



UPSC & STATE PCS CURRENT AFFAIRS · UJIYARI.COM

EDITORIAL ANALYSIS

India's 520 GW Moment — What the Renewable Milestone Conceals

THE HINDU

27 February 2026

SUBJECTS COVERED

ECONOMY

ENVIRONMENT

GS PAPERS

GS3

CURATED & WRITTEN BY

Bharat Choudhary

UPSC Educator & Content Creator •

[linkedin.com/in/epicbharat](https://www.linkedin.com/in/epicbharat)

Free UPSC & State PCS Resources

ujiyari.com

India's 520 GW Moment — What the Renewable Milestone Conceals

The Hindu 27 February 2026

GS3

TH The Hindu

MAINS RELEVANCE: GS Paper 3



INTERVIEW ANGLE

"India has achieved 50% non-fossil installed capacity but coal still generates 70% of electricity. How should India navigate the tension between its renewable ambitions and energy security, especially given DISCOMs' financial fragility and the need for a just transition for coal workers?"

India's crossing of 520 GW installed power capacity — with more than half from non-fossil sources — is a genuine milestone. But headline numbers carry a risk: they can make a messy, ongoing transition look cleaner and more complete than it is. The gap between the 520 GW installed capacity figure and the underlying realities of India's power sector deserves the same attention as the milestone itself.

CAPACITY IS NOT GENERATION

The most important caveat about the 520 GW figure is one that rarely appears in official announcements: **installed capacity is not the same as electricity generation**. Solar panels produce power only when the sun shines; wind turbines only when the wind blows. Their **capacity utilisation factors** (the proportion of time they operate at maximum output) are far lower than coal plants:

Source	Typical capacity utilisation factor (India)
Solar (utility)	~20–23%
Wind	~25–30%
Coal	~55–65%
Hydro	~35–40% (variable)

The consequence: despite contributing more than 50% of installed **capacity**, non-fossil sources contribute only about **30% of electricity generation** in India. Coal, despite its declining share in installed capacity, still produces roughly **70% of actual electricity**. The transition in generation — which is what matters for

emissions — lags the transition in capacity by a substantial margin.

THE DISCOM PROBLEM: THE WEAKEST LINK

India's electricity distribution system is administered by **state-owned DISCOMs** (electricity distribution companies). Their aggregate debt stands at approximately ₹6 lakh crore. This is not a new crisis — it has persisted through multiple reform cycles:

UDAY scheme (2015): Restructured DISCOM debt, but structural problems persisted

RDSS (Revamped Distribution Sector Scheme, 2021): ₹3.03 lakh crore scheme to modernise distribution and reduce aggregate technical and commercial (AT&C) losses

DISCOMs are caught in a political economy trap: they buy power at market rates but sell at below-cost tariffs (often for political reasons — free electricity schemes for farmers, household consumers). The result is:

Reluctance to sign long-term **PPAs (Power Purchase Agreements)** for new renewable capacity

High **AT&C losses** (~17–20% national average, much higher in poorer states)

Inability to invest in grid modernisation needed for renewable integration

Without DISCOM reform, India's renewable capacity additions will not translate into affordable, reliable green electricity.

GRID INTEGRATION: THE NEXT FRONTIER

Adding renewable capacity is the easier part. Integrating it into a stable grid is far harder. Solar generation peaks around noon; demand peaks in evenings. Wind is unpredictable. As renewable penetration rises, three critical investments become urgent:

BATTERY ENERGY STORAGE SYSTEMS (BESS)

India has announced 4 GWh of BESS tenders, but this is tiny relative to the grid's needs. BESS capital costs are falling globally (~\$150/kWh and declining), but financing BESS in India — particularly for DISCOMs with poor balance sheets — remains a challenge.

PUMPED HYDRO STORAGE (PSP)

India has identified over **96 GW of pumped hydro potential** across Himalayan and peninsular sites. PSP stores energy by pumping water uphill when power is surplus; releases it through turbines when demand peaks. It is the most cost-effective large-scale storage technology. But PSP projects take 8–12 years to build and require environmental clearances.

TRANSMISSION INFRASTRUCTURE

Green Energy Corridors (GEC Phase I and II) are being built to evacuate renewable power from Rajasthan, Gujarat, Tamil Nadu, Karnataka, and Andhra Pradesh to demand centres. But transmission bottlenecks remain, particularly for the massive planned solar parks in Rajasthan's Thar Desert.

