



Powering Atmanirbhar Bharat

India's Renewable Revolution: Building Clean Power, Made in India

August 15, 2025

Prime Minister Narendra Modi at his Independence Day address on 15th August, 2025:

- It is imperative for Bharat to be Atmanirbhar in the field of energy.
- We undertook the initiative and today, the solar energy capacity has increased **30-fold**, over the past 11 years.
- We are constructing new dams for clean energy production. Bharat is investing thousands of crores of rupees under **Mission Green Hydrogen**.
- We are also undertaking major initiatives in nuclear energy. **10 new nuclear reactors** are already operational. Resolve to increase our **nuclear energy capacity tenfold by 2047**.
- We achieved the **50% clean energy target in 2025 itself**, five years ahead of the scheduled goal for 2030.

Key Highlights of India's New and Renewable Energy Sector

- **Record RE buildout:** India added **29.52 GW** renewable capacity in FY 2024–25, taking total RE to **234.24 GW** (excluding **8.78 GW** of **Nuclear capacity**) as of **August 12, 2025**, (up from **198.75 GW** in FY 2023–24) and moving firmly toward the **500 GW non-fossil 2030 goal**.
- **Installed Solar capacity crosses 100 GW:** **116.24 GW** solar as of **August 12, 2025** (up from **2.82 GW** in 2014). Solar energy alone accounts for **48%** of India's total RE capacity.
- **Large Hydro capacity** stands at **49.62 GW** and **Small Hydro** stands at **5.10 GW**, as of August 12, 2025.
- **Wind energy capacity:** **51.67 GW** as of **August 12, 2025** (up from **21.04 GW** in 2014).
- **Biopower generation capacity** has increased to **11.59 GW** over the last 11 years.

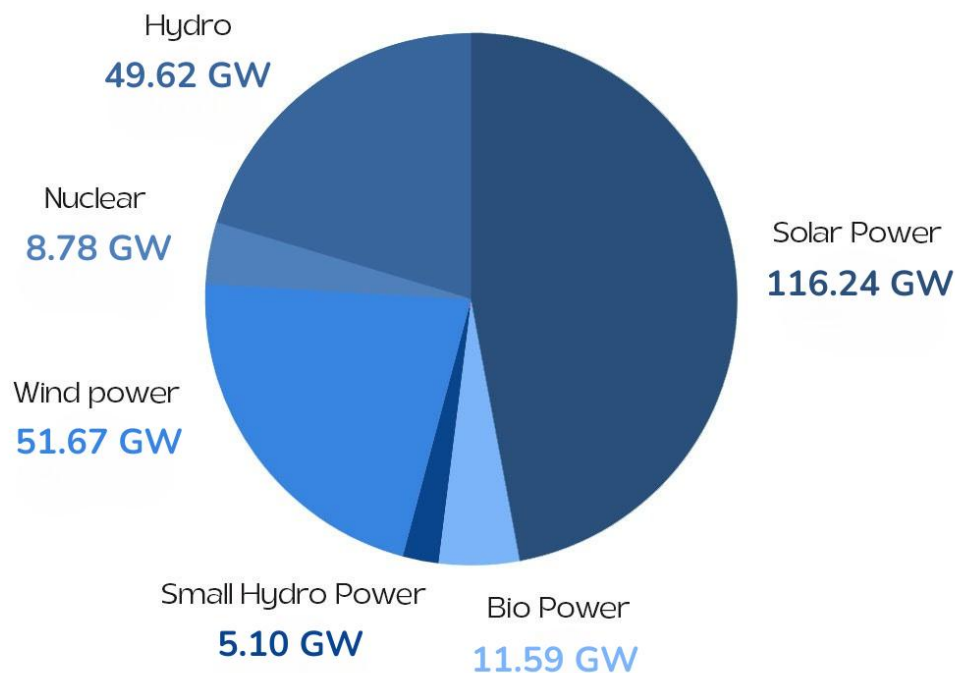
Introduction

Over the past decade, India's energy landscape has undergone a transformation of historic scale and speed. From being a net importer heavily dependent on fossil fuels, the country has emerged as a **global clean energy leader** — **ranking 4th globally in Renewable Energy (RE) Installed Capacity, 3rd in solar, 4th in wind, and holding the world's fastest-growing renewable energy program**. The shift since 2014 is more than just about gigawatts added; it's about building an energy ecosystem that is secure, affordable, inclusive, and proudly self-reliant.

