Contents

SCOPE & COVERAGE

Scope: ***Renewable Energy Statistics 2024-25*** presents a comprehensive overview of the renewable energy sector through detailed statistics on electricity installed capacity and electricity generation. The publication covers developments at national, state, and international levels, offering insights into the current status and growth of renewable energy sources under electricity sector.

Coverage: At national and state levels, the analysis is limited to installed capacity and energy generation from utilities. Pumped storage is included under large hydro. For international statistics, International Renewable Energy Agency (IRENA) includes electricity installed capacity and electricity generation from both utility and non-utility power plants in their publication. Unlike national classification, IRENA excludes pumped storage from hydropower, considering only "renewable hydro" as part of the renewable energy .

Data Sources:

- **Non-Renewable Energy and Large Hydro:** Installed capacity data is sourced from the National Power Portal of the Central Electricity Authority (CEA), while energy generation figures have been taken from the website of CEA, Ministry of Power.
- **Renewable Energy (Solar, Wind, Bio, and Small Hydro):** Installed capacity data is from Ministry of New and Renewable Energy (MNRE).
- **International Data:** Installed capacity and energy generation figures are drawn from IRENA's publication *Renewable Energy Statistics 2025*. Share of Renewable energy (rounded to two decimal places) is used to estimate the electricity installed capacity and electricity generation from non-renewable sources for each country.

Reference Period: National data on installed capacity and energy generation is reported on a financial year basis (April–March), while international data follows the calendar year (January–December).

INTRODUCTION

Energy is the heartbeat of our planet, intricately linked to the climate challenge we face today. The rapid growth of the global population and advances in civilization have resulted in an exponential growth in energy demand. Despite the well-known environmental and health risks posed by fossil fuels, our dependence on them persists.

To address the growing energy demand and mitigate climate change risks, transitioning from fossil fuels to renewable energy is crucial. To accomplish this objective, India's power sector is also undergoing a transformative journey, brimming with enthusiasm for tapping into Renewable Energy from diverse renewable sources.

In line with its mandate, Ministry of New & Renewable Energy has launched multiple initiatives to encourage the widespread adoption and production of renewable energy technologies, with the goal of accelerating India's shift to clean energy and reducing reliance on fossil fuels. PM-Surya Ghar: Muft Bijli Yojana stands as the world's largest domestic rooftop solar initiative, targeting the electrification of one crore households with solar energy by March 2027. This transformative scheme not only promotes sustainability but also enhances energy affordability by empowering millions of families to generate clean power at the grassroots level. Complementing this effort, the Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM) supports the deployment of solar pumps and grid-connected renewable power plants on barren and agricultural lands, strengthening rural livelihoods and reducing the agricultural sector's reliance on fossil fuels. In parallel, National Green Hydrogen Mission envisions India as a global leader in green hydrogen production and utilization. As a clean energy vector, green hydrogen holds immense potential to decarbonize hard-to-abate sectors such as fertilizer manufacturing, steel production, heavy transport, and shipping. Together, these flagship initiatives are accelerating India's transition towards a sustainable, affordable, and inclusive clean energy future. During 2024–25, Ministry rolled out a series of progressive initiatives to accelerate India's clean energy transition while fostering inclusive and sustainable growth. A key milestone was the launch of the Viability Gap Funding (VGF) Scheme for 1,000 MW offshore wind energy projects. Ministry also introduced Model Solar Village initiative under PM-Surya Ghar: Muft Bijli Yojana, aiming to establish one solar-powered model village in every district. To advance green hydrogen adoption, a dedicated scheme was launched to support pilot projects for hydrogen production and utilization in residential and community settings. In a significant move to empower tribal populations, MNRE unveiled the New Solar Power Scheme for Tribal and PVTG Habitations/Villages under PM JANMAN and DA JGUA , targeting electrification in remote areas. Additionally, National Bioenergy Programme was revised to include updated Central Financial Assistance (CFA) rates for pellet and briquette manufacturing plants, promoting biomass utilization and strengthening the country's renewable energy mix.

The Ministry's effective policy measures have led to significant progress, reflected in the rise of renewable energy capacity installations and increased green energy generation. This publication highlights the transformative evolution of the renewable energy sector across national, state, and international levels.

HIGHLIGHTS

ALL INDIA STATUS

Installed Capacity:

- As on 31st March 2025, India's total installed power generation capacity reached to 475.21 GW, reflecting a substantial increase of 72.18% from 275.99 GW of 2014–15. A major highlight of this transformation has been the rapid expansion of installed capacity under renewable energy sources , which recorded a growth of 170.69% over the decade. Within this segment, solar, wind, bio power, and small hydro power sources experienced a combined growth of over 330%, showcasing the country's strong commitment to clean energy.

