequestration using algal species like Chlorella.

9.3.3 For decentralized power generation, SSS-NIBE established a Solid Oxide Fuel Cell (SOFC) test bench to research the use of biofuels (biogas/producer gas). The institute is also synthesizing advanced carbon materials, such as Activated Carbon and Carbon Quantum Dots from bamboo, for applications in energy devices like supercapacitors. Collaborative projects are focused on optimizing the mixing and feeding of coal and agro-wastes for co-milling in thermal power plants and enhancing rural livelihoods through the dissemination of improved cookstoves in Punjab. During 5th International Conference on Recent Advances in Bio-Energy Research held at SSS-NIBE in October 2025, the institute logo unveiled by Hon'ble Minister Shri Shripad Naik.

9.3.4 Division Wise R&D Progress

9.3.4.1 Biomass and Energy Management Division

The Biomass and Energy Management Division has launched various initiatives in the areas of biomass resource mapping, biomass supply chain management, and biomass valorization over the last year.

9.3.4.1.1 Development of Livestock-waste energy atlas of India

To promote scientific utilization, this study mapped the state-wise availability of livestock waste using data from the 2012 and 2019 Livestock Census covering cattle, buffalo, pigs, poultry, sheep, and goats. The biogas generation potential from these wastes was calculated, along with estimates for power generation, CBG for transport, and LPG/fuelwood replacement for cooking. Results indicate annual biogas potentials of 31,603 Mm^3 (2012) and 33,689 Mm^3 (2019), mainly contributed by cattle waste. Among states, Uttar Pradesh, Rajasthan, and Madhya Pradesh showed the highest contributions. For 2019, the total livestock waste offered an estimated potential of 7122 MW of power, 13.5 million tons of CBG, and 15/13.5 million tons of LPG/fuelwood replacement.

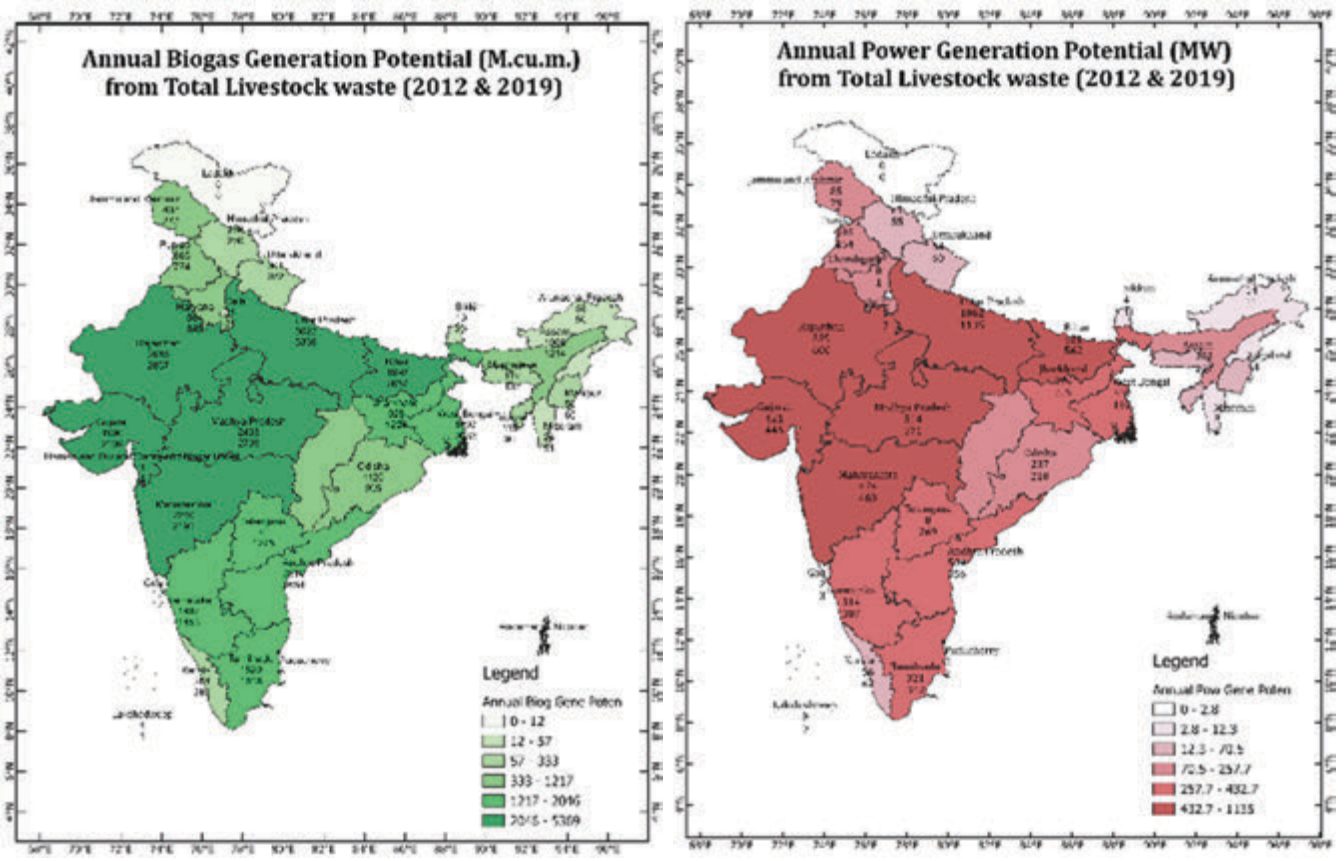


Fig. 9.14: Annual bio-energy and power generation potential from total livestock

9.3.4.1.2 Smart Hybrid Biogas Plant

SSS-NIBE is developing a Smart Hybrid Biogas Plant (SHBP) to address the challenge of maintaining constant digester temperatures in anaerobic digestion. The system features an in-house automation setup with priority-based algorithms for precise temperature control and efficient energy management. By integrating solar, biomass, and waste heat sources, SHBP ensures sustainable and economical operation. It uses advanced heating methods, including dual heating coils and phase change materials (PCM), to reduce lag time and improve efficiency.



Fig. 9.15: Smart hybrid pilot-scale biogas plant

9.3.4.2 Biochemical Conversion Division

During FY 2024-25, several externally funded and in-house R&D projects were taken up by the research team in the division. Major focused area includes biogas production from different feedstocks, biogas upgradation via microbial electromethanogenesis, development of enzyme cocktail for enhanced sugar recovery through enzymatic saccharification of various lignocellulosic biomass, 2G ethanol from different feedstocks, biohydrogen production from organic waste, lignocellulosic biorefinery, wastewater treatment using microalgae and algal biorefinery, etc.

9.3.4.2.1 Optimizing Biogas Production from Napier Grass using a Thermophilic Anaerobic Digestion Consortium

A research work has been carried out to further enhance the biogas production from Napier grass using a thermophilic consortium THERMI-NIBE V.1 at 52˚C.The optimization of solid loading and inoculum concentration has been done using the Biomethane Potential Analyser (BMP). Further, experiments have been conducted to check the impact of supplementation and voltage on biomethane production.

9.3.4.2.2 Upgradation of Biogas via Microbial Electro methanogenesis

A jacketed double chambered bioreactor (H-type cell) has been designed and fabricated for the upgradation of biogas via microbial electro methanogenesis (ME). The study on ME is being conducted using an in-house developed thermophilic consortium, i.e., THERMI-NIBE

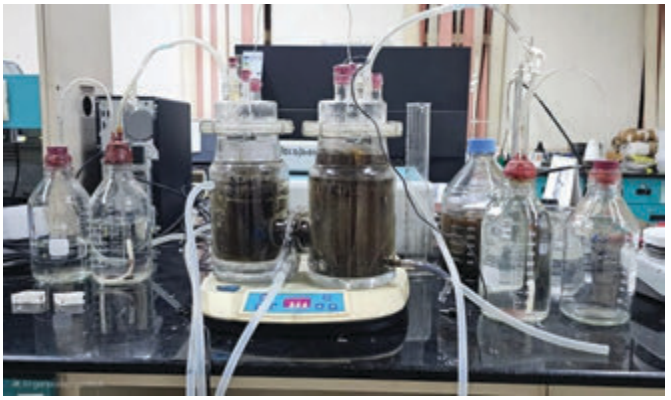


Fig. 9.16: Reactor set-up for biogas upgradation via microbial electromethanogenesis

V.1. In this process, carbon dioxide (CO_2), a major component of raw biogas, is biologically converted into methane (CH_4) through the action of electroactive microbes under the influence of external potential. The ongoing optimization is expected to significantly improve the sustainability and economic feasibility of biogas purification through bio electrochemical means.

9.3.4.2.3 Enhanced 2G-Bioethanol Production from Sugarcane Bagasse using simultaneous saccharification and co-fermentation (SSCF)

The research was focused on optimizing second-generation (2G) bioethanol production from sugarcane bagasse using a cost-effective and sustainable bioconversion strategy. The process began with an ammonia-based pre-treatment (10% v/v at 85°C for 24 h) to disrupt the lignocellulosic structure and enhance enzyme accessibility. This was followed by Simultaneous Saccharification and Co-Fermentation (SSCF) using both commercial enzymes (Cellic CTec2 and Htec2) and an in-house developed enzyme cocktail, along with a thermotolerant yeast strain Kluyveromycesmarxianus FKS.A1 capable of fermenting both glucose and xylose.

9.3.4.2.4 CO2 sequestration using Algal Biorefinery

The experiments on understanding the relation between pH and dissolved CO2 in water and BG-11 media have been studied. The key observations are that the pH decreases with the increasing dissolved CO2 concentration in water. The dissolved CO2 concentration is very crucial for the algal cultivation. The experiments for testing the CO2 sequestration performance of Dunaliella and Chlorella species were done. The Dunaliella is a halotolerant species usually found in highly saline water, while Chlorella is a freshwater alga. Both are distinct in nature. It has been found that Chlorella in the flask suspended culture has high CO2 sequestration efficiency.

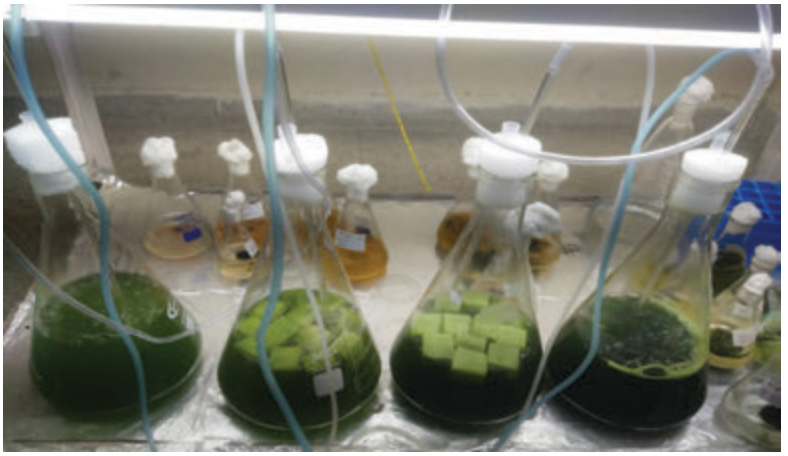


Fig. 9.17: Biomass growth and attachment resulting in biofilm formation in the sponge media

9.3.4.2.5 Hydrothermal cracking of used cooking oil into sustainable aviation fuel

The increasing demand for sustainable aviation fuel (SAF) has driven the exploration of renewable feedstocks and innovative conversion technologies. Current work investigates the hydrothermal cracking of used cooking oil (UCO) as a viable pathway for producing SAF, utilizing its high triglyceride content. Hydrothermal cracking, conducted under subcritical water conditions, facilitates the breakdown of long-chain fatty acids in UCO into shorter hydrocarbons suitable for jet fuel applications.



Waste Cooking Oil *Hydrothermal Cracking* *Biocrude*

Fig. 9.18: Conversion of waste cooking oil into biocrude using hydrothermal cracking reaction in a high-temperature high-pressure reactor

9.3.4.2.6 Design and Development of Microalgal Biofilm Bioreactor

Presently, the research team is designing and developing a Microalgal Biofilm Bioreactor (MBB) for an integrated wastewater treatment and biomass conversion into biohydrogen under a biorefinery approach. Under this, project, a lab-scale MBB reactor is designed that has double layered cotton fabric (Muslin cloth) as a carrier material. The study showed 80% nitrate and 95% phosphate removal in the biofilm system, with dried biomass productivity up to 3.98g/m2 in a 10-day study period. The biofilm formation efficiency of the isolated native microalgal strains from the Industrial area canal, based on nutrient removal efficiency and biomass yield in the developed MBB, is in progress.

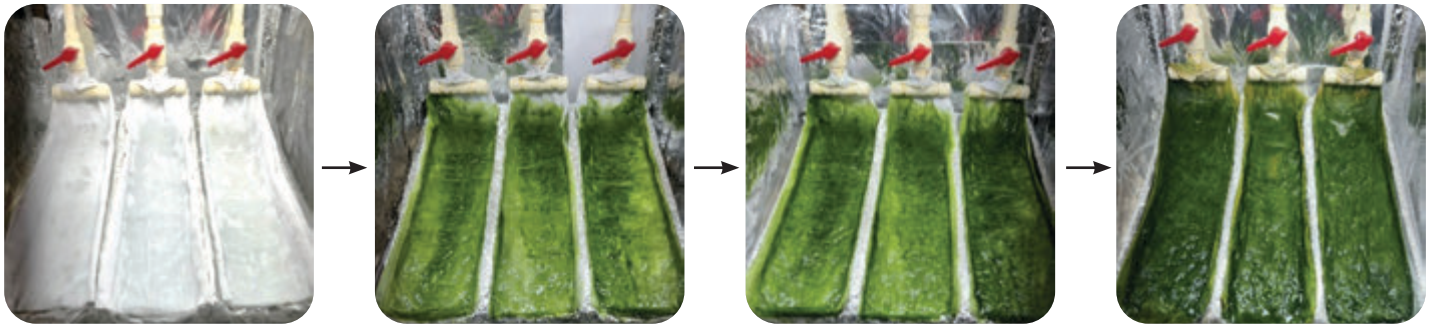


Fig. 9.19: Biofilm-supported algal culture for industrial wastewater treatment

9.3.4.3 Chemical Conversion Division

The Chemical Conversion Division at SSS NIBE aims to transform waste lignocellulosic biomass into valuable chemicals through various processes. These include Slow Pyrolysis to produce biochar, Hydrothermal carbonization (HTC) / Hydrothermal Liquefaction (HTL) for biomass conversion to biochar and Biochar activation for diverse applications, Bio-oil production and its conversion into high-value chemicals. Additionally, the division conducts catalytic transformations of

different lignocellulosic biomass components (Cellulose, Hemicellulose, Lignin) into high-value chemicals. Feasibility studies are also underway for upgrading Biogas to Hydrogen via catalytic steam or dry methane reforming. In the FY 2024-25 Chemical Conversion Division has initiated the following research activities:

9.3.4.3.1 Paddy straw valorisation through hydrothermal liquefaction processes for the production of bio-oil

After China, India is the world's second-largest producer of paddy. India produces 98 million tonnes of paddy, yielding approximately 130 million tonnes of straw. Farmers in Punjab face the annual challenge of managing nearly 20 million tonnes of paddy straw (PS). Paddy straw contains components such as cellulose, hemicellulose and lignin that could be utilized for production biofuels/chemicals, and can be substituted the uses of fossil fuel. Furthermore, the PS biomass is renewable, sustainable, carbon neutral and it is abundant in the earth. In this study, hydrothermal liquefaction/carbonization of PS was investigated to produce bio-oil/value-added chemicals and biochar.

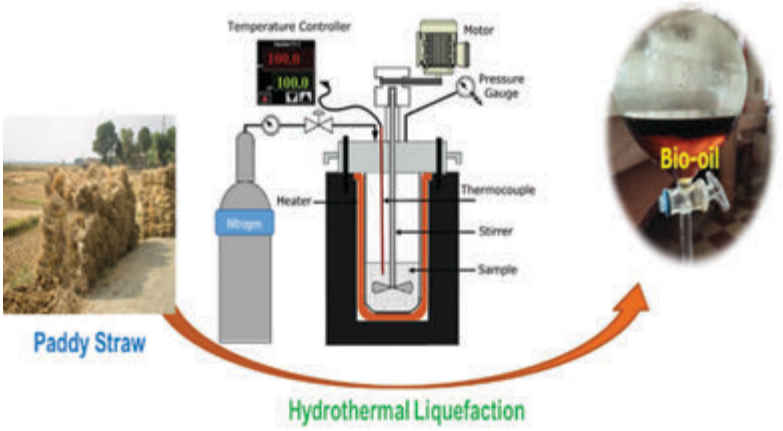


Fig. 9.20: Schematic of HTL of PS

9.3.4.3.2 Hydrothermal liquefaction for bio-oil production:

In this study, Silica-rich ash derived from PS was used as a catalyst. The PS ash, a low-cost agricultural byproduct, can serve as a catalyst in various applications. It is produced by heating paddy straw at 600°C for 5 hours, which removes the organic matrix from the silica backbone, leaving silica-rich ash containing approximately 78% silica with small amounts of impurities. A series of batch experiments were conducted at temperatures between 230-270°C for reaction times ranging from 15 to 45 minutes, with and without the silica-rich ash catalyst, using water and water-ethanol solvent mixtures. The bio-oil obtained with the catalyst displayed the highest area percentage of 4-ethyl phenol among all the samples.

9.3.4.3.3 Comprehensive characterization of sawdust-derived biochar for energy applications

The potential of timber industry waste, sawdust, for producing porous, carbon-rich biochar was explored through carbonization for energy applications. This study optimized sawdust carbonization to achieve biochar with enhanced calorific value and yield. Using response surface methodology, carbonization conducted at 200–500°C for 30–180 minutes showed a maximum calorific value of 5893.29 kcal/kg (45% higher than raw biomass) and a biochar yield of 47.26% under optimized conditions of 500°C for 42 minutes.

9.3.4.3.4 Integrated Processing of Rice Straw for Moisture-Repellent Fibers

This research project proposes a novel, integrated approach that extracts cellulose-rich fibers through alkaline delignification, valorizes hemicellulose and lignin coproducts, and utilizes ash-derived silica for sol-gel modification—imparting water repellency and durability to the regenerated fibers.

9.3.4.4 Electrochemical Division

The Electrochemical Process Division at SSS-NIBE is actively conducting research on utilizing both conventional and underexplored biomass sources to synthesize carbon materials for energy device applications, such as supercapacitors.

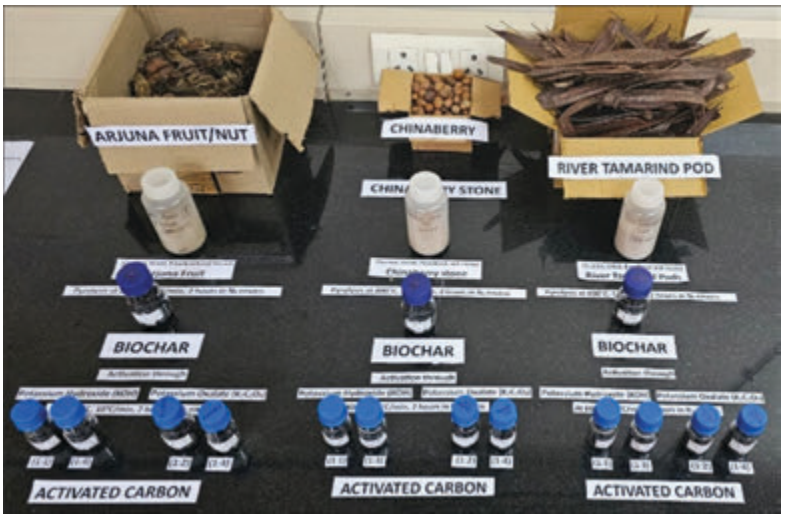


Fig. 9.21: Biomass-derived Activated Carbon through Chemical Activation

9.3.4.4.1 Synthesis of activated carbon from bamboo

The production of activated carbon (AC) from bamboo involves a structured process that ensures the transformation of bamboo into a highly porous material suitable for hydrogen storage. Initially, bamboo materials undergo preparation, which includes cleaning and cutting into suitable sizes.



Fig. 9.22: Synthesis of Carbon Quantum Dots from bamboo

9.3.4.4.2 Exploiting residual biomass for bioenergy and bioplastic production

The residual biomass and raw biomass were examined for different parameters and it was observed that calorific value of the residual biomass (pigment extracted) was much higher (5303.384 Cal/gm) as compared to that of the raw biomass with pigments (4403.996 Cal/gm). Similarly, the CHNS(O) analysis demonstrated that residual biomass has higher C/N and C/H ratio. These results reflected superior lipid content in the residual biomass, thus can be used as promising substrate for bioenergy production. In order to reduce the dependence on plastic, the research was undertaken to utilize residual biomass for bioplastic production.

9.3.4.4.3 Solid Oxide Fuel Cell (SOFC) test bench - A futuristic, sustainable, decentralised power generation

SOFC test bench was established in collaboration with CSIR-NAL, Bangalore, at SSS-NIBE for conducting research activities. This is one of SSS-NIBE's journey routes toward harnessing cutting-edge technology for clean and sustainable energy generation. The institute is working biofuels, such as biogas/producer gas, which are potential fuels for Solid Oxide Fuel Cells (SOFCs) instead of pure hydrogen. The R&D division is also exploring other areas of research in collaboration with CSIR-NAL, such as the preparation of anode-supported cells, preparation of electrolyte-supported cells, enhancement of oxygen vacancies in cathode electrode material, and modelling of fuel cell stacks.



