



INDIA'S RENEWABLE POWER GENERATION: DRIVING SUSTAINABLE ENERGY TRANSFORMATION

Examining power generation of renewable energy, policy support,
investment opportunity & development track in India

Publishing – March 2025



Key Highlights – RE Power Generation in India

- The FY26 budget allocated INR 256.49 billion to the renewable energy sector, a 39% increase from last year's initial estimate of INR 191 billion for MNRE.
- The solar sector received the largest share of the allocation, with INR 241 billion, including INR 1.5 billion for solar power (grid) and INR 2.6 billion for PM KUSUM, which supports farmers by subsidizing solar pumps and solarizing existing grid-connected pumps.
- The bulk of the funding went to PM Surya Ghar Muft Bijli Yojana, which saw a significant 81% increase in allocation, rising from INR 110 billion in FY25 to INR 200 billion in FY26.
- The National Green Hydrogen Mission saw a major funding increase, with INR 6 billion allocated in the latest budget, double the INR 3 billion revised estimate for FY25, highlighting the government's commitment to boosting the green hydrogen economy. .

Research Base

India's Solar generation will be on rise with the support of government

The Ministry of Power (MoP) has mandated that all Renewable Energy Implementing Agencies (REIAs) and state utilities incorporate a minimum two-hour co-located energy storage system (ESS), equivalent to 10% of the installed solar capacity, in all solar tenders. The advisory also suggests that distribution licensees consider mandating two-hour storage for rooftop solar installations. If these requirements are fully implemented, approximately 14 GW/28 GWh of storage is expected to be installed by 2030. This move aims to address intermittency issues and provide essential support during peak demand hours.

The ESS mandate is crucial for enhancing grid stability and reliability by ensuring that energy generated during periods of low demand can be stored and used when solar power generation is low. The storage system can function in a single-cycle mode, charging with solar power and discharging during evening hours, or in a double-cycle mode, charging from the grid during low-demand hours and discharging during peak hours, alongside solar energy use. The Ministry's proposal aims to help India achieve its goal of 500 GW of renewable energy capacity by 2030, while mitigating the intermittency challenges associated with renewable energy projects.

