POWERup

Update on India's electricity capacity, generation and investment

Institute for Energy Economics and Financial Analysis

2Q 2025

1. Installed Capacity

Second Quarter (2Q) 2025 Update:

India added power-generating capacity of **16,933 megawatts (MW) in the second quarter of 2025 (April–June)**, with **non-fossil fuel-based power capacity** accounting for **86.2%** of new capacity additions. Net capacity added was **9,607MW,** after accounting for total retirement capacity of 7,326MW **(Table 1).**

Non-fossil fuels-based power capacity accounted for 86.2% of all new capacity installed in 2Q 2025. Coal's share in total power capacity declined to 45.6%.

Solar continued to dominate capacity additions with a **62.6%** share, followed by coal (13.8%), large hydro (9.7%), and wind (9.7%). The following were the **notable additions** from energy sources other than solar and wind:

- **Coal power** capacity additions included the commissioning of JSW Energy's 350MW Unit 1 at Utkal, Odisha (formerly known as Ind-Bharat plant, acquired through proceedings under the National Company Law Tribunal); National Thermal Power Corporation's (NTPC) North Karanpura Unit 3 (660MW) in Jharkhand and Barh I Unit 3 (660MW) in Bihar; and Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited's Obra C Unit 2 (660MW).
- **Hydropower** capacity additions included National Hydroelectric Power Corporation's Parbati-II Unit 4 (200MW) in Himachal Pradesh, Tehri Hydro Development Corporation's Tehri Unit 1 (250MW) in Uttarakhand, and Greenko's Pinnapuram plant's Units 1-5 (240*5 = 1,200MW) in Andhra Pradesh.
- **Nuclear power** capacity addition of 700MW with the commissioning of Unit 7 of Nuclear Power Corporation of India Limited's Rajasthan Atomic Power Station.

While the quarter saw total retired capacity of 7,326MW across coal, gas, and nuclear units, only Madhya Pradesh Power Generating Company Limited's Satpura Units 6-9 (830MW) were permanently retired. The remaining capacities of 1,995MW (coal), 4,401MW (gas), and 100MW (nuclear) were temporarily removed from operational capacity due to prolonged outages.

The share of coal-based power in total power capacity declined to **45.6%** by the end of June 2025, with **non-fossil fuel-based power capacity** accounting for **50.1%**, a target India had set for 2030 and now aims to maintain.

Table 1: Installed Power Generation Capacity (MW), by Source, 2Q 2025

Energy Source	Capacity Added in 2Q 2025	% of New Capacity Added	Capacity Retired in 2Q 2025	Operating Capacity as on 30 June 2025
Wind Power	1,637	9.7	0	51,675
Solar Power[1]	10,602	62.6	0	116,248
Small Hydro	1	0.0	0	5,102
Biomass	0	0.0	0	10,743
Waste to Energy[1]	13	0.1	0	853
Large Hydro	1,650	9.7	0	49,378
Nuclear	700	4.1	100	8,780
Coal (+ Lignite)	2,330	13.8	2,825[2]	221,318
Gas	0	0.0	4,401	20,132
Diesel	0	0.0	0	589
Total	**16,933**	**100**	**7,326**	**484,819**

[1]Includes grid and off-grid capacities
[2]Includes 830MW of permanently retired capacity and 1,995MW of temporarily retired capacity

Source: Central Electricity Authority, GoI; IEEFA

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

India added **27,584MW** of new power generation capacity in 1H 2025 (January-June) compared with 18,110MW in 1H 2024, registering **a sharp increase of 52.3%** in capacity additions (**Table 2**). This significant growth was driven by increased capacity additions in solar, wind and large hydro.

Capacity installations increased by 52.3% in 1H 2025 compared with 1H 2024.

Renewables accounted for **89%** of total installations at 24,554MW. This represents a record-high expansion of renewables capacity in a six-month period in the country. The growth may have been driven by the expedited installation of large-scale solar and wind capacities prior to the imposition of Inter-State Transmission System (ISTS) charges starting 1 July 2025.

The Government of India has removed the 100% waiver of ISTS charges for pure-play wind and solar projects commissioned after 30 June 2025. The charges will be progressively increased every year to reach the full level by July 2028. However, the 100% waiver of ISTS charges will continue for co-located solar/wind battery energy storage projects and pumped hydro storage projects until 2028, for green hydrogen projects until 2030, and for offshore wind projects until 2032.

The commissioning of a major hydro power plant by Greenko at Pinnapuram (1,200MW) in 2Q 2025 further boosted renewable energy installations during the quarter.