Fig. 9.23: SOFC test bench

9.3.4.5 Thermo-Chemical Division

9.3.4.5.1 Design and Development of the laboratory-Scale Experimental Biomass (Agro Residue) Based Downdraft gasifier (1kg/hr)

A laboratory-scale downdraft biomass gasifier has been finalized based on detailed technical calculations to support experimental research in biomass-to-hydrogen conversion via gasification. The system is designed to facilitate controlled studies of the agro-residue based gasification process, enabling evaluation of key operational parameters, optimization of reaction conditions, and precise characterization of syngas composition. A Purchase Order (PO) has been released for its fabrication and installation. This setup will serve as a critical platform for generating insights essential for process scale-up and for advancing sustainable hydrogen production technologies.

9.3.4.5.2 CFD Modelling of Cyclone Combustor for Producer Gas/ Biogas

The cyclone combustor is designed to burn raw producer gas/biogas. The combustor has tangential fuel and air inlets that caused a swirling flow inside it in order to facilitate fuel-air mixing. The preliminary combustor simulation has been done to get insights over the temperature, velocity, and pressure drop along the length of the combustor. This system is designed to burn the producer gas and biogas produced from the thermal conversion of raw biomass.

9.3.5 Sponsored / External Funded Projects

9.3.5.1 Advanced microalgal biorefinery approach for recycling of domestic sewage/ waste water for cleaner and greener Himalayan region

A project has been funded by National Mission on Himalayan Studies (NMHS), Ministry of Environment, Forest & Climate Change, Govt. of India for 3 years starting in July 2023. The project cost is INR 96.75 Lakhs. NIT, Hamirpur and Jal Shakti Vibhag, Hamirpur are the collaborating partner in the project.

9.3.5.2 Exploration of Lignocellulolytic enzymes producing thermophiles from hot springs of Western Himalayan region for biorefinery applications

The project 'Exploration of Lignocellulolytic enzymes producing thermophiles from hot springs of Western Himalayan region for biorefinery applications' is funded by DST under KIRAN scheme. A thermophilic lignocellulolytic gram positive bacterium Bacillus licheniformis (NIBE – 23) has been screened out of all the isolates from Western Himalayan Region for its potential with the highest cellulolytic enzyme activity. The project has been bound up in October 2024.

9.3.5.3 Complete Heating and Emission Analysis of Raw Biomass and Pellets during Combustion (NMB-3 of SG-1)

The ongoing project is funded by the Central Power Research Institute (CPRI), investigates the thermal and emission behavior of biomass and coal blends for energy applications. Biomass samples collected from seven northern Indian states were analyzed for moisture, ash, volatile matter, elemental composition, and calorific value, revealing notable regional variations due to agro-climatic differences.

9.3.5.4 Dissemination of Improved Cookstoves Among SC Community of Punjab

A project funded by PSCST (2024–2025) aims to disseminate improved cookstoves among the SC community of Punjab to enhance rural livelihoods. Two villages in Jalandhar district—Fateh Jalal and Khaira Majha—were selected for their proximity to SSS-NIBE, enabling effective field testing. Meetings were held with village representatives to identify households using traditional cookstoves, and 10 households per village were selected. Accordingly, 30 cookstoves have been disseminated in two villages. Subsequently, SSS-NIBE is monitoring the field performance of the improved cookstoves to assess their impact and efficiency.

9.3.5.5 To Optimize Coal and Agro-Wastes Mixing and Feeding for Co-Milling for Thermal Power Plants with Minimum Changes to Installed Systems and Operations

The project funded by the Department of Science and Technology (DST) was initiated to optimize coal and agro-waste mixing and feeding for co-milling in thermal power plants with minimal system modifications. The project aims to collect operational data from power plants (e.g., NTPC Dadri), develop a DEM-CFD coupled simulation facility, and characterize coal and biomass samples from across India. Equipment such as an HGI tester and a high-performance workstation has been procured to support these studies.

9.3.5.6 Project No. 223/2/2019-Waste to Energy-Part (2): Densification of agro-waste and assessment for its application in the gasifier

Significant progress was achieved toward completing the objectives of the project, activities included procurement and installation of necessary instruments and setup of an 8 kW agro-residue-based downdraft gasifier with genset, demonstrated by M/s Enersol Biopower, Jaipur.

9.3.5.7 Complete Ash Analysis of Biomass Pellets and Co-Combusted Fuels

The study focused on biomass co-firing with coal in thermal power plants to enhance combustion efficiency and reduce emissions while addressing operational challenges. Different agro-residues—paddy straw, wheat straw, maize stalk, mustard straw, and bajra stalk—were blended with coal (0–20% biomass) to analyze their chemical composition and effects on boiler performance.

9.3.6 5th International Conference on Recent Advances in Bio-Energy Research (ICRABR-2025)

The 5th International Conference on Recent Advances in Bio-Energy Research (ICRABR-2025) commenced on 06.10.2025 at the Sardar Swaran Singh National Institute of Bio-Energy (SSS-NIBE), Kapurthala. The four-day conference (6th–9th October 2025) provides a premier platform for researchers, industry leaders, and policymakers to discuss emerging technologies and future pathways in bioenergy.

The inaugural session was graced by Hon'ble Shri Shripad Naik, Minister of State for New and Renewable Energy and Power, as Chief Guest, who also unveiled the new logo of SSS-NIBE, symbolizing innovation and sustainability. An MoU between IIT Ropar and SSS-NIBE was signed to promote collaborative research in biomass and bioenergy. Shri Santosh Kumar Sarangi, Secretary, MNRE (virtual), and Prof. Rajeev Ahuja, Director, IIT Ropar, attended as Guest of Honour.



Fig. 9.24: SSS-NIBE institute logo unveiled by Hon'ble Minister Shri Shripad Naik

Hon'ble Minister Shri Shripad Naik highlighted India's vast bioenergy potential from crop residues, MSW, and livestock waste, emphasizing government initiatives such as the National Bioenergy Programme, SATAT, SAMARTH Mission, and GOBARdhan, and noted that 20% ethanol blending has been achieved ahead of schedule. Shri Santosh Kumar Sarangi emphasized bioenergy's role in decarbonisation and energy security, highlighting MNRE support exceeding ₹1,000 crore. Prof. Ahuja stressed interdisciplinary collaboration, green hydrogen, and indigenous technology development.

Former Director General, SSS-NIBE, Dr Sridhar outlined conference activities and ongoing research initiatives. The session concluded with a vote of thanks by Dr. Anil Kumar Sarma, Co-Chair, ICRABR-2025.

9.3.7 Vigilance Awareness Week

SSS-NIBE observed "Vigilance Awareness Week-2025" (VAW) from 27.10.2025 to 02.11.2025 with Theme: "Vigilance: Our Shared Responsibility". During this, all officers, staff, research scholars and other participated in the "Integrity Pledge", Quiz and Debate completion at Dr. A.P.J. Abdul Kalam Auditorium, SSS-NIBE.

9.3.8 Constitution Day Celebration

The institute celebrated the Constitution Day on 26.11.2025 in Dr. A.P.J. Abdul Kalam Auditorium, SSS-NIBE. During the event a pledge ceremony was organized.

9.3.9 Joining of New Director General

Dr. Sangita M. Kasture has taken additional charge as Director General of the Institute with effect from 20.11.2025 to lead the institute. She is an Adviser at Ministry of New and Renewable Energy (MNRE) and brings her expertise in Bioenergy and advance biofuels by promoting Industrial Bioenergy projects and innovations for last 15 years.



Fig. 9.25: Dr. Sangita M. Kasture, Director General

Shortly after assuming charge, Dr. Kasture strengthened academic and research collaboration by signing a Memorandum of Understanding (MoU) with the **Dr. B.R. Ambedkar National Institute of Technology (NIT), Jalandhar** to work together on advanced bioenergy research, education and sustainable clean energy solutions.

9.3.10 Collaboration

During the year 2024-25, SSS-NIBE signed MoUs with various institutions to facilitate collaborative research and exchange of students for academic work. The MoU's signed are:



Fig. 9.26: Collaboration done by SSS - NIBE

1. MoU between SSS-NIBE and Organic Recycling System Limited (ORS) was signed on 8.11.2024 to collaborate on sustainable technology development. SSS-NIBE and ORS join hands to propel Napier Grass Based Anaerobic Digestion Process for Biogas Generation. The strategic partnership aims to maximize biogas potential of Napier Grass Advancing India's Renewable Energy Agenda.
2. NDA between SSS-NIBE and Bansco Energies LLP, Hisar has been signed on 30.04.2024 to develop 30m3 biodigester for Napier grass to biogas on indigenous developed technology.

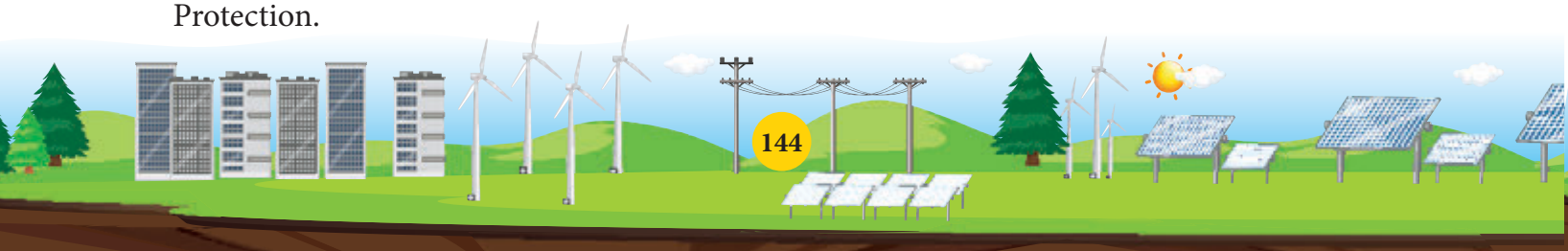
3. MoU between SSS-NIBE and MNRE: for Financial Year 2024-25 was signed between Secretary, MNRE and DG, SSS-NIBE.
4. MoU was signed between SSS-NIBE and CPWD on 11.12.2024.
5. MoU was signed with Energreen Technologies LLP, Chennai on 14.01.2025 for collaboration on the development of Bio-CNG plants across the country.
6. MoU with PSCST: In a significant step towards promoting sustainable energy solutions and fostering scientific collaboration, Sardar Swaran Singh National Institute of Bio-Energy (SSS-NIBE), Kapurthala, signed a Memorandum of Understanding (MoU) with Punjab State Council for Science & Technology (PSCST), Chandigarh. The MoU signing ceremony took place on 23.04.2025 at the premises of SSS-NIBE, Kapurthala.
7. MoU with PAU: SSS-NIBE, Kapurthala and PAU, Ludhiana have signed a MoU on 17.03.2025 at PAU, Ludhiana for collaboration on Bio-Energy Research, Academic programs and capacity building. This partnership aims to promote sustainable utilization of agricultural residue for energy production and soil nutrient amendment.
8. A tri-party Non-Disclosure Agreement (NDA) was signed among three parties, namely SSS-NIBE, Kapurthala; DCM Shriram Limited, New Delhi and Chem Process Systems Pvt. Ltd. Ahmedabad on 25.03.2025. DCM Shriram Ltd. and Chem Process Systems Pvt. Ltd. visited the Institute during March 24-25, 2025 to demonstrate 2G ethanol technology developed at SSS-NIBE.
9. MoU signed between NIBE and The Dr. B.R. Ambedkar National Institute of Technology (NIT), Jalandhar to work together on advanced bioenergy research, education and sustainable clean energy solutions.

9.3.11 NABL Accreditation

In a significant stride towards quality assurance and standardization, three characterization techniques (solid biofuels: bomb calorimeter and CHN analyzer and Gaseous biofuels: Biogas/ BioCNG), received the NABL (National Accreditation Board for Testing and Calibration Laboratories) accreditation in January 2025. This accreditation validates the precision, reliability, and competence of our laboratory practices. This achievement marks a key milestone in ensuring that our laboratory continues to maintain excellence in testing and research infrastructure.

9.3.12 Publications

Overall, 45 publications demonstrate significant multidisciplinary research in bioenergy, waste management, and clean energy transition were published. Out of which 28 were research journal articles and 17 book chapters/books/conference papers. The journal articles cover diverse topics such as biogas production, biomass valorization, bioenergy systems, catalytic conversion, and renewable energy technologies, appearing in reputed journals like Environmental Science and Pollution Research, Critical Reviews in Biotechnology, and Process Safety and Environmental Protection.



9.4 Solar Energy Corporation Of India Limited (SECI)

Solar Energy Corporation of India Ltd. (SECI), a Navratna Central Public Sector Enterprise (CPSE) under the Ministry of New and Renewable Energy (MNRE), continues to play a pivotal role in India's renewable energy expansion. As the country transitions toward a low-carbon economy, SECI serves as the principal public sector organization responsible for the conceptualization, development, and implementation of large-scale renewable energy projects across India. Its strategic initiatives encompass solar, wind, hybrid, energy storage, and green hydrogen domains, driving innovation and market transformation.

SECI's efforts align with India's nationally determined contributions (NDCs) and the vision of achieving Net Zero by 2070. Through transparent competitive bidding, robust payment security mechanisms, and innovative business models, SECI has emerged as a trusted intermediary between renewable energy developers and power distribution companies (DISCOMs), enabling efficient project execution and affordable green power supply.

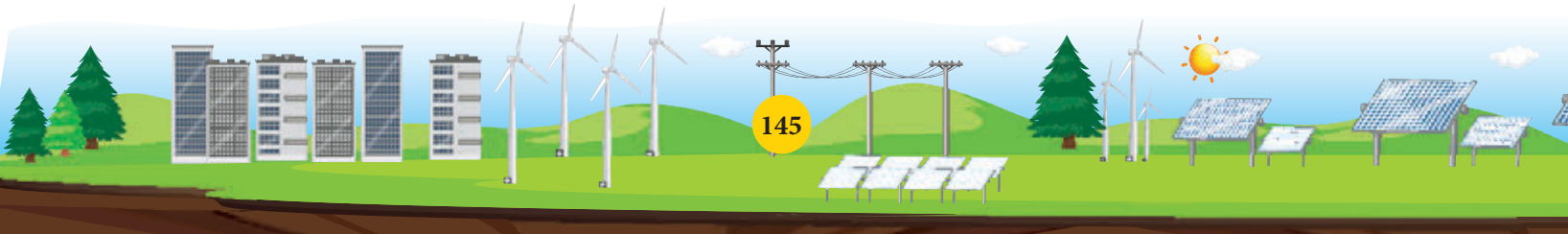
9.4.1 Major Highlights:

- Under its scheme tenders, SECI added 7.19 GW of Solar and 0.77 GW of Wind capacity (including hybrid components) which accounts for over 16% and 12%, respectively of the national capacity additions in FY 2025-26.
- SECI's landmark Green Ammonia tender under the SIGHT Scheme, targeting decarbonization of India's fertilizer sector discovered record-low prices, with bids as low as ₹49.75/kg, significantly lower than the international benchmark of ~₹110 per kg.
- SECI crossed milestone of 65 GW of Power Sale Agreements for Renewable Energy Projects, paving the way for India's Clean Power Transition. The milestone reflects SECI's leadership in advancing India's clean energy transition.
- SECI received an 'Excellent' rating for its performance under the Memorandum of Understanding (MoU) with the Ministry of New & Renewable Energy (MNRE) for FY 2024-25, scoring 97.36 out of 100. The rating was issued by DPE in January 2026, reflecting SECI's commitment to operational excellence and corporate governance standards.
- SECI successfully issued its maiden Debentures on the National Stock Exchange (NSE), raising ₹600 crore. The issue received an overwhelming response — 43 bids totaling ₹2,156.75 crore were received against the issue size of ₹600 crore, reflecting strong investor confidence.

9.4.2 Business Activities

9.4.2.1 Accelerating RE Expansion through Market Investments

SECI serves as the lead implementing agency for renewable energy projects in India, driving progress towards the nation's NDCs. Acting as the market interface between renewable energy developers and power off-takers, SECI facilitates project development through transparent, tariff-



based e-bidding on both pan-India and state-specific scales. As of 31.03.2026, SECI has awarded over 80 GW of RE capacity under its tenders, of which over 39 GW has been commissioned, accounting for ~14% of India's total non-fossil installed capacity.

Innovative Renewable Energy Supply Models: SECI has pioneered next-generation renewable energy procurement frameworks that integrate solar, wind, and energy storage technologies. These projects ensure higher reliability, better grid management, and enhanced capacity utilization factors (CUF). By encouraging co-located hybrid projects and round-the-clock renewable energy supply, SECI is enabling greater grid flexibility and optimized land use. As of 31.03.2026, SECI has awarded 13.12 GW under Hybrid/Peak Power/RTC/FDRE categories, with 2.939 GW commissioned.

Energy Storage Systems (ESS): Energy Storage Systems are central to addressing the intermittency challenges of renewable energy. By integrating large-scale battery storage with solar and wind assets, SECI ensures round-the-clock power availability and improved power quality. Such initiatives contribute to grid security and operational efficiency.

9.4.2.2 Emerging Areas:

National Green Hydrogen Mission: Under the National Green Hydrogen Mission implemented by MNRE, SECI is playing a key role in developing large-scale hydrogen and ammonia production capacities. India is well-positioned to emerge as a global hub for clean fuels, and SECI's tenders are helping build this ecosystem. SECI has awarded the following capacities under the SIGHT Scheme till 31.03.2026:

Technology	Awarded Capacity
Electrolyser Manufacturing	3,000 MW
Green Hydrogen Production	8,62,000 MT
Green Ammonia Production & Supply	7,24,000 MT

SECI's landmark Green Ammonia tender under the SIGHT Scheme targeting decarbonization of India's fertilizer sector discovered record-low prices, with bids as low as ₹49.75/kg.

PLI Scheme for High Efficiency Solar PV Modules: The Production Linked Incentive (PLI) Scheme for High Efficiency Solar PV Modules is one of the flagship manufacturing initiatives of the Government to strengthen domestic capability and reduce import dependence. SECI, as implementing agency for Tranche-II, has awarded 11 manufacturers for 39,600 MW cumulative capacity with an approved PLI outlay of ₹13,937.54 Cr.

9.4.2.3 Govt. Schemes handled by SECI:

SECI is involved in implementing various other schemes of MNRE, such as Solar Park scheme, VGF scheme, CPSU Scheme etc. As part of these initiatives, SECI takes on the responsibility of

disbursing Central Financial Assistance (CFA) to project implementing agencies. The disbursement of funds is based on achieving pre-defined milestones set forth by the respective schemes.

9.4.2.4 CAPEX Projects (Operational):

Project	Location	Capacity
Solar + BESS	Chhattisgarh	100 MW + 40 MW/120 MWh
BESS Project	Lakshadweep Islands	1.7 MW + 1.4 MWh
Solar Project	Badi Sid, Rajasthan	10 MW
Rooftop Solar	Andaman & Nicobar	1 MW
Solar Project (DRDO)	Karnataka	10 MW

The above operational projects collectively demonstrate SECI's technical expertise in designing and managing diverse RE solutions ranging from on-grid solar to battery-integrated systems. These initiatives also contribute to regional energy access and emission reduction.

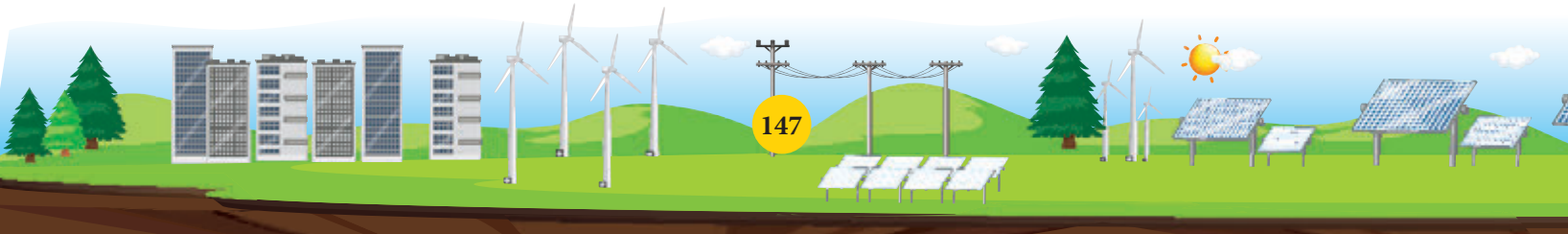
Under Implementation Projects:

Type	Location	Capacity
Floating Solar	Getalsud, Jharkhand	100 MW
Solar + BESS	Leh, Ladakh	25 MW
Solar (DCR)	Ramagiri, Andhra Pradesh	300 MW
Solar (DCR)	Dhar, Madhya Pradesh	200 MW
BESS	Nandiyal, Andhra Pradesh	1200 MWh

These projects are in advanced stages of development and reflect SECI's expanding project portfolio in varied terrains, including high-altitude and remote locations. Such initiatives also facilitate localized economic growth and green employment generation.

9.4.2.5 Project Management Consultancy (PMC): SECI provides PMC services for renewable energy projects undertaken by public sector and government entities. Its expertise spans feasibility analysis, bid process management, construction monitoring, and commissioning. Over 350 MW capacity has been successfully commissioned through this model till 31.03.2026. The Corporation is also exploring expansion of PMC services to international assignments, leveraging its experience in utility-scale projects.

9.4.2.6 Power Trading: SECI holds a Category-I Power Trading License, facilitating pan-India renewable energy trade. It acts as an intermediary procurer of RE power, executing PPAs with developers and corresponding PSAs with DISCOMs and other entities. Cumulative PSAs over 65 GW have been signed with various States/UTs and other buying entities. During FY 2025-26, trading volumes increased by 23.46 % to reach 62807 million units, reflecting robust operational growth.



