POWERup

Update on India's electricity capacity, generation and investment

Institute for Energy Economics and Financial Analysis

3Q 2025

1. Installed capacity

Third quarter (3Q) 2025 update:

India added power-generating capacity of **16,071 megawatts (MW) in the third quarter of 2025 (July–September)**, with **non-fossil fuel-based capacity** accounting for **82.8%** of the additions **(Table 1).**

With these additions, India's cumulative **power generation capacity** crossed the 500 **gigawatts (GW)** mark, reaching **500.9GW,** with non-fossil fuel-based capacity accounting for **51.1%** of the total at **256GW,** by the end of September 2025. India has the third-largest power generation capacity after China (3,720GW) and the US (~1,300GW).

India has a target to achieve non-fossil fuel-based installed power generation capacity of 500GW, accounting for 50% of its total power generation capacity by 2030. India achieved the 50% capacity goal around mid-2025 and now must maintain it as its overall power generation capacity grows. The country also aims to achieve a non-fossil fuel-based power capacity of 500GW, nearly double the existing capacity, in the next five years.

Solar continued to dominate capacity additions with a **69%** share, followed by coal (17.2%), wind (9%), and large hydro (4.5%) in 3Q 2025. The following were the **notable additions** from energy sources other than solar and wind:

- **Coal power** capacity additions included the commissioning of THDC India Limited's Unit 2 (660MW) at Khurja, Uttar Pradesh, in September 2025; Meenakshi Energy Limited's (a subsidiary of Vedanta Limited) Unit 3 (350MW) and Unit 4 (350MW) at Thamminapatnam, Andhra Pradesh, in July and August 2025, respectively; Vedanta Limited's Unit 1 (600MW) in Chhattisgarh in July 2025; and TSGENCO's Yadadri thermal power station Unit 1 (800MW) in July 2025.
- The quarter witnessed the commissioning of **hydro power plants**, Units 1-3 (80MW each) of JSW Energy Limited's Kutehr hydroelectric project and Greenko's Units 7 and 8 (120MW each) at the Pinnapuram plant.

Non-fossil fuel-based power capacity accounted for 82.8% of all new capacity installed in 3Q 2025; Total cumulative power capacity crossed the 500 GW milestone.

Table 1: Installed power generation capacity (MW), by source, 3Q 2025

Energy source	As of 30 June 2025	As of 30 September 2025	New capacity added	% of new capacity added
Wind power	51,675	53,124	1,449	9.0
Solar power*	116,248	127,332	11,084	69.0
Small hydro	5,102	5,134	32	0.2
Biomass	10,743	10,757	14	0.1
Waste to energy*	853	854	1	0.0
Large hydro	49,378	50,108	730	4.5
Nuclear	8,780	8,780	0	0.0
Coal (+ lignite)	221,318	224,078	2,760	17.2
Gas	20,132	20,132	0	0.0
Diesel	589	589	0	0.0
Total	**484,819**	**500,889**	**16,071**	

*Includes grid and off-grid capacities

Source: Central Electricity Authority, GoI; IEEFA

Year-to-date (YTD) - January-September 2025 update:

India added **net new power capacity** of 38,887MW in the first nine months of 2025 (January-September) compared with 24,396MW in the first nine months of 2024, registering a sharp increase of **59.4%** in net capacity additions **(Table 2)**. Net new power capacity is calculated by deducting capacity retirements from the total new capacity added. Without considering retirements, the growth in **new capacity added** is even higher at **88.9%** year over year. A significant total of 7,326MW in capacity was retired in 2Q 2025, comprising non-operating coal and gas plants and a 100MW unit of a nuclear plant.

Non-fossil fuel-based power capacity accounted for 82.7% of the net new power capacity added in the nine months of 2025 as compared with 86.8% in 2024. Solar, wind, and large hydro continue to drive significant capacity additions in the non-fossil fuel category, keeping the share above 80%. India is also witnessing a renewed interest in solar rooftop installations, with an 81% year-over-year increase in the nine months of 2025 to 5,800MW of capacity addition.

The removal of the 100% waiver of inter-state transmission system (ISTS) charges from 1 July 2025 for vanilla solar and wind projects and the progressive application of these charges in full by July 2028, has expedited the commissioning of renewable energy projects. In addition, the favourable economics of renewable power plants, with or without storage, combined with a positive policy scenario, are driving the growth of renewables in India.

Net capacity installations in the first nine months of 2025 were higher by 59.4% compared with the same period in 2024.