Through bold policy reforms, targeted investment incentives, and rapid scale-up of domestic manufacturing, India is now laying the foundation for an **Atmanirbhar Urja sector** — one where every solar module, wind turbine, bio-pellet, and green hydrogen molecule increasingly **comes from Indian soil, fuels Indian industry, and powers Indian homes**.

Non-Fossil Fuel Installed Capacity in India

(Numbers in Gigawatt)



Source: Ministry of power

As of August 12, 2025

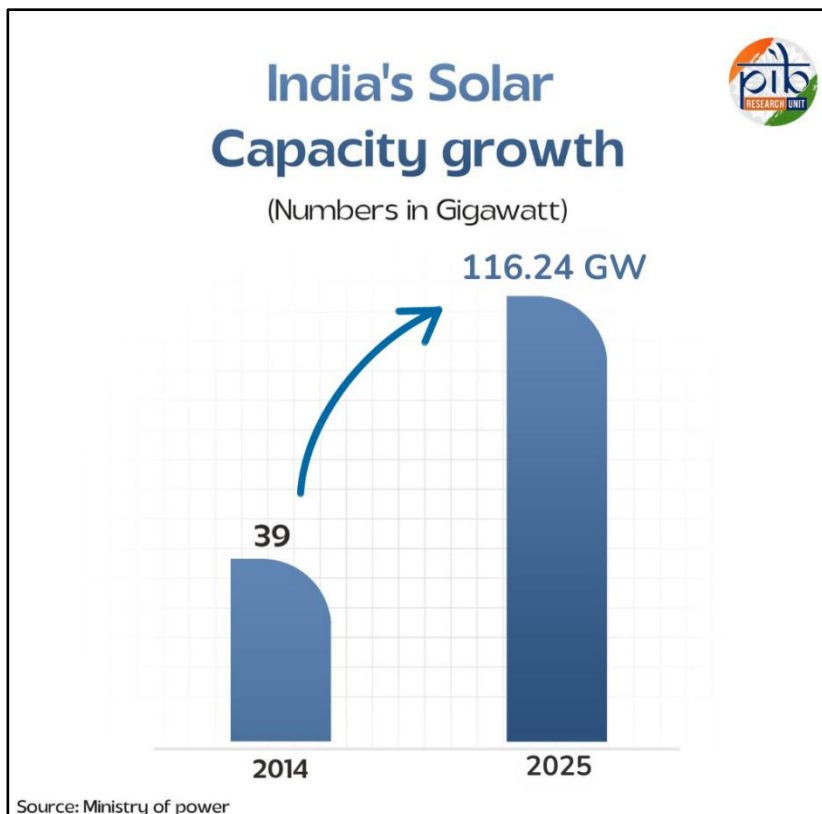
Key Policy Measures Driving Renewable Energy Growth (Post-2014)

Policy / Reform	Description
50 GW/year Central RE Bid Trajectory (FY 2023-24 → FY 2027-28)	Government has invited bids for 50 GW of renewable energy projects every year for 5 years.
Inter State Transmission System Charge Waivers	No inter-state transmission charges if projects commissioned on given dates: Solar/Wind by 30 June 2025 , Green Hydrogen till December 2030 , Offshore Wind till December 2032 .
Renewable Purchase Obligation followed by Renewable Consumption Obligation Trajectory till 2029-30	Obligations moved from just buying renewable power (RPO) to actually consuming it (RCO) and penalties for non-compliance.
Green Energy Open Access	Large consumers (≥ 100 kW) can buy renewable power directly from producers through the grid.
GTAM (Green Term Ahead Market)	GTAM has been launched to facilitate sale of Renewable Energy Power through exchanges.

These reforms collectively drive scale, bankability, and domestic value-addition — the essence of Atmanirbhar Urja.

Solar Energy

India's Solar capacity stands at **116.24 GW** as of **August 12, 2025** (up from 2.82 GW in 2014). Solar energy alone accounts for **48%** of India's total RE capacity.