- The year 2024–25 marked a significant milestone, with annual addition of installed capacity under renewable energy sector hitting a record of 29.53 GW, far outpacing 3.72 GW added by non-renewable sources. This was accompanied by a sharp rise in the annual growth rate of installed capacity under renewable energy sector , which reached 15.50%, compared to just 1.5% under non-renewable energy sector.

- At the end of 2024–25, installed capacity under renewable energy accounted for 46.32% of India's total electricity installed capacity, while non-fossil sources collectively contributed 48.04%.

- As per *Renewable Energy Statistics 2025* published by International Renewable Energy Agency (IRENA), India ranks 4th globally in total renewable installed capacity and holds the 3rd position in solar installed capacity, reflecting its strong international standing in clean energy.

Electricity Generation:

- During 2024–25, India's total electricity generation reached 1824.12 Billion Units (BU), marking a substantial increase of 65.02% from 1105.38 BU of 2014–15. A key driver of this growth has been the rising share of renewable energy in the electricity generation which generated 403.64 BU, accounting for 22.13% of the total electricity generated in the country.

- Electricity generation from wind, solar, small hydro, and bio-energy reached 255.01 Billion Units (BU), during 2024-25 , a sharp rise from 61.72 BU of 2014–15. Solar power has emerged as the leading contributor, with its generation growing at a compound annual growth rate (CAGR) of 41.13% since 2014–15.

- As per *Renewable Energy Statistics 2025* by IRENA, India ranks 5th worldwide in total electricity energy generation from renewable energy sources and holds the 3rd position in electricity generation from solar power.

STATE WISE STATUS

Installed capacity:

- As on 31st March 2025, Rajasthan, Gujarat, Tamil Nadu, Karnataka, and Maharashtra are the top 5 states in Renewable Energy installed capacity, collectively contributed 63.19% of country's total electricity installed capacity under renewable energy sector.
- Rajasthan, Gujarat, Maharashtra, Tamil Nadu, and Karnataka accounted for 73.17% of the installed capacity under solar power sector of the country.
- Wind energy was highly concentrated in the states of Gujarat, Tamil Nadu, Karnataka, Maharashtra, Rajasthan, Andhra Pradesh, and Madhya Pradesh contributing about 99.59% of total wind power installed capacity.
- Bioenergy sector was mainly driven by Maharashtra, Uttar Pradesh, Karnataka, and Tamil Nadu, which together accounted for 71.37% of installed capacity under bioenergy sector.
- Installed capacity under Large hydro power was primarily contributed by Himachal Pradesh, Uttarakhand, Karnataka, Jammu & Kashmir, Maharashtra, and Telangana, making up 57.66% of the total installed capacity of the sector.

Electricity Generation during 2024-25:

- During 2024–25, Rajasthan, Gujarat, Karnataka, Himachal Pradesh, Tamil Nadu and Maharashtra emerged as the leading states in generation of electricity from renewable sources. Together, they accounted for approximately 65% of the country's total generation of electricity from renewable sources.
- Rajasthan, Gujarat, Tamil Nadu, Karnataka, Andhra Pradesh and Maharashtra led solar power generation in India, together accounting for over 81% of the nation's total electricity generation from solar power.
- Gujarat, Tamil Nadu, Karnataka, Maharashtra, Andhra Pradesh and Rajasthan emerged as the key players in wind energy, collectively producing about 94% of India's total electricity generation from wind power.
- In the bioenergy segment, Maharashtra, Uttar Pradesh, Karnataka, Chhattisgarh, West Bengal and Punjab together accounted for approximately 78% of the country's renewable energy generation from bio-based sources.
- Himachal Pradesh, Jammu & Kashmir, Uttarakhand and Karnataka were the top 4 contributors in the electricity generation from large hydro power , collectively producing 56% of India's total electricity generation from the source.

Top 5 states in India in electricity Installed Capacity under Renewable Energy:

I. RAJASTHAN

- As on 31st March 2025, Rajasthan led the country in renewable energy installed capacity, reaching 34.14 GW, which accounted for 15.51% of the total installed capacity . Over the past seven years, state's renewable energy capacity has grown 4.68 times, significantly outpacing the 1.21 fold increase in non-renewable energy installed capacity. Notably, in 2021-22, installed capacity under renewable energy sector in Rajasthan surpassed that of non-renewable sources for the first time.

- Share of renewable energy in Rajasthan's total electricity installed capacity has risen sharply, from 40.51% of 2017-18 to 72.45% by 2024-25. Within the renewable energy segment, solar power continues to dominate, contributing 82.86% of the installed capacity, followed by wind power with a share of 15.26%.