Table 2: Power capacity additions by source (MW), nine months (January-September), 2024 vs 2025

Energy source	Net capacity addition, nine months 2024 (MW)	% of new capacity added, 2024~	Net capacity addition, nine months 2025 (MW)	% of new capacity added, 2025#
Wind power	2,627	10.7	4,961	10.7
Solar power*	17,444	70.9	29,468	63.4
Small hydro	89	0.4	33	0.1
Biomass	463	1.9	29	0.1
Waste to energy*	22	0.1	235	0.5
Large hydro	18	0.1	3,140	6.8
Nuclear	700	2.8	600	1.3
Coal (+ lignite)	3,254	13.2	5,108	11.0
Gas	-220	NA	-4,686	NA
Diesel	0	0.0	0	0.0
Total	**24,396**	**-**	**38,887**	**-**

*Includes grid and off-grid capacities
~As a % of total new capacity added: **24,616MW**
#As a % of total new capacity added: **46,499MW**

Source: Central Electricity Authority, GoI; IEEFA

Net capacity additions quarterly trend:

India recorded the highest-ever net capacity additions of **16,071MW** in **3Q 2025**, with significant contributions from solar (11,084MW), coal (2,760MW), and wind (1,449MW) **(Table 3)**. Solar is the lead driver, with capacity installations increasing from an average of about 3,500MW per quarter in 2022 to close to 10,000MW per quarter in 2025.

Record high net capacity additions in 3Q 2025 at 16GW.

Wind capacity additions per quarter also increased over the years, from about 500MW in 2022 to more than 1,500MW in 2025, accelerating with the rise in hybrid projects combining wind and solar, and in some cases, storage.

However, the surge in capacity installations, especially of solar and wind, is leading to curtailment of power generation during the daytime. Reports from Grid Controller of India indicate curtailment of solar generation rose by 12% in October 2025 compared with May 2025. India's upstream power sector is booming, while midstream transmission and distribution further downstream struggle to keep pace with increasing renewable power generation.

Table 3: Net power capacity additions by source (MW), last six quarters

Energy Source	2Q 2024	3Q 2024	4Q 2024	1Q 2025	2Q 2025	3Q 2025
Wind power	770	707	800	1,875	1,637	1,449
Solar power*	3,661	5,288	7,103	7,782	10,602	11,084
Small hydro	2	71	25	0	1	32
Biomass	0	369	4	15	0	14
Waste to energy*	7	11	16	220	13	1
Large hydro	0	0	40	760	1,650	730
Nuclear	0	0	0	0	600	-
Coal (+ lignite)	1	60	1,320	2,843	-495	2,760
Gas	-220	0	0	-285	-4,401	-
Diesel	0	0	0	0	0	-
Total	**4,221**	**6,505**	**9,307**	**13,210**	**9,607**	**16,071**

*Includes grid and off-grid capacities

Source: Central Electricity Authority, IEEFA

Capacity additions among large states:

Among large states (with installed renewable power generation capacity of 10 GW or more), **Maharashtra** led in renewable energy capacity installations (3,362MW) in 3Q 2025 **(Table 4)**, driven by a surge in **solar open access projects**. The state recorded a 240% year-over-year increase in open access capacity installations, as commercial and industrial consumers in sectors such as chemicals, fast-moving consumer goods, and textiles switched to solar power through the open access route amid soaring grid tariffs.

With these additions, Maharashtra's installed renewable power capacity reached 27,959MW by the end of September 2025, overtaking Tamil Nadu as the third largest state in renewable capacity, after Rajasthan and Gujarat. The top two states continued their high-growth trajectory, adding capacity of over 2,500MW in the quarter, supported by favourable policies and large renewable energy park developments.

Maharashtra takes the lead in 3Q 2025 renewable energy capacity installations.

Table 4: Renewable energy capacity installations (MW), large states*

	3Q 2024	4Q 2024	1Q 2025	2Q 2025	3Q 2025
Rajasthan	1,809	2,266	1,973	3,735	2,613
Gujarat	1,119	1,958	1,910	4,148	2,571
Madhya Pradesh	74	823	516	452	365
Maharashtra	1,251	1,491	1,780	1,911	3,362
Andhra Pradesh	25	82	940	1,358	504
Karnataka	211	224	1,316	613	970
Tamil Nadu	906	615	967	507	840

*States with an installed renewables capacity of close to 10GW or more.