Table 2: Power capacity additions by source (MW), 6 months (Jan-Jun), 2024 vs. 2025

Energy Source	Capacity Addition, 6 months 2024 (MW)	% of New Capacity Added, 2024	Capacity Addition, 6 months 2025 (MW)	% of New Capacity Added, 2025
Wind Power	1,920	10.6	3,512	12.7
Solar Power	12,156	67.1	18,383	66.6
Small Hydro	19	0.1	1	0.0
Biomass	94	0.5	15	0.1
Waste to Energy (off-grid)	10	0.1	233	0.8
Large Hydro	18	0.1	2,410	8.7
Nuclear	700	3.9	700	2.5
Coal (+ Lignite)	3,194	17.6	2,330	8.4
Gas	0	0.0	0	0.0
Diesel	0	0.0	0	0.0
Total	**18,110**	**100.0**	**27,584**	**100.0**

Source: Central Electricity Authority, GoI; IEEFA

Net Capacity additions trend:

Net power capacity additions indicate the volume of power capacity successfully added to the operational capacity after accounting for additions and retirements in a quarter. India needs to consistently augment operational power capacity to meet the growing electricity demand.

India added net capacity of **9,607MW** in 2Q 2025, which is the third highest in the last six quarters **(Table 3)**. As noted earlier, retirements occurred in coal and gas power capacities, while renewables and nuclear energy led the additions. India has been retiring gas-based power plants installed in the 2000s, anticipating high gas production from the Krishna-Godavari (KG) basin. However, gas production from the KG basin peaked in 2011 and has since fallen to negligible levels, pushing the capacity utilisation factors of gas-based power plants in south-eastern regions below 4%.

Solar capacity additions were at a record high in 2Q 2025. Coal and gas capacity retirements dented net power capacity additions.

India added a **record 10,602MW of solar capacity** in 2Q 2025—the highest quarterly addition to date. Wind capacity additions of 1,637MW were the second highest in the last 22 quarters that we reviewed. The surge in both solar and wind capacity installations was due to the anticipated imposition of ISTS charges.

Furthermore, the success of the PM Surya Ghar programme (for residential rooftop solar) and increased procurement under solar-wind hybrid, wind-solar with energy storage, and Firm and Dispatchable Renewable Energy (FDRE) models are driving solar and wind installations. This trajectory is expected to continue with about 16-17GW of solar and wind capacity likely to be installed in 2H 2025.

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

Energy Source	1Q 2024	2Q 2024	3Q 2024	4Q 2024	1Q 2025	2Q 2025
Wind Power	1,150	770	707	800	1,875	1,637
Solar Power	8,495	3,661	5,288	7,103	7,782	10,602
Small Hydro	17	2	71	25	0	1
Biomass	94	0	369	4	15	0
Waste to Energy (off-grid)	3	7	11	16	220	13
Large Hydro	18	0	0	40	760	1,650
Nuclear	700	0	0	0	0	600
Coal (+ Lignite)	3,193	1	60	1,320	2,843	-495
Gas	0	-220	0	0	-285	-4,401
Diesel	0	0	0	0	0	0
Total	**13,669**	**4,221**	**6,505**	**9,307**	**13,210**	**9,607**

Source: Central Electricity Authority, IEEFA

Capacity additions among large states[3]:

Among large states (in terms of installed renewable power generation capacity of close to 10GW or more), **Gujarat** and **Rajasthan** continue to lead in renewable energy capacity expansion, adding **4,148MW** and **3,735MW**, respectively, in 2Q 2025 **(Table 4)**. Growth in these states is driven primarily by a business-friendly environment that is accelerating solar and wind capacity installations, particularly through open access projects.

Other notable capacity additions in 2Q 2025 were in **Maharashtra (1,911MW)** and **Andhra Pradesh (1,358MW)**. Although Andhra Pradesh has been a laggard in renewable energy capacity additions in recent years, the state has witnessed increased investor interest since the launch of its new Integrated Clean Energy Policy in October 2024. Further, the commissioning of a major hydro power project (1,200MW) by Greenko helped the state register strong numbers in 2Q 2025.

Rajasthan and Gujarat led the race in renewable energy capacity additions.