9.4.3 Financial Performance

Highlights of Financial performance for fiscal year 2025-26, with comparative position of the previous year, are mentioned below-

Standalone Financials

Particulars	FY 2024-25	FY 2025-26	% increase in FY 2025-26 over 2024-25
Revenue from Operations (Rs. Cr.)	15185.1	18,446.80	21.48%
Net-Worth (Rs. Cr.)	3313.32	3,777.95	14.02%
Profit Before Tax (PBT) (Rs. Cr.)	671.95	772	14.89%
Profit After Tax (PAT) (Rs. Cr.)	501.92	578.53	15.26%

9.5 Indian Renewable Energy Development Agency Limited (IREDA)

9.5.1 Background

Indian Renewable Energy Development Agency Limited (IREDA) is a Navratna Central Public Sector Enterprise (CPSE) under the administrative control of the Ministry of New and Renewable Energy (MNRE). Established in 1987 as a Public Limited Government Company and registered as a Non-Banking Financial Institution (NBFI), IREDA is dedicated to promoting, developing, and financing projects in the fields of renewable energy, energy efficiency, and energy conservation. Guided by its motto "Energy for Ever", IREDA plays a pivotal role in driving India's clean energy transition.

9.5.2 Financial & Operational Performance

The key financial and operational highlights for FY 2025-26 are summarized below:

a. During the Financial Year 2025-26, IREDA has achieved highest-ever loan sanctions of ₹51,883.36 Crore, registering an increase of 9.34% over the previous year's sanctions of ₹47,453.11 Crore and highest ever loan disbursements of ₹ 34,945.67 Crore with a growth of 15.84% over the previous year's disbursement of ₹ 30,167.87 Crore.

b. The revenue from operations increased to ₹ 8,309.00 Crore, registering a growth of 23.23% over the previous year's revenue of ₹ 6,742.41 Crore.

c. Profit Before Tax (PBT) and Profit After Tax (PAT) increased to an all-time high of ₹ 2,336.92Crore (11.08% increase over last year) and ₹ 1,873.34 crore (10.29% increase over last year) respectively at the end of FY 26.

d. The loan book of the Company has grown from ₹76,281.65 Crore as on 31st March, 2025 to ₹ 93,068.71Crore as on 31st March, 2026 registering a growth of 22%.

e. The loans sanctioned during Financial Year 2025-26 would support power generation capacity addition of 6,975 MW, RE Equipment Manufacturing of 24,100 MWp per annum, Biofuel Ethanol production of 100 KLPD, Biomass (CBG) 15 TPD, Lithium-ion Cell Manufacturing 1.00 GWh and Biomass Pellet Manufacturing of 10.50 TPH.

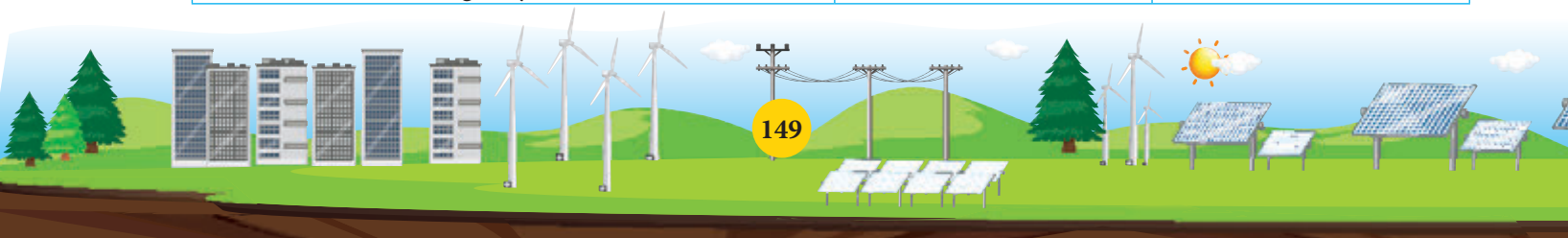
Sector-wise loan sanctions, disbursements, and cumulative achievements as of 31.12.2025 (FY 2025-26) are shown below:

Sector-Wise Break-up of Loan Sanctions and Disbursements during FY 2025-26 as on 31.12.2025

Sector	Sanctions	Disbursements
Solar Energy	9,344.85	5,386.15
Wind Power	1,256.49	480.84
Hydro Power	94.88	203.44
Biomass Power & Cogeneration	682.50	687.50
Short Term Loan	500.00	535.55
Electrical Vehicle (EV)	200.00	70.68
Biomass (Briquetting, Gasification & Methanation from Industrial Effluents)	103.86	148.58
Loan Facility to State Utilities	10,550.00	8,700.00
Hybrid Wind & Solar	3,510.47	1,022.57
Ethanol	281.00	1,797.44
Manufacturing	11,507.33	4,380.84
Waste to Energy		13.99
Miscellaneous (Transmission Lines, Emerging Technology, Guarantee Assistance)	2,068.63	1,475.71
Total	**40,100.01**	**24,903.30**

Sector-Wise Break-up of Cumulative Loan Sanctions and Disbursements as on 31.12.2025

Sector	Sanctions	Disbursements
Solar Energy	69,921.23	43,460.87
Wind Power	39,537.56	28,749.26
Hydro Power	22,361.66	13,483.04
Biomass Power & Cogeneration	6,322.88	4,279.15
Energy Efficiency & Conservation	1,381.71	441.54
Waste to Energy	1,144.93	732.09
National Clean Energy Fund (NCEF)	156.57	127.14
Bill Discounting	181.97	161.76
Bridge Loan	223.86	152.90
Short Term Loan	13,584.35	8,410.62
Electrical Vehicle (EV)	2,258.17	1,317.59
Biomass (Briquetting, Gasification & Methanation from Industrial Effluents)	1,166.04	818.52
Guaranteed Emergency Credit Line (GECL)	565.1	539.84



Loan Facility to State Utilities	54,912.00	51,545.00
Hybrid Wind & Solar	8,739.05	4,093.35
Ethanol	10,709.55	8,466.79
Manufacturing	28,335.70	10,276.04
Miscellaneous (Transmission Lines, Emerging Technology, Guarantee Assistance)	16,513.33	3,932.34
Total	2,78,015.65	1,80,987.84

9.5.3 Resource Base

The total borrowings of IREDA stood at ₹ 77,845.63 Crore as on March 31, 2026 as against ₹ 64,740.31Crore in the previous year. During the Financial Year 2025- 26, IREDA has mobilized ₹31,913.63 Crore from both domestic and foreign currency borrowings.

Net Worth of the Company placed at ₹ 13,781.35 Crore at the end of the Financial Year 2025-26, registering an increase of 34.24 % over the previous year's Net Worth of ₹10,266.16 Crore. The authorized and paid-up capital of IREDA stood at ₹6,000 crore and ₹ 2,809.23 respectively at the end of Financial Year 2025-26.

9.5.4 MoU with MNRE

IREDA has signed a Memorandum of Understanding (MoU) with the Ministry of New and Renewable Energy (MNRE), setting key performance targets for the Financial Year 2025–26. The Company's performance for the Financial Year 2024–25 has been rated "Excellent." This achievement marks the fifth consecutive year that IREDA has received the highest rating, underscoring its unwavering commitment to operational excellence and adherence to the highest standards of corporate governance.

9.5.5 MNRE Schemes

IREDA is the Implementing Agency for the four MNRE Scheme / Programmes, namely:

a. National Programme on High Effciency Solar PV Modules under Production Linked Incentive, Tranche-I

b. Central Public Sector Undertaking Scheme Phase II for setting up grid-connected Solar PV projects under Tranche III

c. Programme on Energy from Urban, Industrial & Agricultural Wastes/Residues as part of the National Bioenergy Programme, Phase I

d. Solar & Wind Generation Based Incentive (GBI) Schemes

9.5.6 Human Resource Development

A motivated and skilled workforce forms the foundation of IREDA's high-performance culture. To fully leverage its human capital, the company continues to invest in specialized training

and capacity-building programs offered by reputed institutions / organizations. IREDA has strengthened its human resources by inducting talent across various functional areas, aligning workforce expansion with the organization's growing operational requirements in the renewable energy sector. The addition of skilled professionals has introduced fresh perspectives, fostered innovation, and enhanced operational efficiency, further reinforcing IREDA's commitment to transparency, excellence, and sustainable growth.

IREDA nurtures a safe, inclusive, and enabling work environment that supports both professional and personal growth. To promote employee well-being, the company conducts daily yoga and meditation sessions, along with regular preventive health check-ups. During the year, IREDA celebrated several key events, including International Yoga Day, Hindi Pakhwada, and International Women's Day. The company also actively participated in the Swachhata Hi Seva 2025 campaign under the theme 'Swachhotsav', organizing a range of cleanliness and awareness activities.

IREDA remains committed to providing equal growth opportunities for women, in line with the Government of India's vision of gender inclusivity. Women employees continue to play significant roles in key functional and strategic areas across all hierarchical levels. Representing 23.35% of the total workforce, women employees have made valuable contributions to the organization's continued success.

The company strictly adheres to the Government of India's reservation policy for Scheduled Castes, Scheduled Tribes, Other Backward Classes, Persons with Disabilities, and Economically Weaker Sections, meticulously maintaining the prescribed reservation rosters. Employee relations remained cordial and harmonious throughout the year, with no loss of man-days reported.

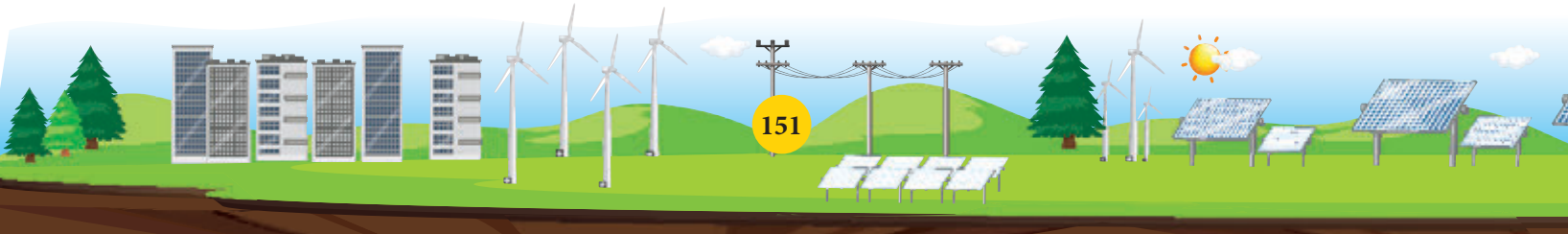
As on 31.12.2025, the Company has 227 fulltime employees comprising of 211 Executives (including 02 Board Level Executives) and 16 Non-Executives.

9.5.7 Corporate Social Responsibility

IREDA, being committed to operate and grow in a socially and environmentally sustainable manner, endeavours to optimally contribute towards the welfare of society at large. Under its CSR Policy and in alignment with the communally responsible regulatory framework prescribed by the Government of India, IREDA invests its resources in projects that are economically, socially, and environmentally sustainable.

In line with this commitment, IREDA continues to enhance its value creation for society by supporting sustainable community and environmental projects in the areas of healthcare, nutrition, renewable energy, energy efficiency, clean technologies, and other initiatives contributing to the social and environmental development of the country.

For the Financial Year 2025-26, a **CSR Budget of ₹ 3,260.45 Lakhs** has been allocated. As on **31st December 2025**, an amount of **₹ 1595.08 Lakhs** has been sanctioned from this budget.



During the Financial Year 2025-26, the Company has undertaken the following activities/projects under its CSR initiatives, as summarized in the table below:

	CSR Initiatives undertaken by IREDA during the year 2025 - 26 (1st April, 2025 to 31st December, 2025)	
S. No	Description	₹ / Lakhs
1	Financial assistance to Samphia Foundation, Kullu, Himachal Pradesh towards operational expenses of two (2) Mobile Medical Vans for running the "Therapy on Wheels" Program for serving children with disabilities	54.30
2	Financial assistance through M/s Rajasthan Electronics & Instruments Limited (REIL) for Supply / Installation / Commissioning and Maintenance of 100 kWp Off-Grid SPV Power Plant (Car Port Structure Type) at BSF Longewala, Jaisalmer, Rajasthan	137.40
3	Financial assistance to M/s Bhagwan Mahaveer Child Welfare Trust for providing primary education to remote and slum area children via 25 nos. of Single Teacher Schools in Jaipur, Rajasthan	22.50
4	Contribution to the Indian Institute of Technology, Delhi towards procurement, performance evaluation, testing, and showcasing a Compressed Bio-Gas (CBG) Car to visitors from across the nation and world.	20.00
5	Financial assistance to M/s. Divya Pragati Sewa Sansthan for organizing four Health Check-up Camps in Rural Areas of District- Unnao, Lucknow, Uttar Pradesh.	10.34
6	Financial assistance to M/s SLS Trust towards supply and installation of solar Power Systems at Govt. Woman's College, Rairangpur, Govt. (SSD) Girl's High School, Rairangpur, Govt. Girl's High School, Rairangpur and Skill Training Hub, Pahadpur in Mayurbhanj district, Odisha	167.35
7	Financial assistance to Jila Civil Social Responsibility Association (JCSRA) for Procurement of necessary Medical Equipment for Community Health Centres (CHCs) of Aspirational District Siddharthnagar, Uttar Pradesh	305.75
8	Financial assistance to The Central Govt. Employees Consumer Cooperative Society Ltd. (Kendriya Bhandar) for supply and installation of 45 kW grid solar power system at water pumping station near Podar International School, Old Goa	28.85
9	Financial assistance to Jetvan Vipassana Meditation Centre for supply and installation of 50 kW Off-Grid solar power system at Vipassana Meditation Centre, Shravasti, Uttar Pradesh	39.75
10	Financial assistance to The Central Govt. Employees Consumer Cooperative Society Ltd. (Kendriya Bhandar), towards supply and installation of Solar Water Coolers with RO Water Purifiers in 11 nos. of Government Schools of Mayurbhanj district, Odisha	96.00
11	Contribution of Rs. 50,00,000/- from CSR funds of IREDA for FY 2025-26 to India International Centre (IIC), New Delhi for supporting and developing artistic and cultural activities, traditions with special emphasis on Young & Budding Artistes.	50.00

12	Financial assistance to Samphia Foundation, Himachal Pradesh towards installation and operationalizing a Community Radio Station (Radio Kullu 90.4 FM) at Kullu, Himachal Pradesh	35.40
13	Financial assistance to The Central Govt. Employees Consumer Cooperative Society Ltd. (Kendriya Bhandar) towards procurement and installation of 11 Ice-Lined Refrigerators (ILRs) in the Community Health Centers (CHCs) and Primary Health Centers (PHCs) across Solan District, Himachal Pradesh	97.71
14	Financial assistance to The Central Govt. Employees Consumer Cooperative Society Ltd. (Kendriya Bhandar) towards supply and installation of Smart Classes in 21 Schools across the aspirational district of Chandauli, Uttar Pradesh.	98.09
15	Financial assistance to M/s Doctors For You (DFY) towards supply and delivery of Electric Vehicles to be utilized at Homi Bhabha Cancer Hospital & Research Centre, Muzaffarpur, Bihar	118.45
16	Financial assistance to The Central Govt. Employees Consumer Cooperative Society Ltd. (Kendriya Bhandar) towards supply and installation of Hemodialysis Machines and other medical equipment in District Hospital Rajgarh and Civil Hospital, Biaora, Madhya Pradesh.	133.14
17	Financial assistance to The Central Govt. Employees Consumer Cooperative Society Ltd. (Kendriya Bhandar) towards supply and installation of Smart Classes in 20 Schools across the aspirational district of Balrampur, Uttar Pradesh.	93.42
18	Financial assistance to Vinayaka Institute of Emergency Medical Sciences for supply and installation of five (05) Dialysis machines at hospitals in Sikkim (two units at Jorethang CHC, Sikkim and three units at District Hospital, Soreng Sikkim)	86.63
	Total	1595.08

9.5.8 Awards

IREDA's contribution towards development and promoting Renewable Energy Sector in the country has been recognized with the following awards:

a. CMD, IREDA was conferred with the prestigious 'CMA ICON 2025' award by The Institute of Cost Accountants of India on 23.06.2025. Director (Finance), IREDA, was also felicitated with a Certificate of Appreciation.

b. IREDA bagged the Excellence in Cloud Adoption Award, Digital Transformation leader of the Year and Digital Security Leader of the Year Award at 10th India PSU IT Awards 2025 by Governance Now.

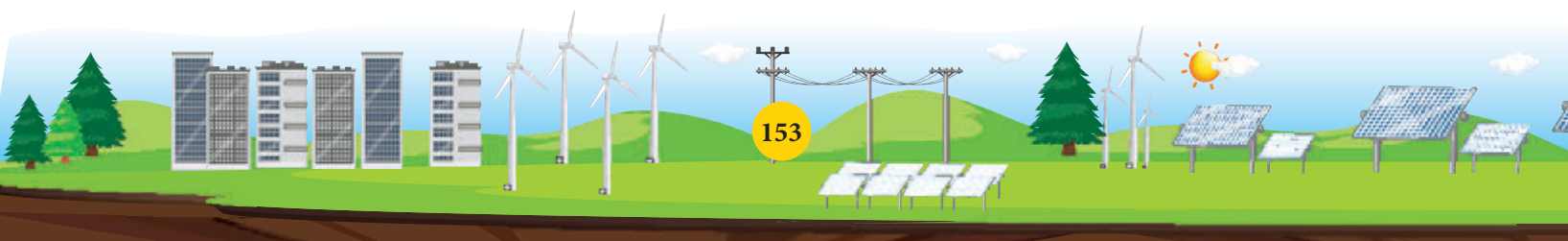




Fig. 9.27: IREDA signed MoU with MNRE for Financial Year 2025-26



Capacity Building, Awareness & Outreach Programme

10.1 Information And Public Awareness Programme

10.1.1 India stands 4th globally in terms of renewable energy installed capacity including large hydro. The Ministry has worked systematically for putting in place facilitative policies and programmes for achieving the goal. In order to percolate the initiatives, benefits and usage of renewable to the masses, information dissemination and publicity is essential. In this background, I&PA programmes for renewable energy are conceptualized and developed for implementation.

10.1.2 The main objective of I&PA Programme is to Create awareness and disseminate GoI's plans and programs in New & Renewable Energy area to the society at large through various media. The Programme is implemented using Government channels viz. (i) Central Bureau of Communication (CBC) (ii) National Film Development Corporation (NFDC); (iii) Doordarshan; (iv) All India Radio (AIR); (v) State Nodal Departments/Agencies for renewable energy; and (vi) NGOs/ Academic institution, etc., and participation in exhibitions of national importance by the Ministry and also through other relevant Institutions/Organizations.

10.1.3 During the year 2025, the Ministry implemented a Renewable Energy media strategy that included organizing major events, providing financial support to State Nodal Agencies through IREDA, extending logo support to renewable energy events, producing short films on key schemes showcased at the World Expo in Osaka and PM sector review, and carrying out extensive publicity through social media, FM radio.

10.1.4 To strengthen the existing programme in the evolving information age, the Ministry of New and Renewable Energy continues to expand its presence across social media platforms including Facebook, Instagram, LinkedIn, YouTube, and Twitter. A dedicated Social Media Cell is operational and actively disseminates accurate and timely information to citizens, industry stakeholders, and researchers. Over the past year, the Cell has implemented structured content strategies such as the A–Z Renewable Energy Knowledge Series, scheme awareness campaigns, and milestone announcements related to solar, wind, green hydrogen, and bioenergy initiatives. The Cell has also enhanced engagement through initiatives such as interactive quizzes, myth-vs-fact posts, and success stories highlighting

beneficiaries of flagship programmes such as PM KUSUM and PM Surya Ghar: Muft Bijli Yojana. Through regular monitoring of analytics and weekly performance reporting, the Social Media Cell has improved content optimization, strengthened outreach to a highly niche follower base comprising industry professionals and renewable energy users, and increased citizen awareness of Ministry schemes, missions, and achievements. These efforts have contributed to better public understanding of renewable energy initiatives and their positive impact on India's sustainable development goals.

10.2 Human Resource Development

10.2.1 Capacity building and skilling are crucial in renewable energy (RE) for meeting ambitious climate goals, driving economic growth by creating green jobs, ensuring project success through skilled installation and maintenance and achieving energy security etc. Human Resource Development (HRD) Programme of MNRE aims to institutionalize the renewable energy education and training to meet the requirement of qualified and trained manpower in the country. HRD Programme supports trainings for manpower at all levels including promoting higher studies and research courses by providing Fellowships to students and research scholars in R&D and academic institutions in Renewable Energy. Support is also provided to R&D and academic institutes for up-gradation of their laboratories for conducting higher degree courses at the Post-Graduate and Doctoral levels in New and Renewable Energy. Under Short-term training programmes of HRD scheme, Skill Development Programmes, namely ***Suryamitra***, ***Varunmitra***, ***Vayumitra*** and ***Jalurjamitra*** were implemented to train the workforce for installation, commissioning, operation and maintenance of renewable energy projects. Ministry has also sanctioned Jaiv Urja Mitra programme for Agri-Residue Aggregator, Biomass Depot Operator, Technicians (O&M) for CBG and Pellets/Briquettes manufacturing considering the potential employment opportunities in rural areas.

Various components of the HRD scheme are as follows:

a. Support to educational and other training organizations for conducting short-term trainings on various aspects of Renewable Energy with focus on skill development at all levels. Skill development programmes such as Solar PV Technician (Suryamitra), Solar Water Pumping Technician (Varunmitra) Wind Power Plant Technician (Vayumitra) and Small Hydro Power Plant Technician (Jalurjamitra).

b. National Renewable Energy Fellowship (NREF) Scheme for pursuing M.Sc./M.Tech/ PhD/ PDF degree courses.

c. Support to higher educational institutions for laboratory upgradation.

d. National Renewable Energy Internship scheme (NREI).

e. Renewable Energy Chair.