Source: Central Electricity Authority, MNRE, IEEFA, JMK Research

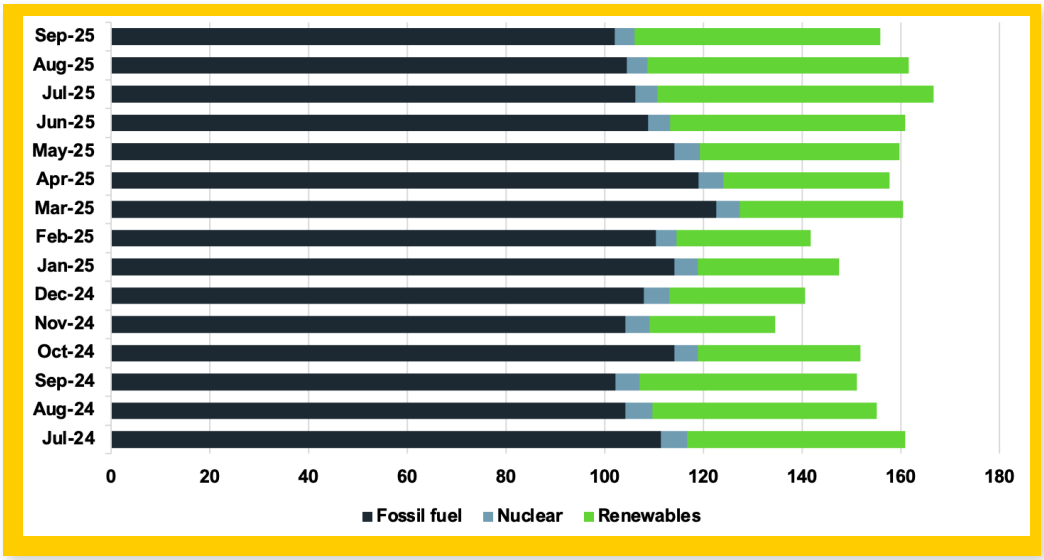
2. Generation

India's total **power generation increased by 3.6%** from 467.14 billion units (BUs) in 3Q 2024 to 484.07BUs in **3Q 2025 (Figure 1)**. In the same period, fossil fuel-based power generation decreased by 1.6%, nuclear power generation decreased by 18.6%, and **renewable power generation** increased by **18.6%**.

Renewable power generation in India saw a marked increase in 2025, driven by a strong monsoon season that boosted hydropower output. Significant capacity additions in solar and wind energy complemented this surge, boosting renewable power generation despite reports of curtailment in some regions. As a result, cheaper renewable electricity is increasingly displacing more expensive fossil fuel and nuclear power across the country.

Cheaper renewable power is increasingly displacing costlier fossil fuel and nuclear power.

Figure 1: Power generation by source (BU), monthly, 2024-25



Source: Central Electricity Authority, MNRE, JMK Research, IEEFA

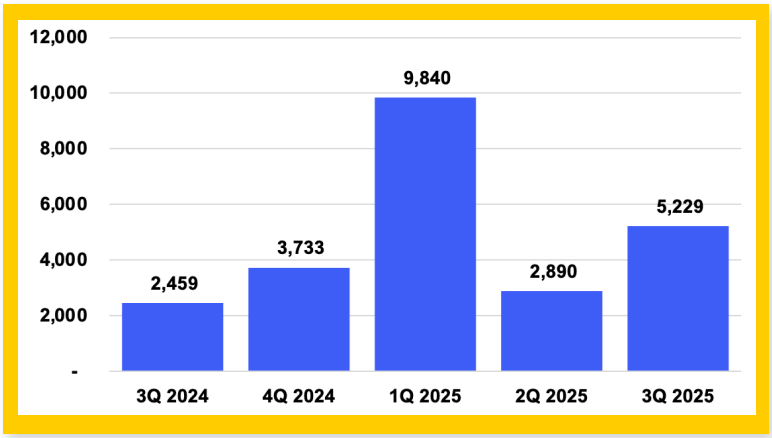
3. Investments

Renewable energy sector investments in the first nine months of 2025 overtake full-year investments in the previous years; the sector sees renewed interest from global investors.

Investments in the renewable energy sector **increased 112.6%** year-over-year from USD2,459 million in 3Q 2024 to **USD5,229 million in 3Q 2025** (**Figure 2**). Nine-month (January-September) investment numbers in 2025 already reached USD18 billion, well above the full-year numbers in 2022 (USD15.2 billion), 2023 (USD13.2 billion), and 2024 (USD10 billion).