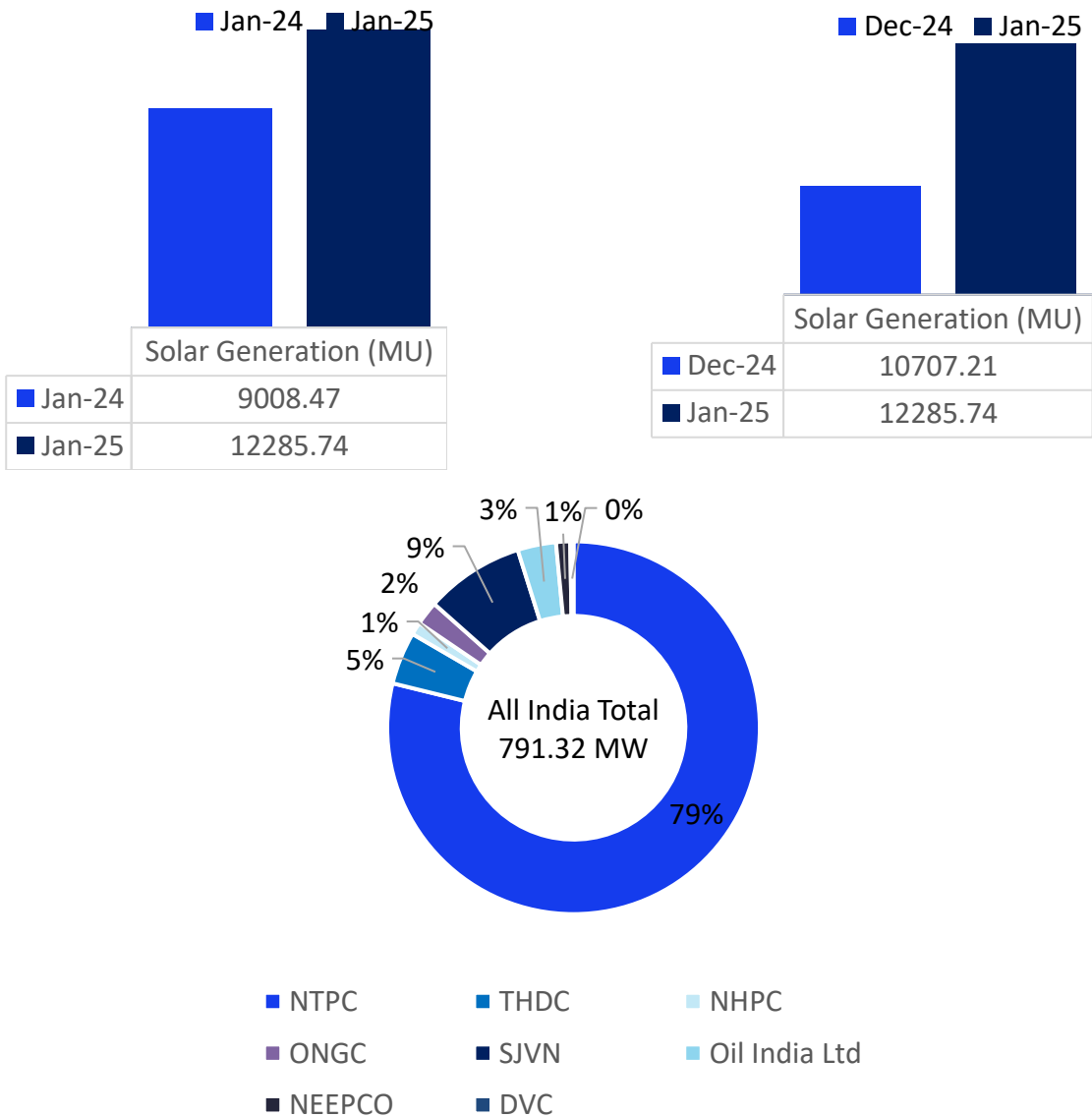
As of December 2024, the installed ESS capacity stands at 4.86 GW, including 4.75 GW of pumped storage and 0.11 GW of battery energy storage projects. The Central Electricity Authority's National Electricity Plan indicates that India will need 73.93 GW/411.4 GWh of storage to integrate the targeted 364 GW of solar and 121 GW of wind capacity by 2032. To support this, the Ministry of New and Renewable Energy has proposed a bidding trajectory of 50 GW annually for REIAs from 2024 to 2028, which includes at least 10 GW of wind tenders. Several standalone energy storage tenders have already been issued by REIAs and state agencies in recent months.

Research Objectives

- Examining the growth & trend of renewable generation in India.
- Investment opportunity in renewable energy.
- Pathways to Decarbonization and Net-Zero Targets
- Sustainability Strategies and Energy Efficiency Initiatives
- Grid Modernization and Energy Storage Integration
- Role of Public-Private Partnerships in Accelerating Growth
- Growth Patterns & Projections for Renewable Energy
- Comparative Analysis: Renewable vs Conventional Energy Growth
- All insights over each source of renewable energy
- State-wise Distribution of RE Installed Capacity

Figure 1.1

Solar Energy Generation Comparison and Player wise Solar PSU players



Research Results

- Emerging Trends in Renewable Energy
- Comparative Analysis: Renewable vs Conventional Energy Growth
- Renewable Energy's Role in India's Energy Mix Transformation
- Key Policy Changes & Government Initiatives
- Regulatory Challenges & Opportunities
- Role of Public-Private Partnerships in Accelerating Growth
- Breakthroughs in Energy Storage and Grid Integration
- Long-term Forecasts for Renewable Energy Installed Capacity
- Emerging Technologies and Their Impact on Future Growth

Research Case

Telangana Aims For 20,000 MW Renewable Energy Boost With New Policy By 2030

Telangana is set to introduce a new Renewable Energy policy aimed at expanding its renewable energy capacity by 20,000 MW by 2030. This ambitious goal will significantly enhance the state's current generation and storage capacity of over 11,000 MW. Deputy Chief Minister Mallu Bhatti Vikramarka revealed the plan during a stakeholder meeting for the Telangana Clean and Green Energy Policy-2024. The focus will be on standalone renewable energy projects, along with innovative solutions such as floating solar, waste-to-energy, and green hydrogen.

Currently, Telangana's renewable energy capacity stands at 11,399 MW, including 7,889 MW of solar energy and 2,518 MW of hydro energy. To meet the growing energy demand, the state is prioritizing the expansion of its clean energy infrastructure. Major infrastructure projects, like Future City and Pharma City, are expected to drive a substantial increase in peak electricity demand, which is projected to rise from 15,623 MW in FY 24 to 24,215 MW by FY 30, and further to 31,809 MW by FY 35.