10.2.2 National Renewable Energy Fellowship Scheme

MNRE continued its support to students and scholars for pursuing higher studies such as M.Sc, M.Tech, Ph.D courses in Renewable Energy through ongoing fellowships in selected educational institutions by providing fellowships or stipend under NREF Scheme. In Financial Year 2025-26, MNRE continued its support by providing 62 nos. fellowships (ongoing 46 fellowships and new 16 no. fellowships i.e 6 JRF, 9 M. Tech and 1 no. RA) till December 2025 to scholars and students for pursuing higher studies in selected educational institutions under NREF Scheme. The fellowship payments are released through Direct Benefit Transfer (DBT). The list of institutes supported by fellowships is given in Table 10.1

Table 10.1: Details of Institutes supported for fellowships for FY 2025-26

S. no.	Name of Department/Institute
1	Indian Institute of Technology, Kanpur
2	Indian Institute of Technology, Roorkee
3	Centre for Energy Studies, Savitribai Phule Pune University, Pune
4	Department of Applied Sciences and Humanities, Jamia Milia Islamia University
5	CSIR-National Physical Laboratory (NPL), New Delhi
6	Cochin University of Science & Technology, Kochi
7	Department of Green Energy Technology, Pondicherry University
8	Department of Energy, Tezpur University, Assam
9	National Institute of Bio Energy/NIT Jalandhar
10	National Institute of Solar Energy (NISE)

10.2.3 Skill Development Programmes and Trainings

The short-term training component of HRD programme, focuses on creation of skilled/trained technicians making them industry ready for installation, operation and maintenance of various RE projects. All the skill development programmes are residential programmes for the duration of 45 – 90 days. These programmes are 100% funded by MNRE as per guidelines of M/o Skill Development and Entrepreneurship (MSDE). Training cost per trainee is about Rs.55,000/- to 79,000/- in these programmes. Assessment and certification is done by Skill Council Green Jobs (MSDE skill council) and uploaded on Skill India portal.

(a) **Solar PV Technician (Suryamitra Skill Development) Programme :** Solar PV Technician (Suryamitra) training was initiated by the Ministry in 2015 to develop work force to meet the demand of solar energy sector. The programme is implemented by about 400 training institutes on Pan-India basis through National Institute of Solar Energy, Gurugram. These trainings are being organized through empanelled Training Centres and partner organizations

in different states across the country empanelled through a transparent process by NISE. In Financial Year 2025-26, training of 2550 no. of Suryamitras were allocated to NISE. In FY 2025-26, 5666 no. of Suryamitras were trained and training of 4077 no. of Suryamitras is undergoing. A cumulative 66351 nos. of Suryamitras have been trained as on December 2025 out of which 33705 no. candidates got employment.

Table -10.2 State wise list of trained and employed manpower under Suryamitra Skill Development Programmes (up to 31.12.2025)

S. No.	State/UT	No. of Suryamitras	
		Trained	Employed
1	Andaman and Nicobar Islands (UT)	0	0
2	Andhra Pradesh	2364	1335
3	Arunachal Pradesh (NER)	150	21
4	Assam (NER)	1710	970
5	Bihar	2276	1300
6	Chandigarh (UT)	291	191
7	Chhattisgarh	2477	1343
8	Dadra and Nagar Haveli and Daman & Diu (UT)	0	0
9	Delhi	719	336
10	Goa	321	202
11	Gujarat	3567	2104
12	Haryana	1710	735
13	Himachal Pradesh	564	203
14	Jammu and Kashmir (UT)	1532	529
15	Jharkhand	936	510
16	Karnataka	2281	959
17	Kerala	1018	561
18	Ladakh (UT)	46	24
19	Lakshadweep (UT)	30	0
20	Madhya Pradesh	6938	3396
21	Maharashtra	5273	2879
22	Manipur (NER)	150	50
23	Meghalaya (NER)	60	44

24	Mizoram (NER)	0	0
25	Nagaland (NER)	60	0
26	Odisha	2927	1360
27	Pondicherry (UT)	149	61
28	Punjab	878	485
29	Rajasthan	6001	3256
30	Sikkim (NER)	30	20
31	Tamil Nadu	4351	2304
32	Telangana	3987	2297
33	Tripura (NER)	238	73
34	Uttar Pradesh	7294	2896
35	Uttarakhand	1235	639
36	West Bengal	4622	2246
Total:	66351	33705	

(a) **Varun-mitra Programme:** Ministry supported Solar Water Pumping Technician Training Programmes (***Varunmitras***) on Solar Water Pumping Systems to National Institute of Solar Energy (NISE), Gurugram. These training programmes are being organised by NISE with various partner institutions such as Government Institutions, Engineering Colleges, Polytechnics and Other affiliated institutions, which have been empaneled through Expression of Interest (EOI). Total 1366 Nos. of ***Varunmitras*** were trained under Solar water pumping Technician training programme including training of 90 no. of ***Varunmitras*** in FY 2025-26 up to December, 2025. Another, 60 candidates are undergoing training.

(b) **Vayu-mitra Skill Development Programme:** Vayumitra Skill Development Programme (VSDP) Phase -1 was launched to train Wind Power Plant Technicians for Wind Energy Projects. National Institute of Wind Energy (NIWE), Chennai has implemented these trainings. The programme has been completed in March 2025 with successful training of 2160 candidate and 281 trainers. State wise trained and employed vayumitras are shown below:

Table -10.3 State wise list of trained and employed manpower under Vayu-mitra Skill Development Programmes (Phase-1)

S. No.	State/UT	No. of Suryamitras	
		Trained	Employed
1	Gujarat	210	80

2	Karnataka	30	0
3	Madhya Pradesh	120	93
4	Maharashtra	600	195
5	Rajasthan	360	113
6	Tamil Nadu	840	565
	Total	2160	1046

Vayumitra Skill Development Programme (VSDP phase II)-"Wind Farm Engineer" has been started with the revised qualification pack for training of 1125 number of candidates for the period of 2025-26 to National Institute of Wind Energy (NIWE), Chennai. Under this programme 15 Master trainers and 54 trainers were trained as on 31.12.2025.

(c) Jal-Urjamitra Skill Development Programme: Ministry has launched the Jal-Urjamitra Skill Development Programme to train technicians for maintenance of Small Hydro Power Projects with a target to develop over 1700 no. of skilled manpower for the period of 5 years i.e. FY 2021-22 to 2025-26. Hydro and Renewable Energy Department, Indian Institute of Technology, Roorkee is coordinating the programme. HRED, IIT Roorkee has empanelled 18 Training Centres (TCs) to impart training under Jal Urjamitra skill development programme. Up to December 2025, 931 no. of candidates and 66 no. of trainers have been trained and training of 540 Jal urjamitras are undergoing. State wise list of Jalurjamitras is given in table 10.4.

Table - 10.4: State wise list of trained and employed manpower under Jal-urjamitra skill development programmes (up to 31.12.2025)

S. No.	State/UT	No. of Jal Urja Mitra	
		Trained	Employed
1	Andhra Pradesh	120	26
2	Arunachal Pradesh	29	24
3	Himachal Pradesh	44	0
4	Karnataka	53	42
5	Maharashtra	90	49
6	Odisha	270	218
7	Tamil Nadu	85	0
8	Uttarakhand	240	153
	Total	**931**	**512**

10.2.4 National Renewable Energy Internship Scheme (NREI)

Under the National Renewable Energy Internship (NREI) programme, the Ministry provides internship opportunity to students pursuing under-graduate, post graduate degree or research scholars enrolled in recognized institutions or universities within India or abroad, as Interns to understand the various activities/policies/schemes in RE sector. In FY 2025-26, 53 no of students perusing B.Tech, M.Tech, M.A, MBA, LLB ,B.Voc on RE etc. have successfully completed internships in MNRE and in its institutions while 26 internships are ongoing as on December, 2025.

10.2.5 Third party evaluation of HRD Scheme

For further continuation of HRD scheme beyond 31.03.2026, the scheme has to be evaluated by Third party as per MoF guidelines. Based on RfP, M/s Forvis Mazars Advisory LLP, Gurugram was selected through QCBS Mode. An independent evaluation study has been undertaken to assess the impact, efficiency and sustainability of HRD programme of the Ministry implemented during the period i.e FY 2021-22 to 2025-26. Division has several of meetings with third party Agengy. Agency has submitted final draft report.

The report provides an evidence-based assessment of high employment outcomes of skilled manpower, strong trainee satisfaction, significant earning potential, catalyst for entrepreneurship, development of qualified manpower through fellowship and internship programmes. They also highlighted operational gaps and suggest refinements in one or two components for the next HRD programme.

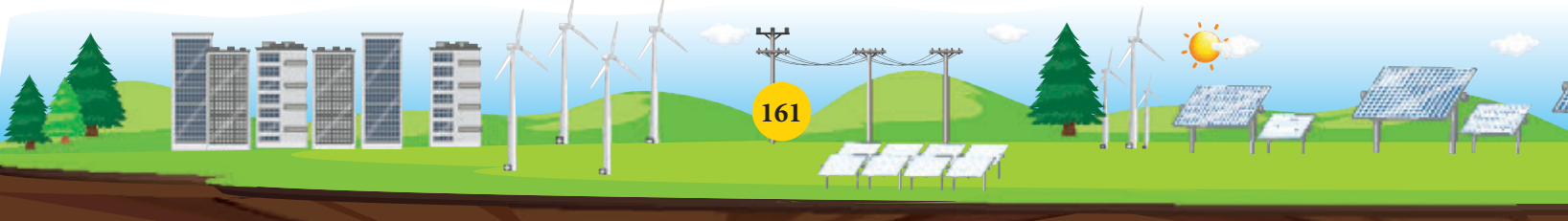
This analysis reveals an urgent need for strengthening the HRD program of MNRE to leverage the programme's proven strengths in job creation to seize the historic opportunity of India's green transition.

10.3 Capacity Building and Training Initiatives under Mission Karmayogi

The Ministry of New and Renewable Energy (MNRE) has made significant progress in enhancing its capacity-building efforts, guided by the comprehensive vision of Mission Karmayogi. Launched in September 2020, Mission Karmayogi, also known as the National Programme for Civil Services Capacity Building (NPCSCB), is designed to modernize and empower India's civil services through a competency-based approach. By shifting focus from rules to roles, the mission promotes effective governance and service delivery through structured learning and continuous performance analysis.

10.3.1 Learning on iGoT Platform

The Integrated Government Online Training (iGOT) Karmayogi platform, offering diverse learning modes including online, offline, and blended, plays a pivotal role in scaling these efforts across the Ministry. Ministry achieved 100% onboarding of its employees and its institutions,



encompassing both regular and contractual staff, with all officers actively participating in a range of learning programs. A total of 10,290 learning hours have been logged, and the Ministry has successfully enrolled 9,348 courses, with 6,806 course completions. This reflects a completion rate of approximately 72.80%, demonstrating a robust learning culture within MNRE. Special workshops were conducted for MTS both regular and contractual staff of the Ministry.

10.3.2 Rashtriya Karmayogi Programme

The Rashtriya Karmayogi Program for Central Government Personnel is a part of Mission Karmayogi rolled out by Capacity Building (CBC). It has a 2-fold goal i.e. Inside goal-Developing Seva Bhaav and rediscovering one's inner purpose & Outside goal-Serving national goals & serving all stakeholders better. Under Phase-1 of the programme two ministry officials- Shri Sanjay Kumar Shahi, Scientist-E and Shri S.R. Meena, Scientist-E have been trained as Master Trainers who further trained the officials of MNRE in batches of 30 to 35 each.

MNRE has completed Phase I of the Rashtriya Karmayogi Large Scale Jan Seva Programme under Mission Karmayogi by covering 193 officials of MNRE in six batches facilitated by CBC-designated above Master Trainers of MNRE – covering all levels of MNRE staff — from Directors to MTS/ staff card drivers, ensuring inclusive participation. A felicitation ceremony was conducted for Top learners of MNRE under Mission Karmayogi on 16.06.2025 where all the winners felicitated by Secretary, MNRE.



Fig: 10.1 Rashtriya Karmayogi Large Scale Jan Seva Programme under Mission Karmayogi

10.3.3 Know Your Ministry (KYM Module)

One of the key activities under Mission Karmayogi is the development of the Know Your Ministry (KYM) module — a short, online induction training course for employees posted within various Ministries, Departments, and organizations. A comprehensive KYM module for the Ministry

has been developed, showcasing its history, policies, schemes, and other key information. Eleven modules have been prepared for MNRE, which are currently in the beta stage. After finalization, the modules will move to the gold stage, following which HRD discussed with different divisions and agencies & finalized module for beta stage.

10.3.4 Mandatory Courses on iGoT Platform

As per DoPT guidelines, Ministry identified mandatory annual course completion and comprehensive assessment framework on iGOT Karmayogi Portal for all employees. The status of course completion for mandated courses and the assessment performance of the employee will be directly fetched from iGOT portal and reflected in the APARs of the employees from the reporting period 2025-26 (corresponding to the APAR cycle of 2026-27). Accordingly, the Ministry in consultation with CBC, has identified relevant courses on the iGOT platform for officers (at each level) of the Ministry and assigned these courses to all the employees at each level.

10.3.5 Domain Course development for iGoT

The Ministry is in the process of developing domain-specific courses. Of these, four courses are being developed by IIT Roorkee and two by National Institute of Wind Energy (NIWE). Additionally, two courses have been developed on Green Hydrogen under NGHM of MNRE, at the Karmayogi Bharat studio.

10.3.6 Capacity building of attached Institutions and PSUs

Ministry facilitated a dedicated workshop in collaboration with capacity building commission to orient attached organizations on developing their ACBP-Lite versions and encouraged nomination of officials to suitable courses.

10.3.7 Lecture session on Women in Business: Opportunities and challenges

The Ministry of New & Renewable Energy organised a lecture on "Women in Business: Opportunities & Challenges - Insights of Successful Business Women" at Atal Akshay Urja Bhawan, New Delhi on 21.08.2025.

The speakers, Dr. Rashi Gupta (Vision Mechatronics), Ms. Vaishali Nigam Sinha (Renew Foundation) & Dr. Vidya Murkumbi (Shree Renuka Sugars) shared their journeys of overcoming challenges and encouraged women to take bold steps in building enterprises and creating opportunities for the next generation.

Shri Santosh Sarangi, Secretary, MNRE applauded the eminent speakers for leading with grace, breaking barriers, and being true role models. He highlighted how women are driving change in business & entrepreneurship and inspiring future leaders with their vision.



Fig:10.2 Lecture session on Women in Business: Opportunities and challenges

10.3.8 Fourth National Conference of Chief Secretaries

The 4th National Conference of Chief Secretaries was held on 13th to 15th December 2024. The theme for this National Conference was "Promoting Entrepreneurship, Employment & Skilling - leveraging the Demographic Dividend". One of the sub-themes/pillars under this theme is "Opportunities in Green Economy" which includes Skilling and Job Creation in the Renewable Energy Sector. MNRE was the nodal agency for this theme and Secretary led the presentation session.

NITI Aayog has forwarded the minutes of the meeting of the 4th National Conference of Chief Secretaries along with the action points of Ministry which includes RE Skills and Job session (16 Nos) and Thematic session (2 Nos.) points. The action taken report of the action items are being updated on the CS conference portal regularly.

The following Sixteen Action Points were covered:

i. Strengthening industry participation in training
ii. Planning for hyper localized jobs in RE concentrated districts
iii. Use of ITIs and polytechnics and other institutes for RE skilling
iv. Integration of green skills with state skilling missions
v. Development of state renewable energy job portals
vi. Policy & Support for Entrepreneurship
vii. Enhance women participation in RE skilling, employment and Entrepreneurship in RE
viii. Encouragement of start-ups in solar O&M, biomass supply chains
ix. Plugging regional gaps
x. Strengthening trainer certification

The action taken under the major action points such as identification of 100 RE concentrated districts, 100 training institutes as RE institutes etc. were presented by NITI Aayog along with ATR of other ministries during 5th National Conference of Chief Secretary held on 27th to 29th December 2025.

One of the action points is that the Industries / Associations were requested to host a workshop to identify HR Policies and other interventions and women's participation in RE. Accordingly, Ministry conducted a "**National Conference on Skill Development for Renewable Energy Workforce**" to discuss the strategies for development of Renewable Energy Workforce for inclusivity, Resilience and empowerment (REWIRE) on 20.06.2025, in association with National Solar Energy Federation of India (NSEFI).



Fig: 10.3 National Conference on Skill Development for Renewable Energy Workforce

10.4 Vigilance

The Vigilance Division of the Ministry of New and Renewable Energy (MNRE) handles complaints against officers of the Ministry in accordance with CVC/DoPT guidelines. The Division also examines complaints against Board-level officers of two CPSUs, namely the Indian Renewable Energy Development Agency Limited (IREDA) and the Solar Energy Corporation of India Limited (SECI), and supervises vigilance work in organizations under its purview, namely three autonomous bodies: the National Institute of Solar Energy (NISE), the National Institute of Wind Energy (NIWE), and the Sardar Swaran Singh National Institute of Bio-Energy (SSS-NIBE). The Vigilance Division is also entrusted with the task of maintaining and scrutinizing Annual Performance Appraisal Reports (APARs) and Immovable Property Returns (IPRs) of officials within the Ministry.

The complaints received by the Vigilance Division during the year 2025 were examined in accordance with the applicable rules and guidelines, and necessary actions were taken wherever violations of rules were found.

The "Vigilance Awareness Week, 2025" was observed in the Ministry from 27.10.2025 to 02.11.2025. This year's theme for the Vigilance Awareness Week was "Vigilance: Our Shared Responsibility." During the week, the Integrity Pledge was administered to all staff and officers by the Secretary, MNRE. Banners and posters related to Vigilance Awareness Week, 2025 were displayed. Various activities, including a poster-making competition and a quiz competition, were conducted during the week. Additionally, a training session on Cyber Security was also organized.

Efforts were made to promote awareness among citizens and officials about complaints under the Public Interest Disclosure and Protection of Informers (PIDPI) Act.



Fig: 10.4 Vigilance Pledge 2025

10.5 Library

The Library of the Ministry of New and Renewable Energy acts as a reference center and knowledge house in the field of renewable energy. At present 12,987 books (including gifted books) are available in the library covering diverse subjects such as Renewable Energy, Climate Change, Natural Sciences, Sustainable Development, History, Sociology, Indian Literature, Computer Science, etc. The collection in the library also includes books of general interest like food, cooking, sculpture, painting, mountaineering, etc. Currently, the library is subscribing 100 Licenses of Magzter Digital Reading platform for the officers of this ministry.

(ii) The Library Committee constituted in the Ministry scrutinizes and recommends the books, periodicals etc. for procurement by the library.

(iii) The library is also subscribing to 35 Magazines & 23 Newspapers in Hindi and English languages. The library is using cloud based library software e-granthalaya version 4.0 for accessing the Library Catalogue to library users, Circulation (issue-return) and Membership Management etc.

10.6 E-Governance/Information Technology (IT) Initiatives

10.6.1 The ministry aims to digitize it's all activities through use of the IT tools. MNRE has developed and is maintaining following web portals and Mobile apps for transparency in operations and better service delivery to stakeholders under Digital India Initiative of the Government of India:

I. Details of various portals being developed/ have been developed by MNRE.

(a) Ministry's Official Website (https://mnre.gov.in): Ministry's official website has been redesigned and redeveloped in SWAAS (Secure, Scalable, Sugamya (Accessible) cloud service) platform. The new website was made live in October 2023. It is a bilingual website (Hindi and English) for information on all its schemes, physical achievements and division officers.

(b) National Portal for Rooftop solar (https://solarrooftop.gov.in): An online portal with simplified procedure for residential consumers to have flexibility to get the rooftop solar plant installed by themselves or through vendor of their choice. This portal has been developed to simplify the procedure for Rooftop Solar Programme. The portal has been integrated with DBT, SANDES, PRAYAS, and NGO DARPAN.

(c) Human Resource Development (HRD) Portal (https://hrd.mnre.gov.in): A portal developed to institutionalize renewable energy education and training to meet the requirement of qualified and trained manpower in the country under five different schemes. Beneficiaries can submit online applications/proposals for following programmes:

i. Short term trainings and skill development in renewable energy

ii. Fellowships for higher studies and research in renewable energy

iii. Enhancement of Renewable Energy education and training infrastructure

iv. Renewable Energy Chair

v. National Renewable Energy Internship Programme

(d) CCDC (Concessional Custom Duty Certificate) Wind (https://ccdcwind.gov.in): This portal is for issuance of concessional custom duty certificate for import of components required for manufacturing of wind turbines.

(e) Biourja Portal (https://biourja.mnre.gov.in/): Portal for digitization of the Biomass (Scheme to support Manufacturing of Briquettes, Pallets, and Promotion of biomass-based cogeneration in industries) and Waste to Energy (Programme on Energy from Urban, Industrial and Agricultural Waste/Residues) program. Facilitates the grant of subsidies for plants for waste to energy scheme & biomass scheme under national bioenergy programme for the duration for FY 2021-22 to 2025-26.

(f) **Biogas Portal (https://biogas.mnre.gov.in/):** This portal has been developed for beneficiaries to submit applications for installation of small and medium biogas plants.

(g) **Research and Development (R&D) Portal (https://research.mnre.gov.in):** R&D portal facilitates online submission and processing of renewable energy related R&D proposals.

(h) **PM KUSUM Portal (https://pmkusum.mnre.gov.in):** The portal has been developed for implementation and monitoring of PM KUSUM scheme, which is meant for farmers.

(i) **National Green Hydrogen Portal (https://nghm.mnre.gov.in):** NGHM portal has been developed as a central point of information and data dissemination for those interested in the journey of India towards becoming a global green hydrogen hub.

(j) **Akshay Urja Portal (https://akshayurja.gov.in):** This portal acts as a central repository for renewable energy data such as RE potential, installed RE capacities, & Generation. The portal provides features such as data analysis and report generation regarding power potential, installed capacity and power generation in respect of solar, wind, small hydro, bio energy & waste-to-energy plants, and off-grid components.

(k) **ALMM Portal:** The portal is being developed to manage procedural framework for the implementation of MNRE's Approved Models and Manufacturers of Solar Photovoltaic Modules. It will enable manufacturers to include their PV products in the ALMM list by modules of new applications, add additional models at existing facilities, setting up a new manufacturing facility, add Co-ALMMs and Renewals.