PM-Surya Ghar: Muft Bijli Yojana

- Launched with a total outlay of **₹75,021 crore** for **1 crore household**. As of August 14, 2025, a total of **58.81 lakh applications** have been received on the national portal. A total of **17.24 lakh households** have been benefitted under the scheme. Subsidy worth **₹9,841.77 crore** has been auto-released.
- On August 9, 2024, the Ministry launched **Model Solar Village guidelines** under PM-Surya Ghar: Muft Bijli Yojana with an **₹800 crore outlay** to set up one Model Solar Village in **each district**. Revenue villages meeting population criteria will compete on installed renewable energy capacity, with the top village in each district winning **₹1 crore**.

Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM)

- Under **Component A** of PM KUSUM scheme, **640.99 MW** solar capacity has been installed as of August 14, 2025.
- Under **Component B** of PM KUSUM scheme, it is targeted to install 14 lakh pumps, out of which **8.53 lakh solar pumps** are installed as on August 14, 2025. The installation of these solar pumps has contributed towards replacement of diesel pumps and de-dieselization of the farm sector.
- Under **Component C**, **8,966 pumps (IPS)** and more than **6.45 lakh pumps (FLS)** have been solarized.
- As of July 31, 2025, it is estimated that the installation of solar pumps and solar plants under all components of PM KUSUM scheme has **mitigated 6.6 million tonnes of CO2 emissions**.
- Agriculture Infrastructural Funds (AIF) interest subvention (3%)** now covers **Component-A; Component-C** amended (peak-load basis) accelerating the installation of 616 MW out of 877 MW since November 2024.

Wind Energy

Onshore

- The country currently has the **fourth highest wind installed capacity in the world** with total installed capacity of **51.67 GW** (as of August 12, 2025) of which 4.15 GW was added during FY 2024-25.
- In addition, **29.10 GW** of projects are under implementation.

- Wind power generated **78.21 billion units of electricity** during April 1, 2024 to February 28, 2025, contributing **4.69% of total electricity generated in the country**.
- As per National Institute of Wind Energy, the estimated wind potential of the country is **1,164 GW** at 150 meters above ground level.
- Total **manufacturing capacity** of wind turbines is about **18 GW per annum**.

Offshore

- The Ministry's revised **Offshore Wind Energy Strategy (on September 26, 2023)** outlines a **37 GW bidding trajectory by 2030**, proposing **1 GW** of capacity with viability gap funding and transmission support, while also enabling private developers to access sea beds for projects under open access, captive use, or third-party sale without direct financial assistance.
- Notified on **December 19, 2023**, the **Offshore Wind Energy Lease Rules** regulate leasing of offshore areas for wind projects, with Solar Energy Corporation of India (SECI) issuing the first **4 GW** seabed lease tender under captive, bilateral, or open access modes in line with the national strategy.
- The Union Cabinet approved a **₹7,453 crore Viability Gap Funding scheme** for **1 GW** of offshore wind projects (500 MW each off Gujarat and Tamil Nadu) and port upgrades.

Bio-Energy: Fuelling Coal Savings and Rural Industry

Biopower generation capacity has increased to **11.59 GW** over the last 11 years. **Compressed Biogas (CBG)** generation capacity expanded from a single project with 8 Tonnes per Day (TPD) in 2014 to **150 projects** with a cumulative capacity of **1,211 TPD** as of March 2025.

The Ministry conducted a study through Administrative Staff College of India (ASCI) for assessment of biomass power and bagasse cogeneration potential in the year 2020-21. As per the study report finalized in 2021, **228 Million Metric Ton (MMT)** of surplus biomass is generated annually in India which has a power potential of **42 GW**.