The Telangana government is committed to providing clean, reliable, and affordable energy solutions to meet these future needs. The proposed Renewable Energy policy includes incentives such as reimbursement of Net SGST (State GST), stamp duty, transmission and distribution charges, and waivers on electricity duties. These measures aim to reduce the financial burden on developers, making large-scale investments more viable. The new policy is expected to be discussed in the state cabinet soon and will emphasize innovation and effectiveness to ensure Telangana meets its renewable energy goals while addressing the state's growing energy demands.

Renewable Energy of India: Growing center for Investments

- NTPC to invest Rs 96,000 crore in Chhattisgarh's clean energy projects.
- Tata Power to Invest ₹30,000 Crore in Assam for 5000 MW Renewable Energy Projects
- Assam Cabinet Approves Assam Integrated Clean Energy Policy 2025
- Amazon invests in three new wind energy projects in India
- Andhra Pradesh Approves 180 Billion Investments in Clean Energy
- Clean energy investments to surpass fossil fuels in 2025
- Welspun New Energy to invest Rs 13.5k cr in clean energy projects in Odisha
- Invest Karnataka-2025: Karnataka Attracts Major Renewable Energy Investments From JSW Neo Energy
- Invest Karnataka: State gets huge investment proposals; attracts Rs 5L cr

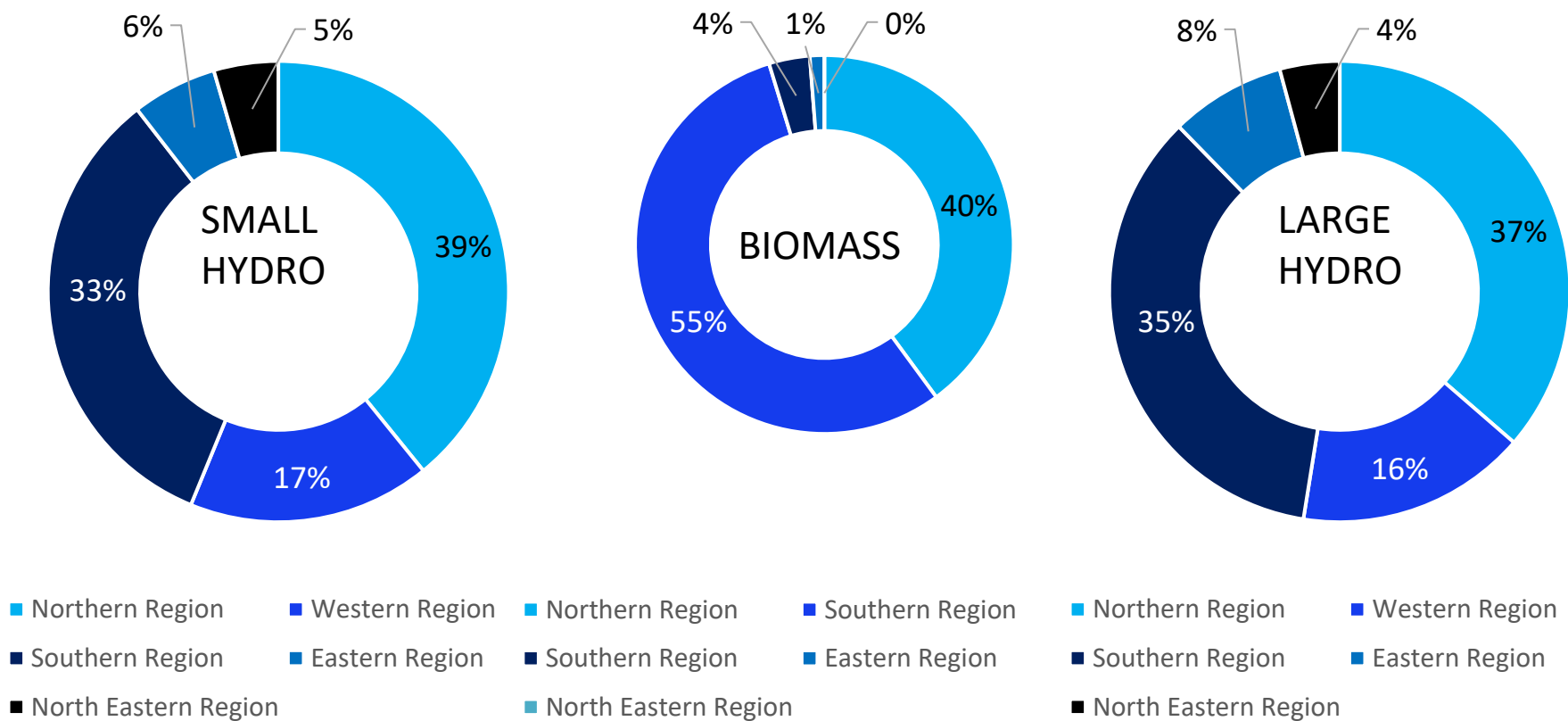


HIGHLIGHTS

1. RE capacity addition during January 2025 has been 2725.63 MW (Solar – 2465.11 MW, Wind – 202.10 MW, Waste to energy –43.52 MW, Biomass-14.90 MW).
2. All India RE generation during January 2025 has increased by 27.47 % as compared to January 2024.
3. Large Hydro Power generation during January 2025 as compared to January 2024 has increased by 16.31 % on All India Basis except Jammu & Kashmir, Ladakh, Punjab, Uttarakhand, Gujrat, West Bengal, Odisha, Mizoram and Meghalaya.
4. Solar Power generation during January 2025 as compared to January 2024 has increased by 36.38 % on All India Basis.
5. Wind Power generation during January 2025 as compared to January 2024 has increased by 38.34 % on All India Basis except Maharashtra, Andhra Pradesh and Telangana.
6. Biomass Power generation during January 2025 as compared to January 2024 has increased by 16.34 % on All India Basis except Tamil Nadu and Odisha.
7. Bagasse power generation during January 2025 as compared to January 2024 has increased by 3.74 % on All India Basis except Haryana, Uttar Pradesh, Telangana and Tamil Nadu.