(l) **National Renewable Energy Portal (NREP) (https://nrep.mnre.gov.in):**

Solar Parks: Monthly Progress Report of Solar Parks being setup in India

Solar Power: Details and status of Tenders floated for Renewable Energy Plants

Green Energy Corridor – Phase II: Physical/financial progress of the projects

SHP: The small hydro power portal is being developed and made live to facilitate the application regarding the small hydro power.

(m) **Intra MNRE (https://intramnre.mnre.gov.in):** The portal has been developed for managing services being used in MNRE premises such as management of inventory, IT assets, canteen, conference room booking, vehicle management etc. Conference Room and Vehicle booking modules have already been launched. Role based dashboards are being developed for MNRE Officers for details on budget and physical achievements (overall, division wise and scheme wise).

(n) **Gati Shakti (https://gatishakti.mnre.gov.in):** The portal has been developed to map the layers and coordinates of the large-scale projects above 50 MW under solar, wind, hybrid (solar and wind), solar parks, solar PV manufacturing plants across India.

(o) **Renewable energy equipment imports monitoring system (REE-IMS) (https://reeims.mnre.gov.in):** The Renewable Energy Equipment Import Monitoring System (REE-IMS)

facilitates the submission and monitoring of applications and enables the generation of self-approved certificates for imported solar and wind components.

(p) **eHRMS:** e-HRMS is a common application tool for personnel management activities such as leave, posting, promotion, transfer, maintenance of service book, etc. It automates and digitizes the human resource processes, enhancing efficiency and transparency within the government organisation. It provides a user-friendly interface to access and manage various HR-related tasks such as Promotion, Transfer/Posting, Role Management, Bill Reimbursements, Leave applications, Circulars/OMs/Orders, and more. It is designed to ensure data privacy and security.

(q) **eOffice:** In a step forward for paperless work in office space, the Ministry has fully implemented eOffice which is meant for effective processing and online movement of files and receipts/ letters. It aims to contribute significantly towards transforming the core of the Government working which eventually would bring desirable values of transparency, efficiency, accountability, and faster decision-making.

II. Cyber awareness activities organised by IT Division during the year 2025 which are as follows:

i. An awareness and training session on Zoho Mail was organized on 25.09.2025 to familiarize officials with secure email usage and best practices. Key aspects such as phishing prevention, password security, data protection, and effective utilization of the official email platform were covered.

ii. A comprehensive training course on eOffice File Management system (eFile) was made available on the Karmayogi Bharat Platform for all the officials and staff of MNRE.

iii. In accordance with the directions of the Central Vigilance Commission (CVC), National Cyber Security Awareness Month & Vigilance Awareness week was observed in the Ministry from 27.10.2025 to 02.11.2025. The following activities were organized under this:

(a) A Cyber Awareness workshop was conducted on 22.10.2025 for Ministry officials in coordination with CERT-In and I4C. The session emphasized cyber hygiene, safe digital practices, emerging cyber threats, and preventive measures to safeguard official data and IT infrastructure. It also included interactive discussions to address participants' queries.

(b) Cyber Awareness Quiz- A Cyber Awareness Quiz was organized on 23.10.2025 in MNRE to reinforce learning from the awareness sessions. The quiz encouraged active participation and helped assess officials' understanding of cybersecurity concepts in an engaging manner. The first prize was of Rs.5000/-, Second prize was of Rs.3500/-, Third prize was of Rs.2000/- and there were 10 consolation prizes of Rs. 500/- each.

(c) Do's and Don'ts and Cyber Security tips were notified on social media handle of the Ministry & Digital Screen and Standees.

iv. MNRE in coordination with NIC organized a 5-day basic level training and certification programme on "Cyber Security" for Power Professionals through National Power Training Institute (NPTI), Faridabad. The one-week residential training was held from 3rd -7th February 2025 at NPTI Faridabad Premises.

v. Awareness Session on "Navigating the Digital Highway: Safeguarding the Online Journey" on 11.02.2025 - Ministry of Electronics and Information Technology (MeitY) organised an Awareness Session for Government employees on the topic: "Navigating the Digital Highway: Safeguarding the Online Journey" through C-DAC Hyderabad on 11.02.2025 from 11 AM - 12 PM through Virtual Instructor-Led Training (VILT) mode to sensitize them about the safe use of internet and best practices for cyber hygiene for securing the critical assets, identify & mitigate common cyber threats and safeguard themselves from emerging cyber risks.

vi. Cyber Security Awareness Session" in the Ministry of New and Renewable Energy on 4.08.2025 at 03.00 PM - The IT Division of Ministry of New and Renewable Energy (MNRE) organised a " Cyber Security Awareness Session", on Monday 04.08.2025, at 1500-16:30 hrs. The session highlighted to educate officials on cyber security best practices for online safety, recognizing cyber threats, and protecting personal and organizational data etc.

10.7 Right to Information

10.7.1 The Ministry is implementing the Right to Information (RTI) Act, 2005 as per the laid down guidelines of Department of Personnel and Training (DoPT), Central Information Commission. The Procedure / other details regarding seeking information under RTI Act, 2005 are available at the MNRE website www.mnre.gov.in.

10.7.2 The Progress Report in terms of RTI Application or First Appeals received, disposed-of as well as pendency during the period (01.01.2025 to 31.12.2025) is given in the following Table:

Table - 10.5 RTI Applications / Appeals of the Ministry for the Period 01.01.2025 to 31.12.2025

Item	Received	Disposed off	Pending as on 31.12.2025
RTI Applications	834	796	38
First Appeals	66	61	05

10.7.3 The 3rd Party Transparency Audit proactive disclosure was uploaded on the Ministry's website (https://mnre.gov.in), which contained information as required under the Section 4 of the RTI Act, 2005. It also contains the details of the Department's functions along

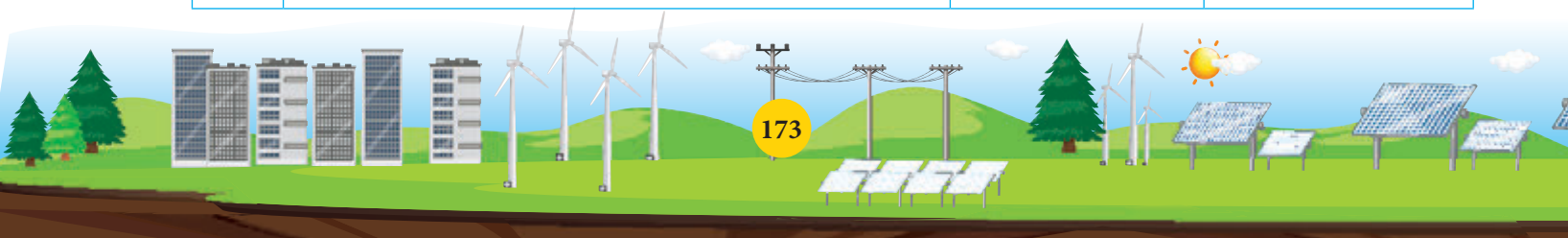
with its functionaries etc. as required under section 4(1) (b) of the RTI Act, 2005.

10.7.4 The Ministry has designated Central Public Information Officer (CPIO) and First Appellate Authorities (FAA) to respond the RTI applications and first Appeals in accordance with subjects assigned to them. The list of CPIOs and FAAs is given in the following table. Nodal officer of RTI coordinates all the physical and online applications and persuades the CPIOs and FAAs to reply them within the stipulated time lines.

Table - 10.6 List of Designated Central Public Information Officers (CPIOs) and First Appellate Authorities (FAAs) (as on 31.12.2025)

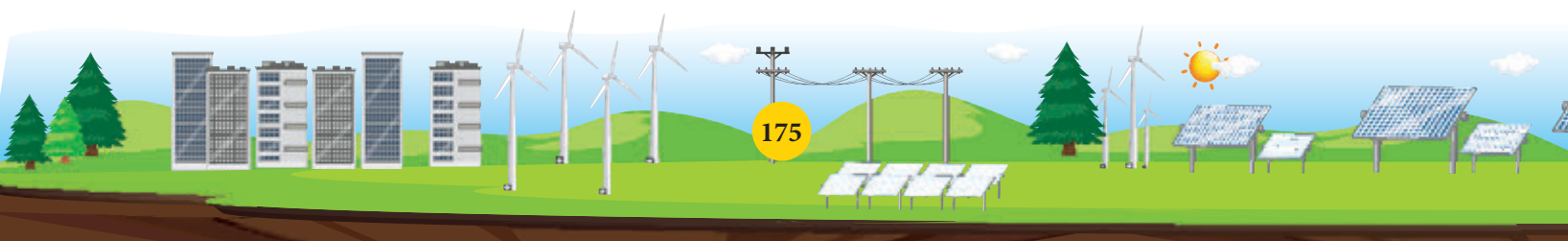
S. No.	Subject	Name of CPIOs & Designation (Shri/Ms./Mrs.)	Name of FAAs & Designation (Shri/Ms./Mrs.)
1.	i. Regular updation of E samiksha portal & other portals including updation of Budget announcements ii. PMO matters	Shobhit Srivastava, Scientist 'E'	J. Rajesh Kumar, EA
2	i. Comments on EFC Notes, Cabinet & CCEA Notes /Concept paper received from other Ministries/ Departments, EGoS, SGoS etc. ii. All matters related to NITI Aayog monitoring including annual PM Infrastructure Sector review & Output Outcome Monitoring Framework (OOMF) iii. DBT related matters iv. FDI related matters	Shri S.R. Meena, Scientist 'E'	J. Rajesh Kumar, EA
3	Administration I, II, III	Suman Kumar, US	Pankaj Gupta, DS
4	1 Coordination works under Sh. Pankaj Saxena, Scientist 'G' 2. GST related matters	Ayush Gupta, Scientist 'C'	Rampal Singh, Director
5	National Green Hydrogen Mission	Shri Prashant Dwivedi Scientist 'C'	Sujit Pillai, Scientist 'F'
6	i Scheme for Development of Solar Parks and Ultra Mega Solar Power Projects ii New Solar Power Scheme (for PVTG Habitations/ Villages) under Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM JANMAN) and JGUA	Shri P V Tarun Saketh, Scientist 'C'	A. S. Parira, Scientist 'E'

7	Policy and Regulatory Matters	Pradeep Kumar, US	J K Jethani, Scientist 'F'
8	Energy Storage; E-mobility; State Resource Adequacy Planning; Electricity Planning & Survey (EPS)	P.N.B.V Chalapathi Rao Scientist 'D'	J K Jethani, Scientist 'F'
9	Circular Economy, PM Gati Shakti; National Infrastructure Pipeline (NIP)	Arun Kumar Choudhary Scientist 'C'	P.N.B.V Chalapathi Rao Scientist D
10	i Rooftop Solar; ii Solar City	Aditya Narayan Prajapati Scientist 'C'	Anubhav Uppal, Scientist 'D'
11	i. Transmission ii. Green Energy Corridor	Tushar Pandey, US	Tarun Singh, Scientist 'E'
12	i Monitoring of tendering (other than REIAs) and commissioning of solar capacity in the country. ii Solar Projects in Ladakh including PMDP iii Solarization of Konark iv All Technical Matters related to NISE v OSOWOG Study related matters	Aravindh MA, Scientist 'D'	A. S. Parira, Scientist 'E'
13	Lab Policy & Standards Quality Control; Development of RE in North East	Raj Kumar Bhawariya, Scientist 'C'	Hiren C Borah, Scientist 'E'
14	Biomass;	P M Barik, Scientist 'D'	S. K. Shahi, Scientist 'E'
15	Small Hydro Power	Raj Kumar Bhawariya, Scientist 'C'	S. K. Shahi, Scientist 'E'
16	Waste to Energy	Bikash Kumar Upadhyay Scientist 'C'	Gaurav Mishra, Scientist 'F'
17	Biogas	Bikash Kumar Upadhyay Scientist 'C'	Gaurav Mishra, Scientist 'F'
18	PM KUSUM Scheme	Yaurav Yadav, US	Nikhil Gakkhar Scientist 'D'
19	HRD & Training including ITEC Innovation Centre	Rajat Yadav, US	Vasanta V. Thakur, Scientist 'E'



20	Wind Energy	Rishikesh Vaishnav, Scientist 'C'	Vikram Dhaka Scientist 'D'
21	R&D; Geothermal Energy; Greening of islands; New Technology including Solar Thermal; Solar Power Cold Storage; RE in UTs; NTPC Bundling Scheme; NTPC EPC Scheme; Green Buildings	Priya, Scientist 'D'	Anil Kumar, Scientist 'E'
22	Information Technology (IT) & Digitization	Gitanjali Virmani, US	Priya, Scientist 'D'
23	CPSU Govt. Producer Scheme, Grid Solar Power, Solar and Invertor Manufacturing matters, Renewable Energy Industry Promotion and Facilitation Board (REIPFB), Coordination for resolving Solar Manufacturers and Developers Issue, Solar PLI Scheme, Guidelines and Standard Bidding Documents for Solar, FDRE, All technical matters of SECI, ALMM	Mohd. Azmal Mansoori, Scientist 'C'	Sanjay Karndhar, Scientist 'E'
24	Climate Change and Coordination with MoEF & CC,	Tarun Valecha, Scientist 'C'	Suman Chandra, Director
25	I & PA; Media / social media	A.K Manish, US	Aseem Kumar, Director
26	Vigilance, Lokpal & Lokayukt	Saurabh Mukherjee, US	Aditya Pratap Singh, Director
27	NSM	Deepak, Khatwani, US	Arun Kumar, Scientist 'D'
28	i Solar Off Grid, Vibrant Village Programme & Solar Villages ii Old Scheme-Rooftop PV and Small Solar Power Generation Programme (RPSSGP) iii Old schemes -VGF (500MW, 2000MW & 5000MW) & Demo GBI. iv Defence Scheme	Sachin Meena Scientist 'C'	Arun Kumar, Scientist 'D'
29	International Relations (IR) & ISA	Saurabh Mukherjee, US	Aseem Kumar, Director
30	Parliament related matter; Public Grievances Cell; Legal Cell	Ajit Kumar Dung Dung, US	Rampal Singh, Director

31	IFD	Geetha Raja, US	Kailash Chand, DS
32	Audit; Budget Monitoring; Library and RTI Matters	Mala Ram Sonwal, Deputy Director	Rampal Singh, Director
33	Cash Section	Sunita Sajwan, US	Pankaj Gupta, Director
34	Official Language	Sheeba Jayaraj Dy. Dir.	Rampal Singh, Director
35	Pay and Accounts Office (PAO); Budget	Santosh Arora, Sr. Accounts Officer	Ameesh Aggarwal, DCA





India And Globe: International Cooperation

11.1

The International Relations (IR) Division of the Ministry has been continuously engaging with various stakeholders, including Ministries/Departments of the Government of India, Indian Missions, Foreign Diplomatic Missions located in India, Multilateral International Organizations and Agencies, Regional Groupings and development banks, among others, to promote international cooperation in the field of Renewable Energy.

11.2

Joint Working Groups (JWGs) meetings, Task-force meetings, and Bilateral and Multilateral meetings were organised to identify, select, and formulate joint activities. Senior Ministry officials led these meetings and events. Details of the JWGs held during FY 2025-26 are as follows:

Fig.11.1: India's international engagements on RE

S.No.	Name of Meeting	Date
1.	4th JWG meeting between India and Japan on Renewable Energy (held in virtual mode)	23 January 2025
2.	5th JWG meeting between India and the United Kingdom on Renewable Energy (held in hybrid mode, New Delhi)	24 January 2025
3.	4th India-UK Energy Dialogue held in New Delhi	10 February 2025
4.	2nd JWG meeting between India and Tajikistan on Renewable Energy (held in virtual mode)	18 February 2025
5.	1st Joint Working Committee (JWC) meeting between India and Egypt on Cooperation in the Field of Renewable Energy (held in virtual mode)	18 March 2025
6.	4th Meeting of the India - Norway Task Force on Energy (held in New Delhi)	28 April 2025
7.	2nd JWG meeting between India and Portugal on Renewable Energy (held in hybrid mode)	4 June 2025
8.	11th India-Japan Energy Dialogue (held in virtual mode)	25 August 2025
9.	JWG meeting on Renewable Energy under the India - Australia Energy Dialogue (held in virtual mode, New Delhi)	15 September 2025

10.	2nd Steering Committee Meeting of the India - Germany Platform for Investments in Renewable Energy Worldwide (held in virtual mode, New Delhi)	17 September 2025
11.	2nd JWG meeting between India and Sri Lanka on Renewable Energy (held in virtual mode)	23 September 2025
12.	5th Meeting of the India-Australia Energy Dialogue in New Delhi	16 October 2025
13.	8th Joint Working Group meeting in the India-Denmark Energy Partnership (held in virtual mode)	3 December 2025



Fig.11.1: India's international engagements on RE

11.3

The Ministry has taken several initiatives for promotion of Renewable Energy. The Ministry has signed Memoranda of Understanding (MoUs), Joint Declarations of Intent (JDIs) with various countries and institutes in the field of Renewable Energy.

The following Bilateral Cooperation Agreements and Understandings have been signed by the Ministry of New and Renewable Energy in FY 2025-26:

i. Memorandum of Understanding with the Ministry of Mines and Energy of Brazil on Co-Operation in the Field of Renewable Energy on 08.07.2025.

ii. Joint Declaration of Intent with the Ministry of Economy, Trade and Industry of Japan on Clean Hydrogen and Clean Ammonia on 25.08.2025.

iii. Memorandum of Understanding with the Ministry of Energy and Natural Resources of the Royal Government of Bhutan on Co-operation in the field of Renewable Energy on 11.11.2025

iv. Memorandum of Understanding with the Ministry of Energy and Mineral Resources of the Government of the Hashemite Kingdom of Jordan on Co-operation in the field of Renewable Energy on 16.12.2025.

Some of the prominent bilateral/multilateral engagements in the financial year include the following:

i. A high-level meeting between the Hon'ble Minister, Ministry of New & Renewable Energy India and H.E. Ed Miliband, Secretary of State for the UK Department for Energy Security & Net Zero was held in New Delhi on 10.02.2025. In course of the Fourth India - UK Energy Dialogue, the two sides agreed to continue the bilateral cooperation in RE, particularly for round-the-clock power supply, expanded renewable energy deployment, and decarbonisation (with focus on offshore wind, energy storage, MSMEs and green data centres).

ii. A high-level meeting between Hon'ble Minister, Ministry of New and Renewable Energy with Ms. Teresa Ribera Rodriguez, Executive Vice-President, Clean, Just and Competitive Transition and Mr. Dan Jorgensen, Commissioner, Energy and Housing of the European Union was held in New Delhi on 28.02.2025. It was discussed that going forward, India and EU will work towards expanding and deepening cooperation including through the India-EU TTC in clean energy, as well as work to intensify cooperation in specific areas clean hydrogen, offshore wind, solar energy. Subsequently, an India-EU Green Hydrogen Forum was also held on the sidelines of the World Hydrogen Summit & Exhibition, 2025 held in Rotterdam, Netherlands from 19th – 23rd May, 2025. It was also decided to deepen the cooperation in the framework of the International Solar Alliance (ISA).

iii. The Ministry of New & Renewable Energy, in partnership with the International Solar Alliance (ISA), convened a workshop on decentralized solar applications at Atal Akshay Urja Bhawan, New Delhi on 09.09.2025. The event, chaired by the Hon'ble Minister of State for Power and New & Renewable Energy, brought together representatives from 17 countries, including Ambassadors and High Commissioners from seven Latin American and Caribbean nations. Sessions led by MNRE officers showcased India's experiences under schemes such as PM KUSUM and PM-Surya Ghar Muft Bijli Yojana, alongside solar mini-grids for rural livelihoods.

iv. On 15.10.2025, a closed-door India-Australia Business Roundtable was hosted in New Delhi, co-chaired by H.E. Chris Bowen, MP, Australian Minister for Climate Change and Energy and the Secretary, MNRE. The Discussions focused on collaboration in advanced renewable technologies, agrivoltaics, grid modernisation, digital energy systems, and regional clean energy partnerships, including cooperation through the International Solar Alliance and joint R&D initiatives in next-generation technologies. The Roundtable was followed by a brief bilateral meeting on 16.10.2025 between the Hon'ble Minister of New and Renewable Energy and H.E. Chris Bowen, MP, Australian Minister for Climate Change and Energy. During the bilateral meeting the Recommendation Report of India-Australia Green Hydrogen Taskforce was launched.




Fig. 11.2: India-Australia Business Roundtable and Bilateral meeting

11.5

The Ministry also participated in various International Events and Conferences during the year, some of which are indicated below:

i. A delegation led by Secretary, MNRE participated in the World Hydrogen Summit & Exhibition, 2025 in Rotterdam, Netherlands, from 19th – 23rd May, 2025.

ii. Participation in the 33rd European Biomass Conference & Exhibition, 2025 at Valencia, Spain from 9-13 June, 2025.

iii. A delegation led by Secretary, MNRE participated in the European Hydrogen Week Conference 2025 at Brussels, Belgium, from 29th September – 3rd October, 2025.

iv. Representation of the Ministry at the Thirteenth Session of the Conference of the Parties (CoP-30), the Twentieth Session of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP-20) and Seventh Session of the Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement (CMA-7) from 8-21 November, 2025, in Belem, Brazil.

11.6

Engagement with International Solar Alliance (ISA): The Eighth Session of the ISA Annual Assembly was held on 28.10.2025 in New Delhi. The Hon'ble President of India, H. E. Smt. Droupadi Murmu delivered the keynote address at the Assembly session during the high-level session of the assembly. Shri Pralhad Joshi, Hon'ble Minister of New and Renewable Energy in his capacity as President of the ISA Assembly, co-chaired the 8th Assembly session along with H. E. Mr. Benoit Faraco, Special Envoy for Climate, French Ministry for Europe and Foreign Affairs representing the Co-President of the ISA Assembly. The 8th ISA Assembly witnessed the participation of 550 high-level delegates from 137 countries and 36 organisations attended the Assembly session, including 30 Ministers and Vice Ministers from Member countries.