THE JUST TRANSITION CHALLENGE

India is the world's second-largest coal producer and consumer. The coal sector directly employs roughly **5 lakh workers** in mining alone; indirectly, millions more depend on coal-linked industries. States like Jharkhand, Chhattisgarh, Odisha, and Madhya Pradesh — already among India's least developed — would bear the greatest burden of coal phase-down.

The **Just Transition** concept (which India accepted in the Glasgow Climate Pact, COP26, 2021) requires:

Retraining and alternative employment for coal workers

Economic diversification for coal-dependent communities and states

Finance — India has argued (correctly) that developed countries must fund just transition in developing nations

India walks a careful diplomatic line: it commits to renewable expansion and net-zero by 2070 while rejecting a hard coal phase-out deadline. The 520 GW milestone strengthens India's negotiating position — but the domestic just transition agenda is far less developed than the renewable target agenda.

WHAT WOULD A MORE COMPLETE TRANSITION LOOK LIKE?

The 520 GW milestone is a genuine achievement, but a complete transition requires:

DISCOM reform — without financially healthy distributors, neither the government nor private investors will sign renewable PPAs at scale

Storage deployment — at least 50 GWh of BESS and a pipeline of pumped hydro projects

Green hydrogen — for industrial decarbonisation (steel, cement, chemicals) and seasonal storage

Coal transition policy — a credible roadmap for closing uneconomic coal plants while protecting worker livelihoods

Generation mix targets — moving from capacity targets (500 GW non-fossil by 2030) to generation targets (50% renewable electricity by 2035)

The 520 GW number is worth celebrating. But the real test is not megawatts of capacity — it is whether Indian households and industry get reliable, affordable, clean electricity. That test is still being run.

UPSC RELEVANCE

DISCOMs, AT&C losses, UDAY, RDSS, BESS, PSP, GEC, just transition, Glasgow Climate Pact.

MAINS GS-3:

India's energy transition challenges; grid integration; DISCOM reform; just transition for coal workers.

INTERVIEW:

“Should India set a coal phase-out date? What are the economic and geopolitical implications?”

★ FACTS CORNER — KNOWLEDGEPEDIA
CAPACITY VS GENERATION GAP:

Non-fossil installed capacity: **>50%** of 520 GW

Non-fossil electricity generation: **~30%** of total generation

Coal generation share: **~70%** (despite <50% installed capacity share)

Solar capacity utilisation: **~20–23%** | Coal: **~55–65%**

DISCOM FINANCE:

Aggregate DISCOM debt: **~₹6 lakh crore**

AT&C losses (national average): **~17–20%**

UDAY scheme (2015): Restructured DISCOM debt — temporary fix, structural issues persist

RDSS (2021): ₹3.03 lakh crore scheme for distribution modernisation

STORAGE TECHNOLOGIES:

BESS: Battery Energy Storage Systems; global cost **~\$150/kWh** and falling

PSP: Pumped Hydro Storage; India potential: **>96 GW**; 8–12 year construction timeline

Green Hydrogen: NGHM (National Green Hydrogen Mission, 2023) targets 5 million tonnes/year by 2030

JUST TRANSITION:

Coal mining employment: **~5 lakh direct workers** in India

Coal-dependent states: Jharkhand, Chhattisgarh, Odisha, Madhya Pradesh

Glasgow Climate Pact (COP26, 2021): Calls for “phasing down” (not out) coal; India insisted on this language change

India net-zero target: **2070**

OTHER RELEVANT FACTS:

India is world’s **2nd largest coal producer and consumer** (after China)

Khavda Solar Park (Gujarat): **30 GW** planned — will be world’s largest

Bhadla Solar Park (Rajasthan): **2,245 MW** — currently world’s largest operating solar park

Solar tariff journey: **₹12+/unit (2010)** → **<₹2/unit (2025)** — world’s cheapest

Power Purchase Agreement (PPA): Long-term contract between generator and DISCOM for buying power at fixed tariff

Sources: The Hindu, PIB, Ministry of Power

CURATED & WRITTEN BY

Bharat Choudhary

UPSC Educator & Content Creator

 [linkedin.com/in/epicbharat](https://www.linkedin.com/in/epicbharat)

Published on ujjari.com · Free UPSC & State PCS Current Affairs