- Rajasthan also ranked as the top state in electricity generation from renewable energy sources during 2024-25, producing 57.35 Billion Units (BU), representing 14.21% of the country's electricity generation from Renewable Energy sources. The state remained a leader in electricity generation from solar, wind, biopower, and small hydro power sources also with a combined electricity generation of 56.45 BU, accounting for 22.14% of the country's electricity generation from these sources.

- During 2024-25, electricity generation from renewable sources contributed 43.86% to Rajasthan's overall power generation. Of this, solar power was the major contributor with 85.61%, while wind power accounted for 12.10%.

II. GUJARAT

- As on 31st March 2025, Gujarat ranked as the second-largest contributor to renewable energy installed capacity in India, with a cumulative installation of 33.39 GW, accounting for 15.17% of the total electricity installed capacity of the country. During 2017-18 to 2024-25, state's renewable energy installed capacity expanded by nearly 3.58 times, compared to a modest 1.06-fold increase under non-renewable installed capacity. A significant milestone was achieved in 2023-24, when renewable energy installed capacity surpassed that of non-renewable sources for the first time.

- Share of installed capacity under renewable energy sector in Gujarat's total installed capacity grew substantially from 28.45% of 2017-18 to 57.36% by 2024-25. Within the renewable energy electricity installed capacity as on 31st March 2025 , solar power leads with a 55.39% share, followed by wind power having 37.96%.

- In 2024-25, Gujarat emerged as the second-highest electricity generator under renewable energy in the country, producing 52.00 Billion Units (BU), representing 12.88% of India's total electricity generation from renewable energy sources. The state also held the second position in electricity generation from solar, wind, bioenergy and small hydro power sources, collectively producing 45.97 BU and contributing 18.03% to the national total from these technologies.

- Renewable sources contributed 32.97% of Gujarat's total electricity generation during 2024-25. Within this, wind power accounted for the largest share with 48.92%, followed by solar power having 38.88%.

III. TAMIL NADU

- As on 31st March, 2025, Tamil Nadu ranked third in the country in terms of renewable energy installed capacity, with a total of 25.24 GW, contributing 11.47% to the national total. Over the last seven years, the state's installed capacity under renewable energy sector has grown 1.88 times, compared to a 1.07-fold increase in non-renewable energy installed capacity.

- Share of renewable energy in Tamil Nadu's total installed capacity enhanced from 44.70% of 2017-18 to 58.59% by 2024-25. Wind power remained the dominant source within the renewable installed capacity, accounting for 46.51%, followed by solar power with a share of 40.23%.

- In 2024-25, Tamil Nadu ranked 5th nationally in electricity generation from renewable energy sources, producing 38.41 Billion Units (BU), which represented 9.52% of India's total electricity generation from RE sources. In the case of electricity generation from solar, wind, bioenergy, and small hydro sources, state ranked fourth, with a total generation of 33.81 BU, contributing 13.26% to the country's electricity generation from these sources.

- Renewable energy accounted for 29.52% of Tamil Nadu's total electricity generation during 2024-25. Electricity generation from wind power contributed the largest share within this segment with a share of 45.11%, followed closely by solar power having 40.98%.

IV. KARNATAKA

- As on 31st March 2025, Karnataka ranked fourth in the country for electricity installed capacity under renewable energy sector, reaching 23.92 GW, which accounted for 10.87% of India's total electricity installed capacity under RE sector . Over the past seven years, the state's renewable energy installed capacity grew 1.47 times by 2024-25, compared to a 1.02-fold increase in non-renewable energy installed capacity.

- Share of renewable energy in Karnataka's total installed capacity has risen from 60.71% to 68.98% over the last 7 years. Within this sector, solar energy leads with a share of 40.47%, followed by wind energy having 30.74% share.

- In 2024-25, Karnataka ranked third in India for electricity generation from renewable energy sources producing 48.14 Billion Units (BU), which constituted 11.93% of the country's electricity generation from RE sources. Specifically for solar, wind, bio power, and small hydro power, the state also ranked third, contributing 34.09 BU, with a share of 13.37% of the total electricity generation from these sources.

- During 2024-25, renewable energy accounted for 48.10% of Karnataka's total electricity generation. Of this, solar power contributed 32.61%, while wind power generated 28.29%.

V. MAHARASHTRA

- As on 31st March 2025, Maharashtra ranked fifth in India for electricity installed capacity under renewable energy sector with 22.40 GW, representing a 10.18% share of total electricity installed capacity under renewable energy sector of the country. Over the past 7 years, the state's renewable energy installed capacity has expanded 1.94 times by 2024-25, while non-renewable energy sector saw a marginal decline of 0.02 times.