The Assembly launched five major ISA knowledge products, including reports on solar market trends, skills, floating solar, and integrated photovoltaics. Key outcomes included the operational roadmap for the OSOWOG (One Sun, One World, One Grid) global grid, the signing of the Global SIDS Initiative Declaration, the introduction of ISA's Global Capability Centre and Academy for skills development, and the unveiling of the SUNRISE Community of Practice for circularity in solar and battery waste. On the sidelines of the Assembly, the Hon'ble Minister also held a series of bilateral meetings with counterparts from Antigua & Barbuda, Commonwealth of Dominica, Eswatini, Liberia, Maldives, Papua New Guinea, St. Kitts & Nevis, Somalia, Solomon Islands, discussing ways to deepen cooperation in solar innovation, energy resilience, and capacity building.





Promotion Of Official Language – Hindi

12.1 Introduction

The Ministry of New and Renewable Energy (MNRE) is committed towards promoting the use of Hindi in Official Work. With a view to accelerate the use of official language in official work and with a view to increase awareness amongst employees with regard to the Official Language Policy of the Government of India, Rajbhasha Division has been set up in MNRE. Its functions are as follows:

i. Translation work: Various documents of the Ministry including those to be laid in Parliament such as Parliamentary Questions, Parliamentary Assurances, papers related to Standing Committees and other Parliamentary Committees, Private Member Bills, Calling Attention Notices, Budget related documents, Demands for Grants, Annual Reports, Notifications, General Orders, Advertisements, Tenders, MOUs/ MOAs, Cabinet Notes, Suo Moto Statements/ Speeches and other documents received from Office of the Minister (NRE) and Office of Minister of State (NRE) and Press releases etc. are translated regularly by Rajbhasha Division of the Ministry.

ii. Implementation of the Official Language Policy of the Union; Official Languages Act, 1963; Official Languages (Use for Official Purposes of the Union) Rules, 1976; Directions/ Instructions issued by the Government from time to time regarding the use of Official Language Hindi; Annual Programme issued by the Department of Official Language, MHA every year for transacting the official work of the Union in Hindi and Presidential Orders issued on the recommendations of the Committee of Parliament an Official Language constituted under the Chairmanship of Hon'ble Minister of Home Affairs.

Presently, Rajbhasha Division is under the administrative control of Scientist-G (equivalent to the level of Joint Secretary), assisted by Director, Deputy Director (OL) and Assistant Director (OL). The Rajbhasha Division consists of one Deputy Director (OL), one Assistant Director (OL), two Senior Translation Officers, two Junior Translation Officers, one Private Secretary and one Steno-D. The Rajbhasha Division monitors the implementation of Official Language Policy in the Ministry as well as in all Offices/Institutes/PSUs under its administrative control. It is playing a leading role in the direction of implementation of official language Hindi in the Ministry. There is a perpetual growth in the work of Official Language Hindi in the Ministry and it is expected that in the near future, the Ministry will achieve targets set by the Department of Official Language in the direction of implementation of OL Policy of the Government.

12.2 Compliance of Official Languages Act, 1963

During the year 2025-26, concerted efforts were made to ensure proper compliance of the provisions of Official Languages Act, 1963 and Rules framed thereunder.

12.3 Promotion of Official Language Hindi

In view of effective implementation of Official Language Policy and to create conducive environment for the officials to do more work in Hindi, various programmes and schemes are being undertaken, which include the following:

i. With a view to ensure effective implementation of Official Language Policy of the Govt. of India in the Ministry, certain check-points as per the provisions of Official Language Policy have been made and circulated for compliance.

ii. Website of the Ministry is bilingual (Hindi/English) and is being updated from time to time.

iii. Hindi books are purchased in the Ministry by the library and efforts are made to achieve the targets laid down by the Department of Official Language, Ministry of Home Affairs.

iv. Addresses of Nodal Agencies have been prepared in Hindi.

v. All documents included under section 3(3) of the Official Languages Act 1963, including Press Releases, Tender Notices, Rules, General Orders, Notifications, Cabinet Notes, Parliament Questions and other Documents to be laid in the Parliament are presented bilingually.

vi. Letters received in Hindi are invariably replied in Hindi and Rule 5 of the Official Language Rules, 1976 is fully complied with.

vii. Website of the Ministry opens in Hindi.

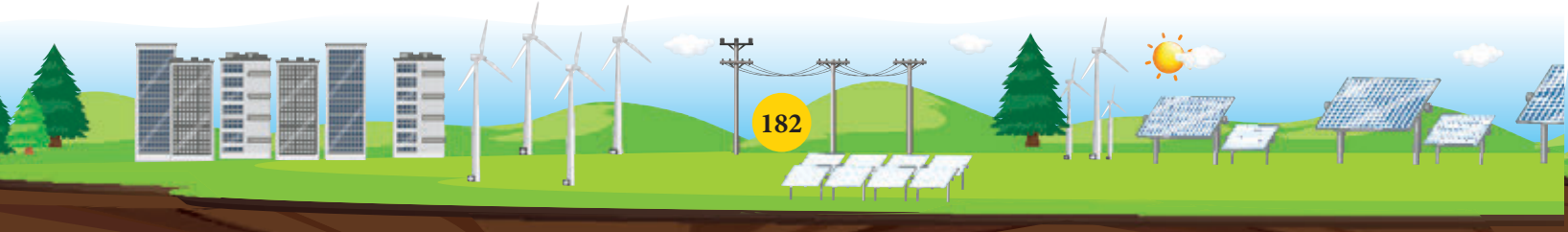
viii. To provide instant translation facility in e-office, E-Kanthasth tool has been added to the Ministry's E-Office.

12.4 Implementation of Official Language Policy

During the year 2025-26, various measures were taken for effective implementation of Official Language Policy in the Ministry. As per the Quarterly Progress Report for the quarter ended 31th December 2025, the percentage of Hindi correspondence with offices in regions designated as A, B and C was 81.30%, 80.70% and 59.11% respectively. Continuous efforts are being made to encourage progressive use of Hindi in official work, not only in the Ministry but also in its autonomous institutions and PSUs.

12.5 Official Language Implementation Committee

In Order to review the progress made in the implementation of Official Language policy, quarterly meetings of Official Language Implementation Committee are held. Discussions are held on quarterly progress reports received from various Sections and Divisions of the Ministry and other organisations i.e. IREDA, SECI, NIWE, NISE and NIBE. The Sections and Divisions of



the Ministry and Organizations under the administrative control of the Ministry are advised to achieve the targets specified by the Department of Official Language, Ministry of Home Affairs.

12.6 Hindi Workshops

Rajbhasha Division of the Ministry is regularly organising a quarterly Hindi workshop as per the guidelines released by the Department of Official Language.

12.7 Hindi Fortnight & Prize Distribution Ceremony

With a view to create awareness and to increase the use of Hindi in official work, Hindi Fortnight was observed in the Ministry during 14th to 29th September, 2025. A number of competitions were held and there was active participation by officers and staff of the Ministry. As many as 42 officers and staff members belonging to Hindi and non-Hindi speaking categories were given cash awards and certificates based on their performances, by the Secretary, MNRE during the prize distribution ceremony held on 27.10.2025. Hindi Fortnight was also observed in various autonomous institutions and PSUs of the Ministry. Necessary instructions were issued to them for effective and extensive promotion and propagation of Hindi.

12.8 Hindi Salahkar Samiti

Hindi Salahkar Samiti of the Ministry has been constituted in August 2025 and its gazette notification has also been uploaded on MNRE's website. Hindi Salahkar Samiti works under the Chairmanship of Union Minister (NRE) with the main objective to advise the Ministry regarding progressive use of Hindi in its official work.

12.9 Inspection Of Subordinate Offices

With a view to assess the status regarding progressive use of Official Language, inspections of all 5 offices (IREDA, SECI, NISE, NIWE & NIBE) under the administrative control of the Ministry were carried out during the year and remedial measures were suggested for compliance of Official Language Policy of the Union in their offices.



Fig. 12.1: *Hindi Fortnight Prize Distribution Ceremony organised on 27.10.2025 under the Chairmanship of Secretary, MNRE.*

Annexure I

Ministry Of New And Renewable Energy (Administration)

Table 1: As on 31.12.2025, the sanctioned and in-position strength in MNRE is as follows:

GROUP	A	B	C	D
SANCTIONED	137	82	84	303
IN POSITION	89	65	70	224
SC	12	10	13	35
ST	4	3	7	13
OBC	15	14	16	44
PwBD	0	2	4	5

National Institute Of Wind Energy (NIWE)

Table 2: Group-wise Sanctioned and In-Position Posts in NIWE as on 31.12.2025 are as follows:

No. of Posts	Group			Total
	A	B	C	
Sanctioned	18	13	17	48
In Position	12	07	16	35
SC	04	02	05	11
ST	01	-	-	01
OBC	05	03	11	19
PH	-	-	-	-

Indian Renewable Energy Development Agency (Ireda)

Table 3: Employees Staff strength of IREDA as on 31.12.2025 is as under: -

Classification	Board Level	Group A	Group B	Group C	Group D	Total
In Position	02	211	00	16	00	227
SC	00	20	00	03	00	23

ST	00	07	00	01	00	08
OBC	00	42	00	03	00	45
Physically Handicapped	00	06	00	01	00	07

Total Sanctioned Strength (below Board level) is 305.

Sardar Swaran Singh – National Institute Of Bio-Energy (Sss-Nibe)

Table 4: Group-wise sanctioned and in-positioned posts in SSS-NIBE as on 31.12.2025 are as follows:

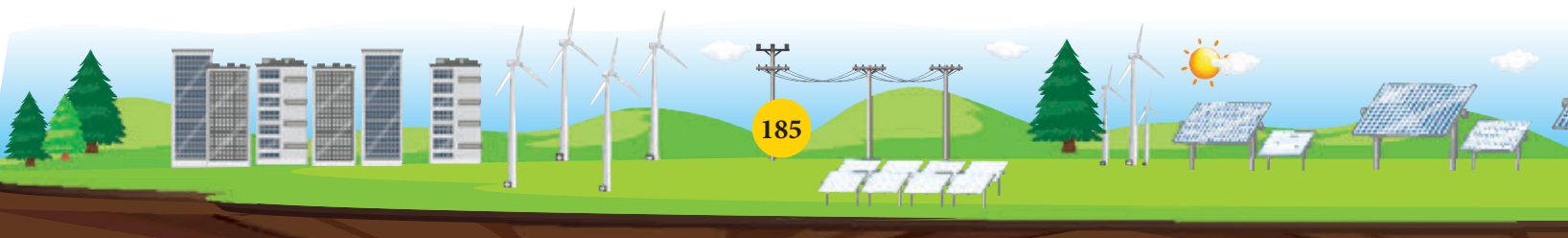
Group	Board	07	00	01	00	08
Level	A	B	C	D	Total	45
Sanctioned	1 (DG)	20	1	4	0	26
In Position	0 (DG)	10	1	4	0	15
SC	-	-	-	-	-	-
ST	-	-	-	-	-	-
OBC	0	2	0	0	0	2
PH	-	-	-	-	-	-

Note – Recruitment is under process for the vacant post.

National Institute Of Solar Energy (Nise)

Table 5: Group-wise sanctioned and in-positioned posts in NISE as on 31.12.2025 as follows:

S. no.	Name of the post	Level	No. of Sanctioned Posts			Filled up Post		No. of Vacant Posts		
			Technical	Admin	Total	Technical	Admin	Technical	Admin	Total
1.	Director General	14	01	00	01	01	00	00	00	00
2.	Deputy Director General	13A	03	00	03	03	00	00	00	00
3.	Director	12	02	01	03	02	01	00	00	00
4.	Deputy Director	11	06	02	08	06	02	00	00	00
5.	Administrative Officer	11	-	01	01	00	01	00	00	00
6.	Assistant Director	10	07	02	09	07	02	00	00	00
7.	Office Secretary	9	-	01	01	00	00	00	01	01
8.	Office Secretary-I	8		03	03	00	00	00	03	03



9.	Executive Officer	8	04	-	04	00	00	04	00	04
10.	Executive Assistant-I	7	08	-	08	03	00	05	-	05
	Total		31	10	41	22	06	09	04	13

Solar Energy Corporation Of India (Seci)

Table 6: Group-wise sanctioned and in-position posts in SECI Staff as on 31.12.2025

Group	A	B	C	D	Total
Sanctioned	275	42	Non-Optional		317
In-position	138	19			157
SC	14	1			15
ST	6	1			7
OBC	28	7			35
PH	1	2			3

Pay And Accounts Office, Ministry Of New And Renewable Energy

Table 7: Group-wise sanctioned and in-positioned posts in Pay & Accounts Office, MNRE is as on 31.12.2025

Group	A	B	C	Total
Sanctioned	04	12	6	22
In-position	03	08	04	15
SC	00	02	00	02
ST	00	00	00	00
OBC	01	03	00	04
PH	00	00	00	00

Annexure II

Details and Status of 22 C&AG paras pending in the Ministry are as follows:

S.N.	Year	Report No	Chapter No	Para No	Subject	Action Taken
1	2021	7 of 2021	3	3.2.2.2	Other significant savings at minor-head/sub-head level	ATN to be furnished
2				3.2.2	Analysis of Savings	
3	2022	31 of 2022	4	4.2.2.2 Annexure 4.3A	Other significant savings at minor-head/ sub-head level	
4				4.11	Misclassification of interest as deduct recovery	ATN furnished
5				4.7	Non-surrender and surrender of savings on last day of the financial year	ATN furnished
6				4.2.2.2	Other significant savings at minor-head/ sub-head level	ATN vetted by Audit
7				4.2.2	Analysis of Savings	
8			3	3.2.4	Documentation of Guarantees and yearly review	ATN furnished.
9	2023	21 Of 2023	4	4.2.2.2 Annexure 4.3B Sl. No. 99 to 101	Other significant savings of ₹100 crore or more at Minor/Sub head level	ATN furnished.
10				4.6 Annexure 4.7 Sl. No. 38	Non-surrender and surrender of savings on last day of the financial year	
11				4.2.2 Annexure 4.2 Sl. No. 40	Analysis of Savings-Segment Wise	
12	2025	4 Of 2025	4	4.4.1..	Injudicious re-appropriation from/to minor/sub-heads	ATN to be furnished
13				4.3.1	Unnecessary supplementary provisions	
14				4.2.2.4	Non surrender of savings	
15				4.2.2.3	Significant savings at minor-head/sub-head level - 100 crore or more	
16				4.2.2.2	Significant savings at segment level - Revenue Voted	
17			3	3.4.3	Internal controls on assets including receivables - Government Investments	

18		16 of 2025	4	4.2.2.3.	Significant savings at minor/sub-head level	
19				4.2.2.3	Significant savings at minor/sub-head level	
20				4.2.2.2	Significant Savings at Segment level	
21				4.2.2.1	Significant savings at Grant/ Appropriation level	
22		13 of 2025	Full Report	Full Report	Solar Parks and Ultra Mega Solar Power Projects Description: The Comptroller and Auditor General in their report highlighted the various issues arising in implementation of the Solar Parks like land, acquisition, regulatory clearances etc. and the associated delays. The report recommended MNRE to ensure timely resolution of various issues like land acquisition, finalization of DPR, transmission issues with Central / State Transmission Utility, Project Developer identification, etc., during development of parks. The report also commended good practices in some States like Karnataka, Gujarat and Rajasthan for completion of the Solar Parks.	ATN furnished

2. Currently, there is no PAC para is pending in the Ministry.

Annexure III

Grants In Aid To States And Voluntary Organisations

Table 1: Funds released to implementing Agencies under HRD Programme in from 01.01.2025 to 31.12.2025

Sr. No.	Sanction No.	Agency Name	Sanction Date	Amount (in Rs.)
1.	342-11/4/2023-HRD	National Institute of Solar Energy, Gurugram	10.06.2025	7,00,00,000/-
2.	342-11/1/2022-HRD	Indian Institute of Technology, Roorkee	19.06.2025	1,00,00,000/-
3.	342-11/1/2025-HRD	National Institute of Wind Energy, Chennai	01.08.2025	1,00,00,000/-
4.	342-11/4/2023-HRD	National Institute of Solar Energy, Gurugram	11.09.2025	5,00,00,000/-
5.	342-11/1/2022-HRD	Indian Institute of Technology, Roorkee	09.10.2025	1,00,00,000/-
6.	342-11/4/2023-HRD	National Institute of Solar Energy, Gurugram	28.10.2025	3,00,00,000/-
7.	342-11/6/2020-HRD	National Institute of Wind Energy, Chennai	25.11.2025	1,00,00,000/-
8.	342-11/1/2022-HRD	Indian Institute of Technology, Roorkee	09.12.2025	1,00,00,000/-
9.	342-11/2/2024-HRD	National Institute of Solar Energy, Gurugram	22.12.2025	9,00,00,000/-

Table 2: Grant given to State PIAs of more than Rs. 50 Lakh in Green Energy Corridor from 01.01.2025 to 31.12.2025

Grant given to State PIAs of more than 50 lakh in Green Energy Corridor from 01.01.2025 to 31.12.2025					
S. No.	Sanction No.	Project/ Organization Name	State	Fund released	
				Sanction Date	Amount (Rs. in lakh)
Green Energy Corridor Phase-I					
1	1/7/2015-EFM	Transmission Corporation of Andhra Pradesh Limited (APTRANSCO)	Andhra Pradesh	25.03.2025	1187.40*

2	1/7/2015-EFM	Transmission Corporation of Andhra Pradesh Limited (APTRANSCO)	Andhra Pradesh	28.04.2025	1162.09**
Green Energy Corridor Phase-II					
3	367-12/2/2023-GEC (Part-1)	Uttar Pradesh Power Transmission Corporation Limited (UPPTCL)	Uttar Pradesh	26.06.2025	47757.40
4	367-12/2/2025-GEC	Kerala State Electricity Board Limited (KSEB)	Kerala	28.11.2025	4928.00
5	367-12/2/2024-GEC	Karnataka Power Transmission Corporation Limited (KPTCL)	Karnataka	29.12.2025	1746.48
6	367-12/2/2023-GEC (Part-1)	Uttar Pradesh Power Transmission Corporation Limited (UPPTCL)	Uttar Pradesh	29.12.2025	12755.10
	Total				**69536.47**

*As the FY 2024-25 ended on 31.03.2025, APTRANSCO could only utilize Rs. 25,30,883/- and amount Rs. 11,62,09,117/- remained unutilized.

** Rs. 11,62,09,117/- is balance CFA of previous sanction to APTRANSCO

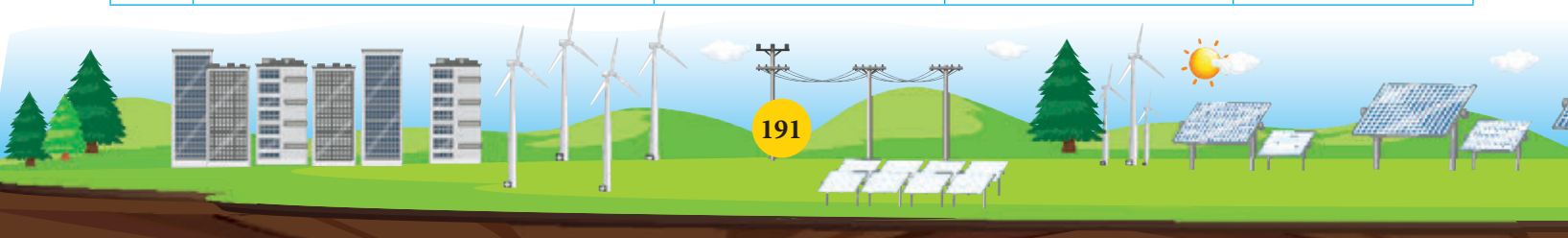
Table 3: CFA released under Solar Park to various Park Developers from 01-01-2025 to 31.12.2025

Sl. No.	State	Solar Park	CFA Released under Solar Park Scheme (in INR)
1	Andhra Pradesh	1400 MW Ananthpuram -I, NP Kunta	26,88,16,200
2	Andhra Pradesh	500 MW Ananthpuram - II Solar Park	9,00,00,000
3	Andhra Pradesh	1000 MW Kadapa Solar Park	48,00,00,000
4	Andhra Pradesh	300 MW Ramagiri Solar Park	21,60,00,000
5	Chhattisgarh	100 MW Rajnandgaon Solar Park	3,00,00,000
6	Gujarat	600 MW GIPCL Khavda Phase 1	28,14,90,000
7	Gujarat	1200 MW GIPCL Khavda Phase 2	25,63,05,000
8	Jharkhand	100 MW Getalsud Solar Park by SECI	7,30,00,000
9	Jharkhand and West Bengal	755 MW GVREL Floating solar park	55,00,00,000
10	Kerala	105 MW Kasargod Solar Park	8,56,20,000
11	Kerala	100 MW Kasargod Solar Park (Phase-II)	2,72,88,000
12	Madhya Pradesh	550 MW Agar Solar Park	22,07,25,000
13	Madhya Pradesh	500 MW Neemuch Solar Park	13,26,84,750