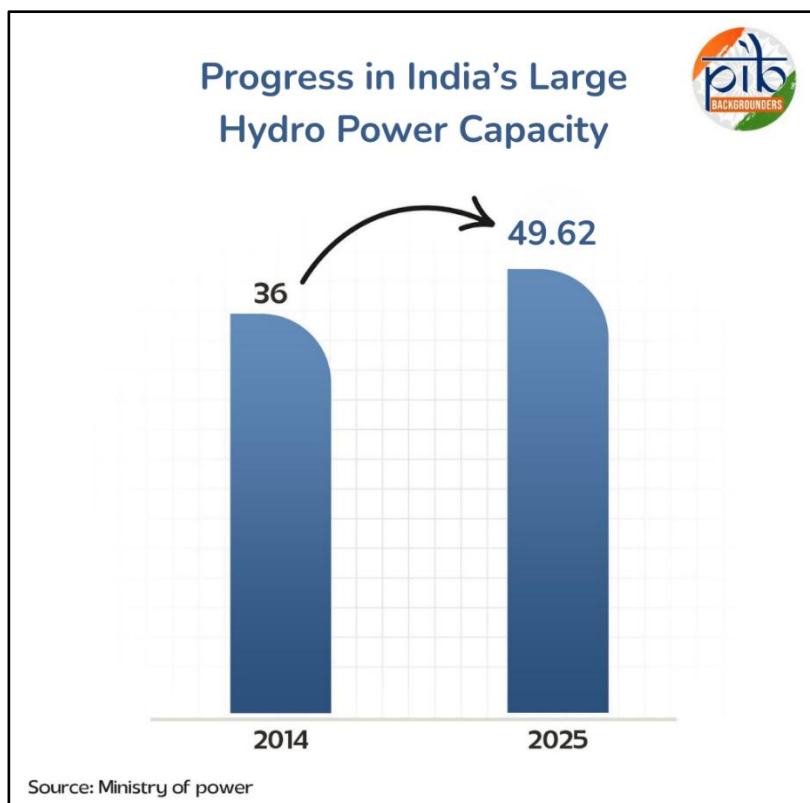
The Ministry notified the **National Bioenergy Programme** on **November 2, 2022** for implementation from April 1, 2021 to March 31, 2026, with a **total budget of ₹1,715 crore** in two phases. The programme provides **Central Financial Assistance for Bioenergy projects** under three components: Waste to Energy, Biomass (including briquettes, pellets, and non-bagasse cogeneration), and Biogas plants ranging from 1 m³ to 2,500 m³ per day.

As on March 31, 2025:

- Cumulative installed capacity of **biomass power and cogeneration projects** stood at about **9.82 GW** (Bagasse & IPP) and **0.92 GW** (Non-Bagasse).
- Cumulative installed capacity of **Waste to Energy projects** stood at about **840.21 MWeq**, with **309.34 MW** capacity of **grid connected projects**, and **530.87 MWeq** of **off-grid capacity**. Under the **Biomass Programme**, cumulative installed capacity is **11,583.82 MW**.
- A total of **51.04 lakh small biogas plants** (1-25 cubic meter) and **361 medium sized biogas plants** (above 25 m³ -2500 m³) with cumulative off grid power generation capacity of **11.5 MW** have been installed in the country.

Hydro & Small Hydro: Firming the RE Stack

Large Hydro sits at **49.62 GW installed**, as of August 12, 2025, while **Small Hydro** is **5.10 GW installed** with additional pipeline.