Table 4: Renewable Energy Capacity Installations (MW), Large States

	2Q 2024	3Q 2024	4Q 2024	1Q 2025	2Q 2025
Rajasthan	1,068	1,809	2,266	1,973	3,735
Gujarat	944	1,119	1,958	1,910	4,148
Madhya Pradesh	81	74	823	516	452
Maharashtra	350	1,251	1,491	1,780	1,911
Andhra Pradesh	38	25	82	940	1,358
Karnataka	725	211	224	1,316	613
Tamil Nadu	592	906	615	967	507

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

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

2. Generation

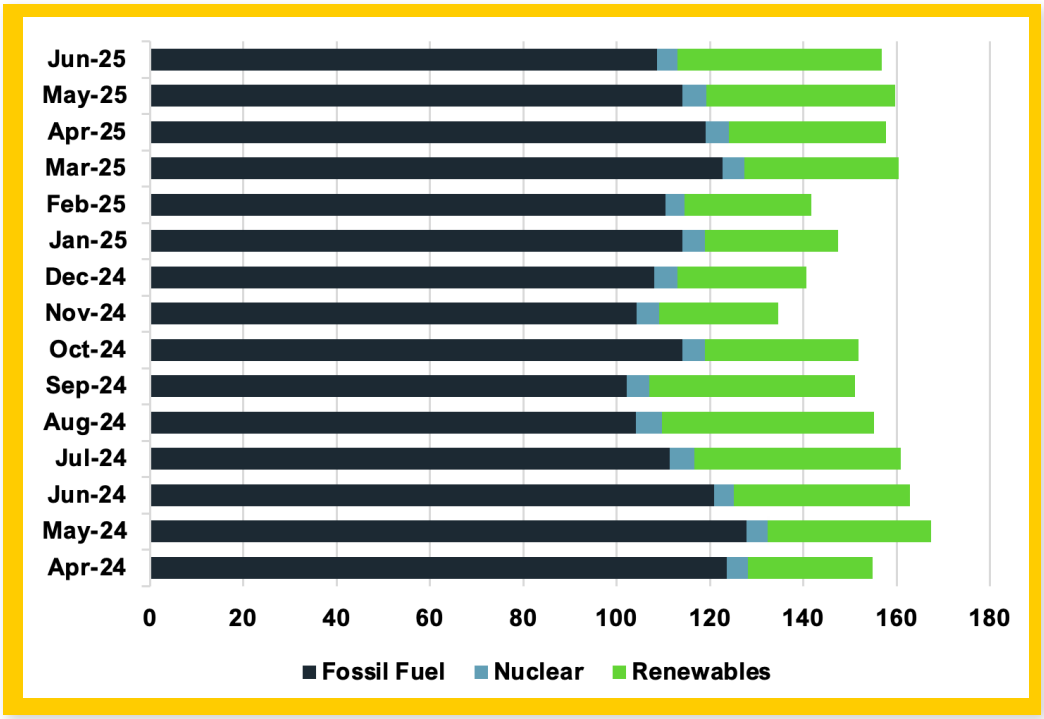
India's total **power generation declined by 2.3%** from 485.14 billion units (BUs) in 2Q 2024 to 474.19BUs in 2Q 2025 as the early onset of monsoon lowered peak demand in May 2025 **(Figure 1)**. This has also replenished dams and reservoirs, resulting in higher hydropower generation during 2Q 2025. For instance, power generation from large hydropower plants increased by 20.8% from 14.71BUs in June 2024 to 17.77BUs in June 2025.

Boosted by increased hydropower generation and higher solar and wind power generation, overall **renewable energy generation increased by 18.3%** from 99.61BUs in 2Q 2024 to 117.83BUs in 2Q 2025. Nuclear power generation also increased by 11% with the commissioning of one additional unit (700MW) in April 2025.

Fossil fuel-based power generation declined by 8.22% from 372.42BUs in 2Q 2024 to 341.81BUs in 2Q 2025 as renewable power generation increased and peak power demand moderated during the period. The share of fossil fuel-based power generation also fell to **72.1%** in 2Q 2025 from 76.8% registered in 2Q 2024.

Renewable power generation grew substantially due to the early onset of monsoons and a moderated peak in summer electricity demand.

Figure 1: Power Generation by Source (BU), Monthly, 2024-25[4]



Source: Central Electricity Authority, MNRE, JMK Research, IEEFA
[4]Data for June 2025 is provisional

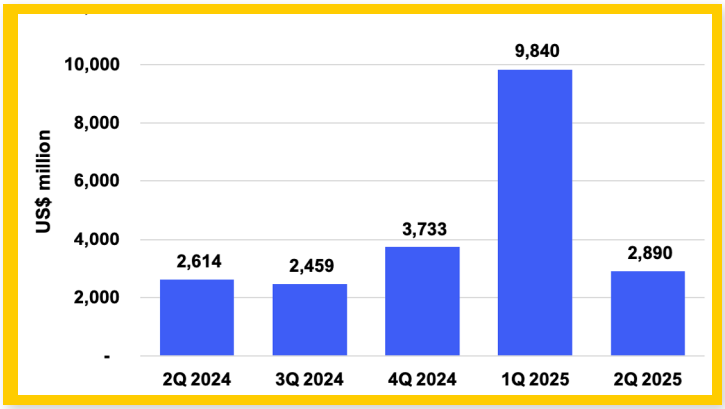
3. Investments

Renewable energy investments increased year-over-year, but fell from record highs achieved in 1Q 2025.