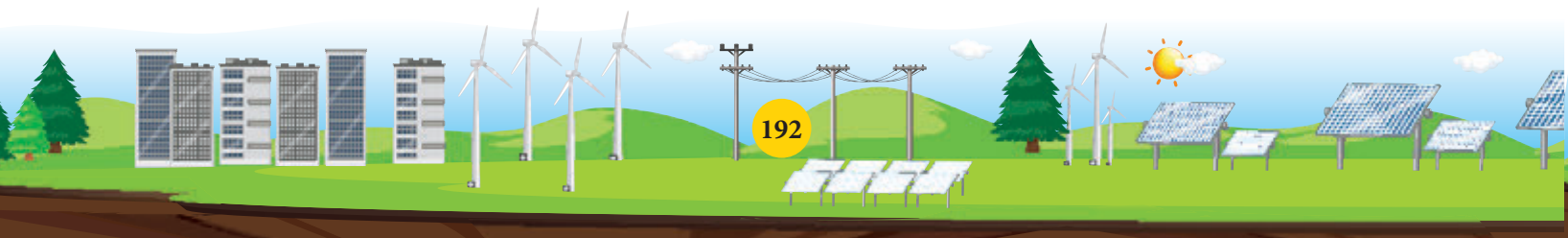
14	Madhya Pradesh	450 MW Shajapur Solar Park	22,50,00,000
15	Madhya Pradesh	630 MW Barethi Solar Park	50,40,00,000
16	Odisha	40 MW NHPC Solar Park	2,98,00,000
17	Rajasthan	1000 MW Pugal Solar Park Phase-I	35,45,40,000
18	Rajasthan	100 MW Pugal Phase II Solar Park	35,54,26,000
19	Rajasthan	925 MW Nokh Solar Park	27,75,00,000
20	Uttar Pradesh	440 MW, Uttar Pradesh Solar Park	1,41,74,782
21	Uttar Pradesh	65 MW Kalpi Solar Park	1,17,00,000
22	Uttar Pradesh	800 MW Chitrakoot Solar Park	58,23,12,000
	Total		**5,06,63,81,732**

Table 4: PM KUSUM – Fund released above Rs. 50 Lakh from 01.01.2025 to 31.12.2025

S. No.	Sanction Number	State Name	Date	Amount (Rs.)
1	32/7/2024-SPV Division	Arunachal Pradesh	01-01-2025	1,30,00,000
2	32/11/2025-SPV Division	Uttar Pradesh	12-02-2025	2,25,00,000
3	32/6/2024-SPV Division	Maharashtra	13-02-2025	10,49,00,000
4	32/6/2024-SPV Division	Maharashtra	13-02-2025	14,84,00,000
5	32/62/2023 SPV Division	Rajasthan	20-03-2025	18,65,84,764
6	32/694/2022-SPV Division	Haryana	04-03-2025	8,22,06,214
7	32/8/2024-SPV Division	Haryana	11-03-2025	48,21,00,000
8	32/8/2024-SPV Division	Haryana	11-03-2025	72,00,000
9	32/61/2023-SPV Division	Uttar Pradesh	10-03-2025	43,48,00,000
10	32/11/2025-SPV Division	Uttar Pradesh	12-02-2025	27,89,00,000
11	32/61/2023-SPV Division	Uttar Pradesh	10-03-2025	3,13,00,000
12	32/15/2025-SPV Division	Gujarat	04-03-2025	3,70,25,982
13	32/19/2025-SPV Division	Gujarat	19-03-2025	10,08,10,684
14	32/3/2024 SPV Division	Tamil Nadu	20-03-2025	2,83,30,576
15	32/51/2024-SPV Division	Maharashtra	04-03-2025	98,45,16,750
16	32/17/2024 SPV Division	Maharashtra	04-03-2025	5,33,00,000
17	32/17/2024 SPV Division	Maharashtra	04-03-2025	63,22,00,000
18	32/17/2024 SPV Division	Maharashtra	04-03-2025	8,71,00,000



19	32/6/2024-SPV Division	Maharashtra	13-02-2025	84,95,00,000
20	32/6/2024-SPV Division	Maharashtra	24-03-2025	33,58,01,523
21	32/6/2024-SPV Division	Maharashtra	24-03-2025	41,48,39,143
22	32/73/2023 SPV Division	Tripura	19-03-2025	3,85,00,000
23	32/51/2024-SPV Division	Maharashtra	12-02-2025	15,85,08,000
24	32/52/2024-SPV Division	Uttar Pradesh	13-02-2025	3,84,00,000
25	32/44/2023-SPV Division	Kerala	24-03-2025	1,64,64,943
26	32/17/2022-SPV Division	Tripura	25-03-2025	5,45,97,748
27	32/635/2022-SPV Division	Arunachal Pradesh	25-03-2025	60,56,945
28	32/19/2025-SPV Division	Gujarat	05-05-2025	47,03,47,008
29	32/15/2025-SPV Division	Gujarat	05-05-2025	14,23,47,877
30	32/31/2024-SPV Division	Karnataka	05-05-2025	31,22,02,317
31	32/31/2024-SPV Division	Karnataka	05-05-2025	1,25,17,358
32	32/31/2024-SPV Division	Karnataka	05-05-2025	86,93,797
33	32/8/2024-SPV Division	Haryana	05-05-2025	51,35,00,000
34	32/26/2025-SPV Division	Assam	06-05-2025	1,41,00,000
35	32/39/2024-SPV Division	Odisha	06-05-2025	4,08,80,000
36	32/41/2024-SPV Division	Uttarakhand	06-05-2025	5,28,11,312
37	32/30/2025-SPV Division	Tamil Nadu	06-05-2025	2,61,83,750
38	32/44/2023-SPV Division	Kerala	08-05-2025	4,85,05,718
39	32/35/2024-SPV Division	Uttarakhand	08-05-2025	1,82,26,768
40	32/51/2024-SPV Division	Maharashtra	13-05-2025	1,75,45,65,750
41	32/6/2024-SPV Division	Maharashtra	13-05-2025	3,10,77,00,000
42	32/6/2024-SPV Division	Maharashtra	13-05-2025	16,31,00,000
43	32/29/2025-SPV Division	Jharkhand	15-05-2025	12,85,00,000
44	32/29/2025-SPV Division	Jharkhand	15-05-2025	3,20,00,000
45	32/17/2024-SPV Division	Maharashtra	15-05-2025	29,46,00,000
46	32/17/2024-SPV Division	Maharashtra	15-05-2025	4,44,00,000
47	32/17/2024-SPV Division	Maharashtra	15-05-2025	3,46,00,000
48	32/15/2024-SPV Division	Uttar Pradesh	15-05-2025	7,25,00,000



49	32/72/2023-SPV Division	Gujarat	27-05-2025	97,88,675
50	32/51/2024-SPV Division	Maharashtra	28-05-2025	2,72,12,22,000
51	32/8/2024-SPV Division	Haryana	05-05-2025	1,35,00,000
52	32/52/2024-SPV Division	Uttar Pradesh	03-06-2025	12,68,00,000
53	32/21/2020-SPV Division	Karnataka	09-06-2025	92,01,066
54	32/21/2020-SPV Division	Karnataka	09-06-2025	87,23,622
55	32/49/2024-SPV Division	Rajasthan	09-06-2025	9,28,56,784
56	32/15/2025-SPV Division	Gujarat	10-06-2025	49,46,69,247
57	32/39/2025-SPV Division	Punjab	11-06-2025	8,86,00,000
58	32/39/2025-SPV Division	Punjab	11-06-2025	2,04,00,000
59	32/3/2024-SPV Division	Tamil Nadu	26-06-2025	2,26,96,145
60	32/60/2023-SPV Division	Uttar Pradesh	27-06-2025	1,80,00,000
61	32/62/2023-SPV Division	Rajasthan	30-06-2025	58,14,07,437
62	32/62/2023-SPV Division	Rajasthan	30-06-2025	17,65,40,296
63	32/8/2024-SPV Division	Haryana	30-06-2025	81,17,00,000
64	32/8/2024-SPV Division	Haryana	30-06-2025	1,87,00,000
65	32/19/2025-SPV Division	Gujarat	30-06-2025	87,24,93,858
66	32/38/2025-SPV Division	Madhya Pradesh	30-06-2025	7,94,78,185
67	32/35/2025-SPV Division	Tripura	09-07-2025	7,43,00,000
68	32/43/2024-SPV Division	Maharashtra	22-07-2025	15,36,00,000
69	32/43/2024-SPV Division	Maharashtra	22-07-2025	3,05,00,000
70	32/43/2024-SPV Division	Maharashtra	22-07-2025	1,65,00,000
71	32/51/2024-SPV Division	Maharashtra	28-07-2025	72,60,48,750
72	32/46/2025-SPV Division	Maharashtra	29-07-2025	86,85,00,000
73	32/46/2025-SPV Division	Maharashtra	29-07-2025	14,71,00,000
74	32/46/2025-SPV Division	Maharashtra	29-07-2025	9,80,00,000
75	32/47/2025-SPV Division	Maharashtra	31-07-2025	26,05,00,000
76	32/47/2025-SPV Division	Maharashtra	31-07-2025	4,41,00,000
77	32/47/2025-SPV Division	Maharashtra	31-07-2025	2,94,00,000
78	32/48/2025-SPV Division	Maharashtra	31-07-2025	17,36,00,000
79	32/48/2025-SPV Division	Maharashtra	31-07-2025	2,94,00,000
80	32/48/2025-SPV Division	Maharashtra	31-07-2025	1,96,00,000

81	32/15/2025-SPV Division	Gujarat	13-08-2025	31,36,03,684
82	32/51/2024-SPV Division Part (1)	Maharashtra	14-08-2025	93,76,92,000
83	32/25/2024-SPV Division	Himachal Pradesh	18-08-2025	72,47,000
84	32/4/2023-SPV Division	Uttar Pradesh	22-08-2025	21,14,19,202
85	32/37/2025-SPV Division	Manipur	27-08-2025	78,38,000
86	32/39/2025-SPV Division	Punjab	08-09-2025	1,73,00,000
87	32/39/2025-SPV Division	Punjab	08-09-2025	1,05,00,000
88	32/51/2024-SPV Division	Maharashtra	15-09-2025	1,82,69,84,250
89	32/13/2020-SPV Division	Jharkhand	15-09-2025	55,80,423
90	32/18/2024-SPV Division	Jharkhand	06-10-2025	1,08,00,000
91	32/44/2025-SPV Division	Maharashtra	06-11-2025	7,67,00,000
92	32/44/2025-SPV Division	Maharashtra	06-11-2025	7,58,00,000
93	32/39/2025-SPV Division	Punjab	10-11-2025	2,46,00,000
94	32/64/2025-SPV Division	Ladakh	03-12-2025	1,49,23,000
95	32/43/2024-SPV Division	Maharashtra	05-12-2025	1,41,00,000
96	32/43/2024-SPV Division	Maharashtra	05-12-2025	94,00,000
97	32/61/2025-SPV Division	Jharkhand	05-12-2025	3,04,00,000
98	32/65/2025-SPV Division	Karnataka	12-12-2025	7,49,76,489
99	32/40/2025-SPV Division	Rajasthan	12-12-2025	4,68,88,937
100	32/18/2025-SPV Division	Karnataka	12-12-2025	2,55,35,160
101	32/13/2024-SPV Division	Mizoram	12-12-2025	1,72,62,009
102	32/8/2024-SPV Division	Haryana	26-12-2025	85,88,00,000
103	32/8/2024-SPV Division	Haryana	26-12-2025	2,28,00,000
104	32/43/2024-SPV Division	Maharashtra	29-12-2025	8,37,00,000
105	32/44/2025-SPV Division	Maharashtra	31-12-2025	52,40,00,000
106	32/44/2025-SPV Division	Maharashtra	31-12-2025	1,31,00,000
107	32/44/2025-SPV Division	Maharashtra	31-12-2025	4,20,00,000
108	32/44/2025-SPV Division	Maharashtra	31-12-2025	45,50,00,000
109	32/51/2024-SPV Division	Maharashtra	31-12-2025	90,85,80,750
110	32/51/2024-SPV Division Part (1)	Maharashtra	31-12-2025	1,08,23,29,500
111	32/51/2024-SPV Division-Part(2)	Maharashtra	31-12-2025	6,02,93,62,500

Table 5: Funds released under New Solar Power Scheme (for PVTG Habitations/Villages) under PM JANMAN from 01.01.2025 to 31.12.2025

(Rs. in Lakhs)

Sl. No.	Sanction Number	Implementing Agency	State	Funds Released	
				Date	Amount in Rs.
1	32/22/2024-SPV Division	APEPDCL, Visakhapatnam	Andhra Pradesh	31.01.2025	36,60,000
2	32/4/2024-SPV Division	TREDA, Tripura	Tripura	17.03.2025	5,96,05,000
3	32/32/2024-SPV Division	JBVNL, Ranchi	Jharkhand	18.03.2025	2,86,08,384
4	32/6/2025-SPV Division	CESC, Mysore	Karnataka	26.03.2025	62,65,000

Table 6; State Wise Expenditure under PM Surya Ghar Muft Bijli Yojana from 01.01.2025 to 31.12.2025

State	No. of Beneficiaries	Amount of CFA Released (in crores)
ANDAMAN and NICOBAR ISLANDS	136	1.15
ANDHRA PRADESH	67,908	525.82
ARUNACHAL PRADESH	1	0.01
ASSAM	55,706	475.68
BIHAR	11,424	88.22
CHANDIGARH	643	4.91
CHHATTISGARH	14,421	111.79
GOA	957	7.59
GUJARAT	279,541	2,204.44
HARYANA	36,034	264.64
HIMACHAL PRADESH	5,020	42.96
JAMMU and KASHMIR	14,980	128.23
JHARKHAND	1,205	9.35
KARNATAKA	10,300	85.29
KERALA	119,324	931.79
LADAKH	891	7.64
LAKSHADWEEP	583	5.00
MADHYA PRADESH	61,043	475.23
MAHARASHTRA	275,009	2,197.51

MANIPUR	604	5.17
MEGHALAYA	16	0.10
MIZORAM	664	5.64
NAGALAND	117	0.98
NCT OF DELHI	4,002	33.56
ODISHA	21,757	166.74
PUDUCHERRY	1,614	12.43
PUNJAB	7,055	54.89
RAJASTHAN	87,830	684.35
SIKKIM	15	0.12
TAMIL NADU	34,412	261.84
TELANGANA	18,253	145.46
THE DADRA AND NAGAR HAVELI AND DAMAN AND DIU	438	3.41
TRIPURA	1,515	12.74
UTTARAKHAND	39,448	338.34
UTTAR PRADESH	247,401	1,896.00
WEST BENGAL	339	2.53
TOTAL	**1,420,606**	**11,191.53**

Table 7: Funds released under 750 MW VGF Scheme (Phase-II Batch-III) to Solar Energy Corporation of India Ltd (SECI) from 01.01.2025 to 31.12.2025.

SI. No	Sanction Number	Agency Name	Sanction Date	Amount Rs. (in Rs)
1	F.NO. 32/7/2017-Solar Energy Group (Gen Component)	SECI	18.06.2025	₹ 10,64,99,983.00
2	F. No. 32/7/2017-Solar Energy Group (SC component)	SECI	18.06.2025	₹ 2,62,84,242.00
3	F. No. 32/7/2017-Solar Energy Group (ST Component)	SECI	18.06.2025	₹ 3,54,88,775.00
4	F.NO. 32/7/2017-Solar Energy Group(Gen.Com)	SECI	26.09.2025	₹ 3,54,99,995.00
5	F. No. 32/7/2017-Solar Energy Group (SC.Com)	SECI	26.09.2025	₹ 87,61,414.00
6	F. No. 32/7/2017-Solar Energy Group (St.Com)	SECI	26.09.2025	₹ 1,18,29,591.00

Table 8: Funds released under 2000 MW VGF Scheme (Phase-II Batch-III) to Solar Energy Corporation of India Ltd (SECI) from 01.01.2025 to 31.12.2025.

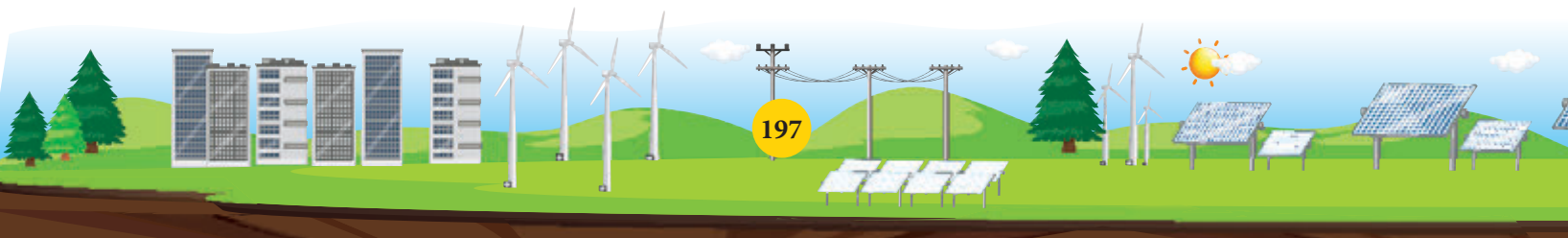
SI. No	Sanction Number	Agency Name	Sanction Date	Amount Rs. (in Rs)
1	283/70/2017-Grid Solar-Part(1)(Gen.Com)	SECI	28.05.2025	₹ 3,44,23,376.00
2	283/70/2017-Grid Solar-Part(1)(SC.Com)	SECI	28.05.2025	₹ 73,75,474.00
3	283/70/2017-Grid Solar-Part(1)(ST.Com)	SECI	28.05.2025	₹ 31,46,510.00
4	283/70/2017-Grid Solar(Gen.Com)	SECI	25.06.2025	₹ 4,01,35,587.00
5	283/70/2017-Grid Solar(SC.Com)	SECI	25.06.2025	₹ 90,68,844.00
6	283/70/2017-Grid Solar(ST.Com)	SECI	25.06.2025	₹ 36,75,129.00
7	283/70/2017-Grid Solar(Gen.Com)	SECI	3.12.2025	₹ 8,76,21,161.00
8	283/70/2017-Grid Solar(SC.Com)	SECI	3.12.2025	₹ 1,97,98,457.00
9	283/70/2017-Grid Solar(ST.Com)	SECI	3.12.2025	₹ 80,23,281.00
10	283/70/2017-Grid Solar(Gen.Com)	SECI	23.03.2026	₹ 1,98,98,556

Table 9: Funds released under DEMO GBI Scheme to Solar Energy Corporation of India Ltd (SECI) from 01.01.2025 to 31.12.2025

SI. No	Sanction Number	Agency Name	Sanction Date	Amount Rs. (In Rs)
1	283/61/2018-GRID SOLAR(Gen.Com)	SECI	07.07.2025	₹ 28,44,957.00

Table 10: Funds released under RPSSGP Scheme to Solar Energy Corporation of India Ltd (SECI) from 01.01.2025 to 31.12.2025.

SI. No	Sanction Number	Agency Name	Sanction Date	Amount Rs. (in Rs)
1	32/6/2017-Solar Energy Group(Gen.Com)	SECI	05.05.2025	₹ 7,32,50,043.00
2	32/6/2017-Solar Energy Group(SC.Com)	SECI	05.05.2025	₹ 1,72,14,353.00
3	32/6/2017-Solar Energy Group(ST.Com)	SECI	05.05.2025	₹ 1,25,09,728.00
4	32/6/2017-Solar Energy Group(Gen.Com)	SECI	19.06.2025	₹ 31,59,36,131.00
5	32/6/2017-Solar Energy Group(SC.Com)	SECI	19.06.2025	₹ 7,82,12,278.00
6	32/6/2017-Solar Energy Group(ST.Com)	SECI	19.06.2025	₹ 3,39,71,432.00
7	32/6/2017-Solar Energy Group(Gen.Com)	SECI	30.09.2025	₹ 29,57,51,557.00
8	32/6/2017-Solar Energy Group(SC.Com)	SECI	30.09.2025	₹ 7,40,01,788.00



9	32/6/2017-Solar Energy Group(ST.Com)	SECI	30.09.2025	₹ 5,47,11,166.00
10	32/6/2017-Solar Energy Group(Gen.Com)	SECI	23.03.2026	₹ 23,39,59,222.00

Table 11 Funds released to Indian Renewable Energy Development Agency Ltd. (IREDA) for payment of interest on Government of India Fully Serviced Bonds from 01.01.2025 to 31.12.2025.