8. Others (Waste to Energy) Power generation has increased by 7.21 % during January 2025 as compared to January 2024 on All India basis.
9. The generation from ISGS stations (Solar and Wind plants) for the month of January 2025 is 5627.26 MUs which is 19.69 % of the Monthly RE generation during the month.
10. The generation from CPSUs for the month of January 2025 is 836.69 MUs which is 2.93 % of the Monthly RE generation during the month.

Figure 1.2

Region wise contribution of other RE generation in January 2025



Must Buy For

- Power Distribution Utilities
- State Electricity Boards
- State Electricity Regulatory Commissions
- Central Power Generation Utilities
- State Power Generation Utilities
- Independent Power Producers
- Solar Power Developers
- Power Transmission Utilities
- Research Institutes / Industry Associations
- Power Project Funding Bodies
- Foreign Collaborating Agencies
- RE Project Developers

Key Queries Resolved

- What are the game-changing trends shaping RE power generation in India?
- How do policies and technologies support India's renewable energy transition?
- How are regulatory shifts and government policies shaping the renewable energy landscape in India?
- What market dynamics and technological advancements are impacting renewable energy integration and adoption?
- What strategies and opportunities are driving India's sustainable energy transition?
- What challenges hinder scaling renewable energy in India, and how can they be addressed?
- What are the emerging technologies like Geothermal, Tidal, and Waste-to-Energy?
- What is the long-term Forecasts for Renewable Energy generation?
- What are the pathways to decarbonization and Net-Zero Targets?
- What are the emerging Technologies and Their Impact on Future Growth?
- What lessons India should learn from Global Energy Transition Leaders?
- What opportunities and strategies can enhance India's renewable power generation?

Table of contents – In Focus



Key Contents & Coverage – In Focus

- | | |
|---|--|
| 1 | India's Renewable Energy Generation Landscape |
| 2 | Solar Energy Generation: Growth, Innovations, and Opportunities |
| 3 | Wind Energy Generation: Growth, Innovations, and Opportunities |
| 4 | Other Renewable Energy Sources: Hydro, Biomass & Emerging Technologies |
| 5 | Case Studies & Sector Insights |
| 6 | Future Focus & Strategic Outlook |

WANT TO LEARN MORE ABOUT THE REPORT ?

WRITE OR CALL TO US

at connect@eninrac.com
+91 935400 48963/47963, +91 9602338172