Green Hydrogen

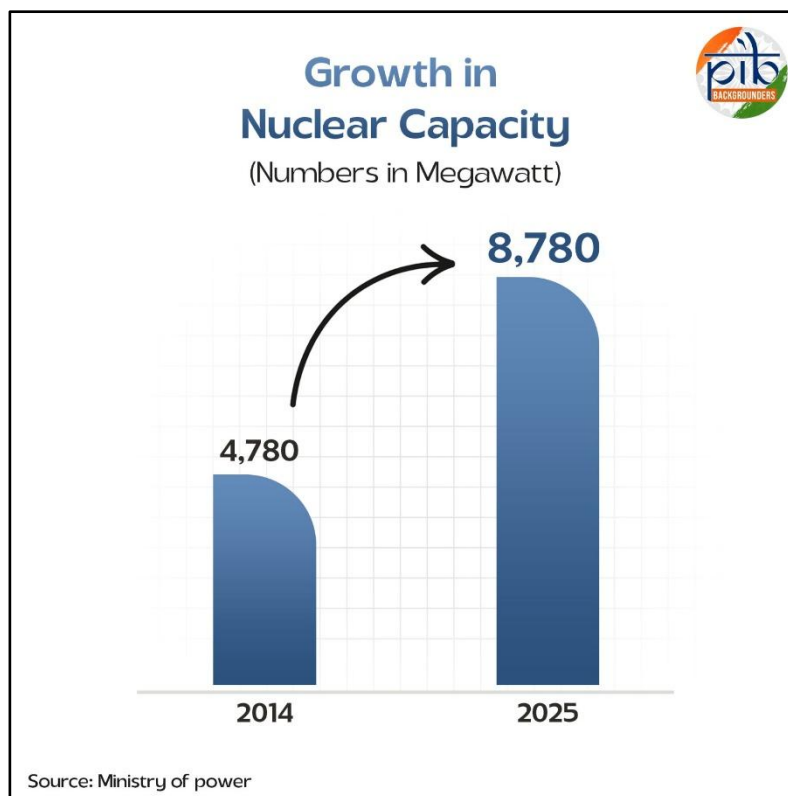
Approved by the Union Cabinet with an outlay of ₹19,744 crore up to 2029-30, the **National Green Hydrogen Mission** aims to make India a global hub for green hydrogen production, usage, and export. By 2030, it targets 5 MMT annual production capacity, 125 GW of additional renewable energy, ₹8 lakh crore investments, 6 lakh jobs, and 50 MMT CO₂ emission reduction. Key components include manufacturing incentives, pilot projects, R&D, hubs, skill development, and a standards framework. **Key achievements include:**

- Incentives awarded for 3,000 MW/year electrolyser and 8,62,000 TPA hydrogen capacity.
- Pilot projects in **steel, shipping, and mobility** sectors underway.
- **Hydrogen Valley Innovation Cluster** approved; national standards notified.
- 23 R&D projects awarded; ISTS waivers, EC exemptions, and ALMM relaxations implemented.
- **Kandla, Paradip, Tuticorin** identified as hydrogen hubs; multiple states launched GH₂ policies.

Nuclear Energy

India's nuclear energy sector has witnessed significant expansion and modernisation over the past decade. With a focus on clean energy, indigenous technology, and performance excellence, the country has scaled up both its operational capacity and future potential. **Key achievements** in the last 11 years include:

- **60% increase in annual nuclear electricity generation:** From 35,592 MUs (2014–15) to 56,681 MUs (2024–25).
- **71% rise in installed nuclear capacity:** Grown from around 4,780 Megawatt (MW) in 2014 to 8,780 MW in 2025, across 25 nuclear reactors operated by Nuclear Power Corporation of India Limited (NPCIL).
- 87% Plant Load Factor achieved in FY 2024–25.
- **Capacity Factor and Availability Factor above 80%** for all operating reactors achieved over the past five years.



New reactors commissioned in the last 11 years

- Kudankulam Nuclear Power Plant (KKNPP) Unit-1 (1000 MW) – December 2014
- Kudankulam Nuclear Power Plant KKNPP Unit-2 (1000 MW) – March 2017
- Kakrapar Atomic Power Project (KAPP) Unit-3 (700 MW) – June 2023
- Kakrapar Atomic Power Station (KAPS) Unit-4 (700 MW) – March 2024
- Rajasthan Atomic Power Project (RAPP) Unit-7 (700 MW) – April 2025

Conclusion

India's renewable energy advancements post-2014 are not isolated achievements; they are interlinked steps toward full energy sovereignty. The country has combined speed with strategy — scaling up capacity while simultaneously building domestic supply chains, integrating flexible grid solutions, opening access to communities, and pioneering future-ready technologies like offshore wind and green hydrogen.

The result is a virtuous cycle: local manufacturing creates jobs and resilience, competitive tariffs make clean energy affordable, and inclusive programs bring every citizen into the transition. As we look ahead to 2030 and beyond, India is not just meeting global commitments — it is setting a new template for how a nation can grow, decarbonize, and remain self-reliant. In the journey from energy dependence to energy leadership, the momentum is unmistakable, and the destination is clear: **an Atmanirbhar Bharat, powered by its own clean, green energy.**

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