Sl. No.	Sanction Number	Agency Name	Sanction Date	Amount (Rs.)
1.	340-12/2/2018-IREDA	IREDA	30-01-2025	₹ 22,14,13,333
2.	340-12/2/2018-IREDA	IREDA	13-02-2025	₹ 8,40,56,831
3.	340-12/2/2018-IREDA	IREDA	21-02-2025	₹ 31,53,11,918
4.	340-12/2/2018-IREDA	IREDA	30-07-2025	₹ 21,84,00,055
5.	340-12/2/2018-IREDA	IREDA	18-08-2025	₹ 8,29,12,877
6.	340-12/2/2018-IREDA	IREDA	02-09-2025	₹ 32,05,38,082

Table 12 The Private, voluntary organizations and State PIAs received grant of more than Rs. 50.00 lakh during the period of 01.01.2025 to 31.12.2025

					Funds released		
Sl. No.	Sanction No.	Project	State/UT	Organization /Agency	Date	Amount (Rs. in Lakh)	Remarks
1	20(38)2008-SHP (Vol-V)	Setting up of Small Hydro Power projects by Kargil Renewable Energy Development Agency (KREDA) in UT of Ladakh under 'Ladakh Renewable Energy Initiative' (LREI) project	UT of Ladakh	Kargil Renewable Energy Development Agency (KREDA)	04.02.2025	202.04	Release of next installment of CFA
2	20(38)2008-SHP (Vol-V)	Setting up of Small Hydro Power projects by Kargil Renewable Energy Development Agency (KREDA) in UT of Ladakh under 'Ladakh Renewable Energy Initiative' (LREI) project	UT of Ladakh	Kargil Renewable Energy Development Agency (KREDA)	04.02.2025	152.00	Release of next installment of CFA

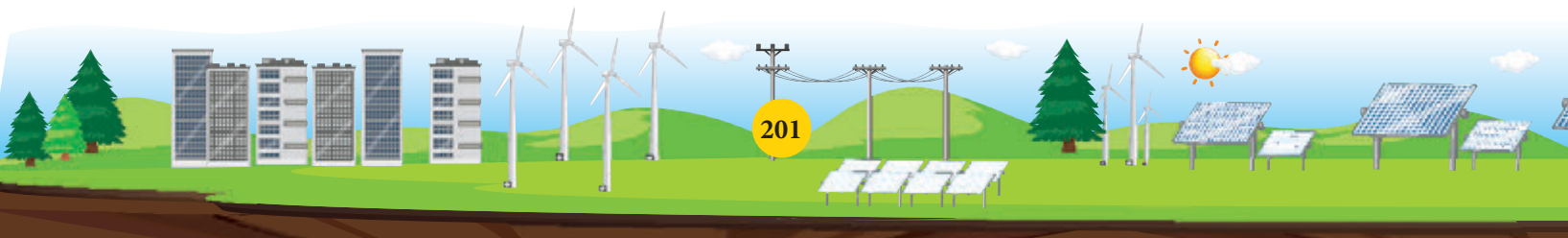
3	6/4/2015-SHP	Setting up of SHP-V project at Chainage 9900m (3x0.75 MW) in Bahadurpur Village on Miyagam Branch Canal in Chhota Udepur District of Gujarat by Sardar Sarovar Narmada Nigam Ltd. (SSNNL)	Gujarat	Sardar Sarovar Narmada Nigam Ltd. (SSNNL)	16.05.2025	78.75	Release of final installment of CFA
4	286/51/2017-SHP	Setting up of Mukerian SHP (2x9 MW) project in Gurdaspur District of Punjab by Punjab State Power Corporation Ltd. (PSPCL)	Punjab	Punjab State Power Corporation Ltd. (PSPCL)	19.05.2025	143.75	Release of final installment of CFA
5	287/19/2018-SHP	Setting up of Holi-II (2x3.50 MW) SHP project in Chamba District of Himachal Pradesh by M/s OM Energy Generation Pvt. Ltd.	Himachal Pradesh	M/s OM Energy Generation Pvt. Ltd.	27.06.2025	125.00	Release of final installment of CFA
6	287/78/2017-SHP	Setting up of Khandaleru (2x3 MW) SHP project in Nellore district of Andhra Pradesh by M/s Khandaleru Power Company Ltd.	Andhra Pradesh	M/s Khandaleru Power Company Ltd.	30.06.2025	375.00	Release of final installment of CFA
7	287/21/2019-SHP	Setting up of Awa SHP (4.50 MW) project in Kangra district of Himachal Pradesh by M/s Awa Power Co. Pvt. Ltd.	Himachal Pradesh	M/s Awa Power Company Pvt. Ltd.	26.08.2025	76.25	Release of final installment of CFA

8	287/250/2017-SHP	Setting up of Neogal SHP (4.50 MW) project in Kangra district of Himachal Pradesh by M/s Awa Power Co. Pvt. Ltd.	Himachal Pradesh	M/s Neogal Power Company Pvt. Ltd.	26.08.2025	76.25	Release of final installment of CFA
9	286/6/2017-SHP	Setting up of New Karnah (3x4 MW) SHP project in Karnah Tehsil of Kupwara district, Jammu & Kashmir by Jammu & Kashmir State Power Development Corporation Ltd. (JKSPDC)	Jammu & Kashmir	Jammu & Kashmir State Power Development Corporation Ltd. (JKSPDC)	10.09.2025	700.00	Release of 3rd installment of CFA
10	286/17/2017-SHP	Setting up of Tlawva SHP (5 MW) project in Champhai District of Mizoram by Power & Electricity Department, Mizoram	Mizoram	Power and Electricity Department, Mizoram	22.09.2025	70.00	Release of 4th and final installment of subsidy
11	289/52/2017-SHP	R&M of 2x12 MW River Bed Generating Units of Bhadra SHP in Bhadravati, Shimoga district of Karnataka by Karnataka Power Corporation Ltd. (KPCL), Karnataka	Karnataka	Karnataka Power Corporation Ltd. (KPCL)	15.10.2025	68.11	Release of 3rd and final installment of subsidy
12	286/48/2017-SHP	Setting up of Poringalkuthu SHP (24MW) project in Thrissur District of Kerala by Kerala State Electricity Board (KSEB)	Kerala	Kerala State Electricity Board (KSEB)	05.12.2025	200.00	Release of 4th and final installment of subsidy

13	286/122/2017-SHP	Setting up of Tsutsung Yongki (2x500 kW) SHP project in Mokokchung District of Nagaland by Department of New and Renewable Energy (DNRE), Nagaland	Nagaland	Department of New and Renewable Energy (DNRE), Nagaland	12.12.2025	50.00	Release of 4th and final installment of subsidy
14	286/169/2017-SHP	Setting up of Ponglefo (2x500 kW) SHP project in Kiphire District of Nagaland by Department of Power, Nagaland	Nagaland	Department of Power, Nagaland	12.12.2025	75.00	Release of 4th and final installment of subsidy
15	286/5/2017-SHP	Setting up of SHP-III at Chainage 32940m (3x5 MW) project in Nani-Kumad village, Ahmedabad district of Gujarat on Saurashtra Branch Canal by Sardar Sarovar Narmada Nigam Ltd. (SSNNL)	Gujarat	Sardar Sarovar Narmada Nigam Ltd. (SSNNL)	23.12.2025	200.00	Release of 4th and final installment of subsidy
16	287/25/2017-SHP	Setting up of Temghar (4 MW) SHP project in Pune District of Maharashtra by M/s Suvas Holdings Ltd.	Maharashtra	M/s Suvas Holdings Ltd.	26.12.2025	300.00	Release of full and final eligible subsidy, on reimburs-ement basis

Table 13: Fund Released to Implementing Agencies under CPSU Scheme Phase II during the period 01.01.2025 to 31.12.2025.

Sl. No.	Sanctioned Order	Agency Name	Sanction Date	Amount (Rs)
1	302/4/2017-GRID SOLAR(iii)	SECI	30.03.2025	64,00,000
2	302/4/2017-GRID SOLAR	SECI	05.06.2025	1,67,87,413
3	302/4/2017-GRID SOLAR(i)	SECI	05.06.2025	3,25,62,077

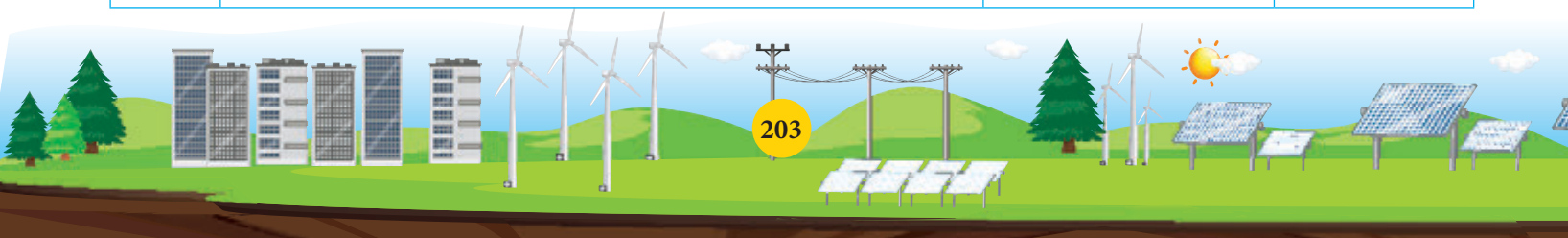


4	302/4/2017-GRID SOLAR(ii)	SECI	05.06.2025	4,39,65,058
5	302/4/2017-GRID SOLAR(iii)	SECI	05.06.2025	13,19,36,865
6	302/4/2017-GRID SOLAR-Part(4) (i)	SECI	24.12.2025	18,90,87,150
7	302/4/2017-GRID SOLAR-Part(4) (ii)	SECI	24.12.2025	14,29,55,400
8	302/4/2017-GRID SOLAR-Part(4) (iii)	SECI	24.12.2025	72,84,57,450
9	302/4/2017-GRID SOLAR-Part(5) (i)	SECI	24.12.2025	1,23,97,427
10	302/4/2017-GRID SOLAR-Part(5) (ii)	SECI	24.12.2025	52,88,360
11	302/4/2017-GRID SOLAR-Part(5) (iii)	SECI	24.12.2025	5,78,62,213

Table 14 Funds release to implementing Agencies under Biogas Programme from 01-01-2025 to 31.12.2025

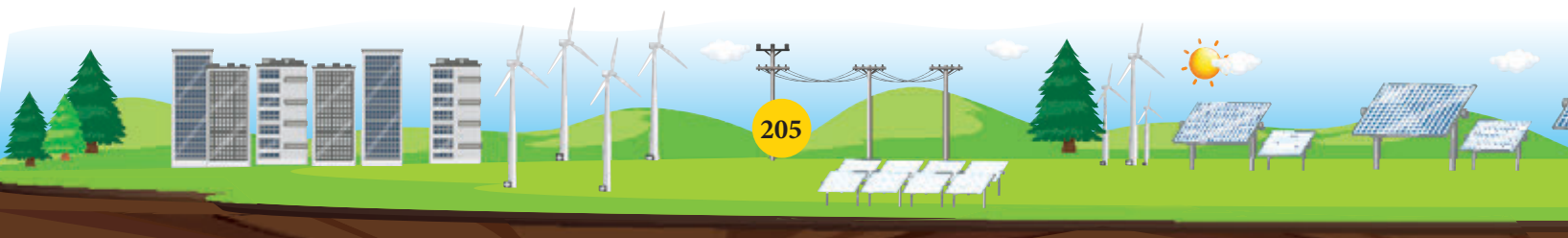
Sl. No	PIA/Beneficiary	Date of Release	Total subsidy released (in Rs.)
1	CREDA, Raipur	08.01.2025	292600
2	MPSAIDC, Bhopal	11.02.2025	1722000
3	MPSAIDC, Bhopal	04.03.2025	14350000
4	MPSAIDC, Bhopal	04.03.2025	2870000
5	BDTC, MPUAT, Raj.	28.02.2025	3530100
6	APEDA, Itanagar	04.03.2025	150000
7	APEDA, Itanagar	04.03.2025	2640000
8	APEDA, Itanagar	04.03.2025	294000
9	RDD, Maharashtra	04.03.2025	25468690
10	RDD, Maharashtra	04.03.2025	585879
11	CREDA, Raipur	03.03.2025	881050
12	CREDA, Raipur	04.03.2025	4090800
13	CREDA, Raipur	04.03.2025	1938300
14	KIIT, Bhunbaneswar	04.03.2025	1119250
15	BDTC, DAV, Indore	07.03.2025	4706800
16	RDD, Maharashtra	22.03.2025	31776000
17	KVIC, Mumbai	21.03.2025	13214350
18	NDDB Mrida Ltd, Anand(Gujarat)	22.03.2025	110000

19	OREDA, Bhubaneswar	22.03.2025	400000
20	PEDA, Chandigarh	28.03.2025	7591150
21	BDTC, IIT, Guwahati	26.03.2025	880000
22	RDD, Pauri, (U.K.)	22.03.2025	2258500
23	Directorate Agri. , State Govt. of Kerala	26.03.2025	383000
24	NDDB Mirda Ltd	29.03.2025	1500000
25	Directorate of Agri. State Govt. of Haryana	30.03.2025	1148000
26	Biogas Development and Training Centre (BDTC), IIT Delhi	25.06.2025	2450000.00
27	Biogas Development and Training Centre (BDTC), IIT Delhi	26.06.2025	2450000.00
28	Devi Ahilya Vishwavidyalaya (DAVV)	26.06.2025	1639750.00
29	Devi Ahilya Vishwavidyalaya (DAVV)	26.06.2025	50000.00
30	Odisha Renewable Energy Development Agency(OREDA)	27.06.2025	1396400.00
31	Odisha Renewable Energy Development Agency(OREDA)	27.06.2025	25000.00
32	Odisha Renewable Energy Development Agency(OREDA)	30.06.2025	31000.00
33	Odisha Renewable Energy Development Agency (OREDA)	30.06.2025	31000.00
34	BDTC, IIT, Delhi	30.06.2025	250250.00
35	BDTC, KIIT, Bhubaneswar	03.07.2025	1856250.00
36	National Biogas Manure and Management Programme (NBMMP)	09.07.2025	2393390.00
37	National Biogas Manure and Management Programme (NBMMP)	09.07.2025	7118050.00
38	Tripura Renewable Energy Development Agency (TREDA)	11.07.2025	5331038.00
39	Tripura Renewable Energy Development Agency (TREDA)	11.07.2025	2763000.00
40	Tripura Renewable Energy Development Agency (TREDA)	11.07.2025	957000.00
41	Tripura Renewable Energy Development Agency (TREDA)	11.07.2025	847000.00
42	Tripura Renewable Energy Development Agency (TREDA)	11.07.2025	44000.00
43	National Dairy Development Board (NDDB)	01.08.2025	29180450.00
44	National Dairy Development Board (NDDB)	01.08.2025	1642200.00
45	National Dairy Development Board (NDDB)	01.08.2025	38828500.00
46	Tripura Renewable Energy Development Agency (TREDA)	12.08.2025	1359000.00
47	Odisha Renewable Energy Development Agency(OREDA)	12.08.2025	468450.00
48	Odisha Renewable Energy Development Agency(OREDA)	12.08.2025	200000.00



49	Biogas Development and Training Centre (BDTC) KIIT , Bhubaneswar	13.08.2025	1181260.00
50	Biogas Development and Training Centre (BDTC) KIIT , Bhubaneswar	13.08.2025	347911.00
51	Biogas Development and Training Centre (BDTC) KIIT , Bhubaneswar	18.08.2025	1406967.00
52	Biogas Development and Training Centre (BDTC) KIIT , Bhubaneswar	18.08.2025	1684324.00
53	MPSAIDC, Bhopal	08.09.2025	8711800.00
54	MPSAIDC, Bhopal	08.09.2025	3917500.00
55	MPSAIDC, Bhopal	08.09.2025	6180000.00
56	Tripura Renewable Energy Development Agency (TREDA)	12.08.2025	68000.00
57	Tripura Renewable Energy Development Agency (TREDA)	12.08.2025	608000.00
58	Uttarakhand Renewable Energy Development Agency (UREDA)	15.09.2025	2756500.00
59	Uttarakhand Renewable Energy Development Agency (UREDA)	15.09.2025	892500.00
60	Uttarakhand Renewable Energy Development Agency (UREDA)	15.09.2025	357000.00
61	Kaira District Co-Operative Milk Producers' Union Ltd. (Amul Dairy), Anand.	17.09.2025	6908500.00
62	Kaira District Co-Operative Milk Producers' Union Ltd. (Amul Dairy), Anand.	17.09.2025	110000.00
63	Kaira District Co-Operative Milk Producers' Union Ltd. (Amul Dairy), Anand.	17.09.2025	1100000.00
64	BDTC Devi Ahilya Vishwavidyalaya (DAVV)	23.09.2025	2865350.00
65	BDTC Devi Ahilya Vishwavidyalaya (DAVV)	23.09.2025	22000.00
66	BDTC Devi Ahilya Vishwavidyalaya (DAVV)	23.09.2025	22000.00
67	M/s Om Chicks(I) Private Ltd (MEDA)	13.10.2025	4200000.00
68	M/s Rajani Kantilal Umap (MEDA)	13.10.2025	4200000.00
69	Uttar Pradesh New and Renewable Energy Development Agency (UPNEDA)	21.10.2025	2286100.00
70	M/s Trimurti Pavan Pratisthan (MEDA)	21.10.2025	1237500.00
71	Dadra & Nagar Haveli	31.10.2025	396000.00
72	Zorabian Sales	31.10.2025	2475000.00
73	Rajas Dairy Farm	12.11.2025	1237500.00

74	IIT Delhi	24.11.2025	430250.00
75	Indo Count	24.11.2026	8200000.00
76	Chhattisgarh State Renewable Energy Development Agency (CREDA), General Category Component 2024-25	04.12.2025	1383300.00
77	Chhattisgarh State Renewable Energy Development Agency (CREDA), SC Category Component 2024-25	04.12.2025	178000.00
78	Chhattisgarh State Renewable Energy Development Agency (CREDA), ST Category Component 2024-25	04.12.2025	643500.00
79	Venco	04.12.2025	4200000.00
80	New National Biogas and organic Manure Programme (NNBOMP) General Category Component 2020-21	08.12.2025	77853500.00
81	New National Biogas and organic Manure Programme (NNBOMP) SC Category Component 2020-21	08.12.2025	2716000.00
82	New National Biogas and organic Manure Programme (NNBOMP) ST Component 2020-21	08.12.2025	2893000.00
83	Milky Mist Dairy Food Pvt. Ltd	09.12.2025	8200000.00
84	Sanjay Kumar Kalvakuntla	09.12.2025	4200000.00
85	SKM Egg Products Export India Limited	09.12.2025	9000000.00
86	New National Biogas and organic Manure Programme (NNBOMP) General Category Component 2019-20	09.12.2025	41373500.00
87	New National Biogas and organic Manure Programme (NNBOMP) SC Category Component 2019-20	09.12.2025	0.00
88	New National Biogas and organic Manure Programme (NNBOMP) ST Component 2019-20	09.12.2025	1050000.00
89	Rural Development Department, Maharashtra (F.Y. 2023-24) General Category Component	09.12.2025	28255450.00
90	Rural Development Department, Maharashtra (F.Y. 2023-24) SC Category Component	09.12.2025	2731600.00
91	Rural Development Department, Maharashtra (F.Y. 2023-24) ST Category Component	09.12.2025	2155600.00
92	M/s. Kalinga Breeding Farms Private Ltd	04.02.2026	8200000.00
93	Mrs. Archana Sunil Kadappati, Kadapatti Dairy Farm	04.02.2026	1237500.00
94	Telangana State Renewable Energy Development Corporation Ltd (F.Y. 2023-24 and 2024-25) General Category Component	18.12.2025	225550.00
95	Telangana State Renewable Energy Development Corporation Ltd (F.Y. 2024-25) SC Category Component	18.12.2025	25000.00
96	Punjab Energy Development Agency(PEDA) 2024-25	22.12.2025	21698450.00



97	Biogas Development and Training Centre (BDTC) KIIT, Bhubaneswar	23.12.2025	96000.00
98	Rural Development Department, State Govt. of Maharashtra under General Category Component (F.Y. 2022-23)	31.12.2025	7584832.00
99	Rural Development Department, State Govt. of Maharashtra under SC Category Component (F.Y. 2022-23)	31.12.2025	895000.00
100	Rural Development Department, State Govt. of Maharashtra under ST Category Component (F.Y. 2022-23)	31.12.2025	822000.00

Table15 Funds released to implementing agencies under RE-RTD Programme as on 01.01.2025 to 31.12.2025

Sr. No.	File No.	Project Title	Project Institute Name	Date	Sanction Amount (Rs.)
1.	31/2/2019-Solar R and D	"Flexible Perovskite Solar Cells and Intermediate Module"	Indian Institute of Technology Bombay, Powai, Mumbai	11.02.2025	40,00,000
2.	313-21/9/2022- Solar R and D	Centre of Excellence titled "Research and development of Ultra Low head and Hydrokinetic Turbines and performance prediction of small hydro turbine models"	IIT Roorkee	27.08.2024	25,00,000
3.	313-21/4/2024- Solar R and D	"Scale-up of Perovskite Tandem Solar Cells (Phase I)"	Indian Institute of Technology Bombay	16.06.2025	14,83,00,000
4.	353/5/2020-New Technology	"Green Hydrogen Mobility Projects at Leh".	NTPC Ltd. Noida, U.P.	19.06.2025	1,72,85,241
5.	313-21/11/2022-Solar R and D	"National Centre for Photovoltaic Research and Education (NCPRE) - Phase III"	Indian Institute of Technology Bombay	21.07.2025	3,91,09,576
6.	313-21/5/2024-Solar R and D	"Perovskite Solar Modules"	Indian Institute of Technology Bombay	16.06.2025	2,00,00,000
7.	313/08/2025- R and D COORD	"Harnessing of Geothermal Energy from Arunachal Himalaya"	Centre for Earth Sciences and Himalayan Studies, Department of Sciences and Technology, Government of Arunachal Pradesh	24.07.2025	1,00,00,000

8.	313/7/2025-Solar R and D COORD	"Pilot Integrated Commercial Geothermal Energy of 450 KWH by retrofitting unproductive oil and gas wells: Raageshwari Gas field, Barmer, Rajasthan"	IIT Madras	01.08.2025	1,00,00,000
9.	313-21/9/2022-Solar R and D	Centre of Excellence titled "Research and development of Ultra Low head and Hydrokinetic Turbines and performance prediction of small hydro turbine models"	IIT Roorkee	11.08.2025	3,50,00,000
10.	313/11/2025-R and D COORD	"Demonstration of power generation using integrated Solar-Geothermal Energies"	Pandit Deendayal Energy University	11.08.2025	7,00,000
11.	313/10/2025-R and D COORD	"A Pilot Project on Study and Testing of Shallow Geothermal Energy Potential in India"	IIT Delhi	17.09.2025	30,00,000
12.	226/2/2018-Wind	"Integrated Wind and Solar Resource Assessment through Mapping and Measurements"	National Institute of Wind Energy, Chennai	29.09.2025	1,21,95,000
13.	313/9/2025- R and D	"Design and Development of Geo Thermal Cooling for Air Conditioning System in 20x20x10 ft Room"	OTBI, Osmania University, Hyderabad	03.10.2025	1,00,000
14.	313/29/2025- R and D COORD	"Design and Development of Power Back up of 1 - 5kWh based on Sodium ion Cell operable at sub-Zero temperature for renewables"	Indian Institute of Technology, Roorkee, Uttarakhand	29.12.2025	70,00,000
15.	313/36/2025- R and D COORD	"Next Generation Energy Storage: Industrial scale manufacturing of Low-Cost High Temperature Latent Heat Storage Using Chloride Salts as the Storage medium"	Indian Institute of Technology Jodhpur	29.12.2025	20,00,000

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