Investments in the renewable energy sector **increased 10.6%** year-over-year from US$2,614 million in 2Q 2024 to **US$2,890 million in 2Q 2025** (**Figure 2**). However, investments dropped by 3.4 times quarter-on-quarter from the record-high investments achieved in 1Q 2025. The record-high investments in 1Q 2025 were due to big-ticket acquisitions and large debt raised during the quarter as noted in the previous edition of this newsletter.

We expect investments in the renewable energy sector to continue their upward trajectory, driven by rising energy demand and a largely favourable policy outlook.

Figure 2: Investments in India's Renewable Energy Sector (US$ million)



Source: JMK Research, News Reports

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

Adani Group	Adani Group plans to raise approximately Rs430 billion (US$5 billion) in debt and equity for its 30GW renewable energy park in Khavda, Gujarat.
Ecoren Energy and GPSR Arya	Telangana has secured Rs290 billion (US$3.37 billion) in renewable energy investments under the Telangana Clean and Green Energy Policy 2025 from Ecoren Energy and GPSR Arya. Ecoren will develop wind-solar hybrid, floating solar, and ground-mounted solar projects across the state, with a total capacity of over 5,500MW.
Tata Power	Tata Power plans to invest Rs250 billion (US$2.9 billion) in FY2025-26, with 50% allocated to renewables, 20% to fossil fuel-based power generation, and 30% to transmission and distribution infrastructure.
Onix Renewable	Onix Renewable plans to invest Rs250 billion (US$2.9 billion) over three years to develop 7GW of renewable energy capacity, including 5GW for solar module and cell production. By 2030, the company aims to scale up to 10GW with a total outlay of Rs300 billion (US$3.4 billion).
ReNew Energy Global	ReNew Energy Global will invest approximately Rs220 billion (US$2.5 billion) to set up a 2.8GW hybrid renewable energy project comprising 1.8GWp solar, 1GW wind, and 2GWh battery storage in Anantapur, Andhra Pradesh.
JSW Energy	JSW Energy plans to invest Rs140 billion (US$1.6 billion) to scale up its recently acquired O2 Power's renewable capacity to 4.7GW by 2027. An additional Rs180 billion (US$2 billion) has been earmarked for FY2025-26 to complete ongoing projects, including the 11.3GW currently under construction.
BC Jindal Group	BC Jindal Group will invest Rs150 billion (US$1.7 billion) by 2030 in renewable energy component manufacturing, starting with Rs40 billion (US$465 million) for solar cells, modules, batteries, and solar glass units.
Blackstone	Blackstone has submitted a Rs128 billion (US$1.5 billion) non-binding bid to acquire Statkraft India's 2GW renewable energy portfolio—its first attempt at acquiring renewable energy assets in India. The deal, part of Statkraft's asset sale, faces competition from KKR-backed Serentica, Sembcorp, and BlackRock.
NTPC	NTPC has secured Rs64.3 billion (US$750 million) External Commercial Borrowing Syndicated Term Loan for renewable energy projects, facilitated by the Bank of Baroda and HDFC Bank.
ACME Solar	ACME Solar secured Rs24.9 billion (US$291 million) in long-term refinancing from the State Bank of India and Rural Electrification Corporation Limited to reduce debt costs for 490MW of operational renewable energy projects in Andhra Pradesh, Rajasthan, and Punjab. The move supports its credit upgrade and cost reduction goals.
BluPine Energy	BluPine Energy has secured Rs24 billion (US$279 million) in debt financing for a 150MW hybrid FDRE project in Karnataka, slated for commissioning in 2026. Standard Chartered Bank is the lead arranger for the solar-wind-battery project.
IndiGrid	IndiGrid will acquire ReNew Solar Aayan's 300MW solar project in Rajasthan and Koppal Narendra Transmission Limited—a build-own-operate-maintain Inter-State Transmission System in Karnataka—for a combined value of Rs21 billion (US$245 million).

About IEEFA

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Charith Konda, Energy Specialist
ckonda@ieefa.org

Kaira Rakehja, Energy Analyst
krakehja@ieefa.org