Global private equity and sovereign funds are showing heightened interest in India's renewable energy sector, spurred by supportive energy transition policies and sustained economic growth. While solar power remains the primary driver of India's energy transition, emerging hybrid applications and the integration of energy storage to deliver firm power are further accelerating investment momentum.

Figure 2: Investments in India's renewable energy sector (USD million)



Source: JMK Research, news reports

Some significant investments and deals that were announced during the quarter include:

Adani Group	The Adani Group plans to invest about INR5.19 trillion (USD60 billion) in India's power sector by FY32, focusing on increasing power generation (especially renewables) and expanding transmission and distribution infrastructure. Within this, Adani Power outlined an INR1.82 trillion (USD21 billion) investment by FY30 to develop renewable power capacity from 14.2GW to 50GW.
Oyster Renewables	Oyster Renewables plans to invest INR160 billion (USD1.8 billion) to develop 2GW of renewable energy capacity in India by 2028. The company plans to commission 800MW by June 2026, with 55% of the capacity already under development. The company plans to develop wind-solar hybrid projects to supply reliable, round-the-clock renewable power across several states.
AM Green BV	AM Green BV, through its subsidiary AM Green Power BV, has acquired a 17.5% stake in Greenko Energy Holdings from Japan's ORIX Corporation for INR123 billion (USD1.4 billion), bringing its total shareholding to 25%. This investment is focused on the production of green hydrogen, ammonia, and biofuels.
SAEL Industries	SAEL Industries, through its subsidiary SAEL Solar P6, will invest INR82 billion (USD953 million) to establish an integrated solar manufacturing plant in Uttar Pradesh. The facility will include 5GW of solar cells and 5GW of solar module manufacturing lines.
Jakson Engineers	Jakson Engineers, a subsidiary of the Jakson Group, has announced plans to invest over INR80 billion (USD930 million) to establish a 6GW integrated solar manufacturing facility, including modules, cells, and wafers, in Madhya Pradesh.
Power Grid Corporation	Power Grid Corporation of India has approved plans to raise up to INR50 billion (USD570 million) through the private placement of unsecured, taxable bonds with a 10-year tenure. The issue, comprising an INR10 billion base size and an INR40 billion green shoe option, will offer annual interest determined via electronic bidding and be redeemable on maturity.
ACME Venus Urja Pvt. Ltd	ACME Venus Urja Pvt. Ltd., a subsidiary of ACME Solar Holdings, has secured INR39 billion (USD442 million) in a long-term (19-year) loan from the State Bank of India (SBI) for the development and construction of a 400MW firm and dispatchable renewable energy (FDRE) project.
KPI Green Energy Ltd	KPI Green Energy Ltd. has secured an INR32 billion(USD364 million) loan from SBI to partly finance its 250MW solar and 370MW hybrid renewable power projects in Gujarat.
ACME Hybrid Urja Pvt. Ltd	ACME Hybrid Urja Pvt. Ltd., another subsidiary of ACME Solar Holdings Ltd., has secured INR32 billion (USD364 million) in a long-term loan from Rural Electrification Corporation for 18 years for its 280MW FDRE project contracted with National Hydroelectric Power Corporation (NHPC).
Websol Energy System	Websol Energy System has announced an investment of INR30 billion (USD341 million) for a phased capacity expansion plan to add 4GW of solar cell capacity and 4GW of solar module capacity. This plan aims to expand existing capacity in Falta, West Bengal.
Statkraft	Statkraft agreed to sell a few renewable energy assets from its India portfolio to Serentica Renewables for approximately INR19.4-22.1 billion (USD220-250 million). The deal covers 1.5 gigawatt-peak (GWp) of assets in Rajasthan, including the 445 megawatt-peak (MWp) Khidrat solar plant, and 1GWp of solar and wind projects at various stages of development.
Oyster Green Hybrid Three	Oyster Green Hybrid Three, a subsidiary of Oyster Renewable Energy, has secured an INR18 billion (USD207 million) loan from the Union Bank of India for its 342MW solar-wind hybrid power project in Madhya Pradesh. The project has 20-year debt financing, with plans to connect to the Inter-State Transmission System (ISTS) grid under a 25-year power purchase agreement.

About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy.
www.ieefa.org

Charith Konda, Energy Specialist
ckonda@ieefa.org

Kaira Rakheja, Energy Analyst
krakheja@ieefa.org