A RESEARCH REPORT BY THE ALTIVUS RESEARCH DESK

# India's Renewable Energy Transition

*Inside the build out toward 500 gigawatts: the capacity, the capital, the bottlenecks, and what comes next*

Energy | Infrastructure | Economics | Strategy

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## Executive Summary

India's renewable energy build out has become one of the largest infrastructure programs underway anywhere in the world. Non fossil power capacity, which combines solar, wind, hydro, bioenergy and nuclear, reached 283.46 gigawatts as of March 2026, up from just 76.38 gigawatts in March 2014, a near fourfold increase in just over a decade. Solar capacity alone has grown more than fifty times over the same period, from 2.82 gigawatts to 150.26 gigawatts, according to data released by India's Ministry of New and Renewable Energy.

The country added a record 55.29 gigawatts of non fossil capacity in the 2025 to 2026 fiscal year, the highest single year addition on record and comfortably ahead of the roughly 46 gigawatts a year that analysts estimate is required to reach the government's target of 500 gigawatts of non fossil capacity by 2030. India met its Paris Agreement pledge of sourcing 50 percent of installed capacity from non fossil sources in June 2025, five years ahead of schedule, and renewable sources met more than half of peak electricity demand for the first time in July 2025.

Behind these headline numbers sit three significant constraints. The first is storage: India's installed battery energy storage capacity is on track to grow roughly tenfold in 2026 alone, yet even that pace leaves the country far short of the 411 gigawatt hours of storage that the Central Electricity Authority estimates will be needed by 2032. The second is financing: the Indian Renewable Energy Development Agency estimates the country needs roughly 30.5 trillion rupees, or about 366 billion dollars, in investment between 2023 and 2030 to hit the 500 gigawatt target, far above the roughly 2 trillion rupees committed in 2025 alone. The third is execution: land acquisition delays, transmission bottlenecks, and an estimated 40 to 55 gigawatts of renewable capacity facing delays in finalizing power purchase agreements all threaten to slow a build out that, on capacity addition numbers alone, currently looks comfortably on track.

This report sets out the scale of that build out, its financing and storage gaps, the states and companies driving it, and how India's pace of renewable deployment compares with China, the United States and the European Union. It closes with strategic implications for investors, policymakers and developers, and three scenarios for how the next four years of the transition could unfold.

*Key figures at a glance*

| Key figure | Value |
|---|---|
| Total non fossil installed capacity, March 2026 | **283.46 gigawatts** |
| Progress toward the 2030 target of 500 gigawatts | **57 percent** |
| Non fossil capacity added in FY 2025 to 26, a record | **55.29 gigawatts** |
| Solar capacity, March 2026, up from 2.82 GW in 2014 | **150.26 gigawatts** |

| | |
|---|---|
| Investment in renewable capacity, 2025 | **about 22.3 billion dollars** |
| Total investment required, 2023 to 2030, per IREDA | **about 366 billion dollars** |
| Battery storage required by 2031 to 32, per CEA | **411.4 gigawatt hours** |
| Share of peak electricity demand met by renewables, July 2025 | **51.5 percent** |

Source: Ministry of New and Renewable Energy, Central Electricity Authority, IREDA, PIB, IBEF

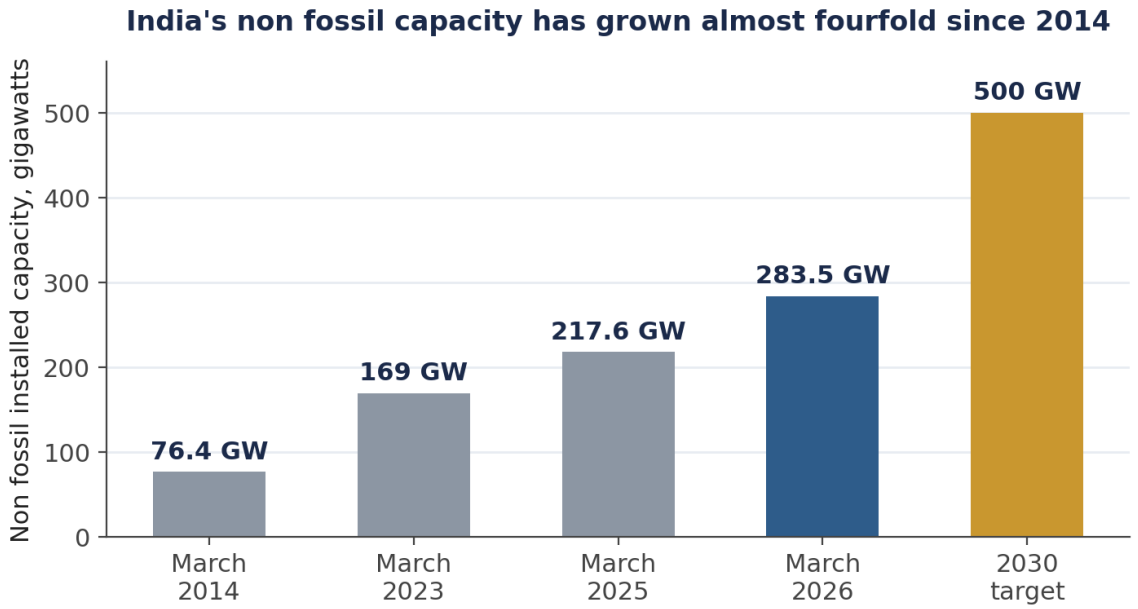
# 1. Introduction: Why India's Energy Transition Matters

India occupies an unusual position in the global energy transition. It is simultaneously the world's third largest electricity consumer, a country whose energy demand is projected to keep rising for decades as incomes grow and industrialization continues, and one of the fastest growing renewable energy markets on the planet. Unlike many advanced economies that are decarbonizing an already mature and largely flat electricity system, India is trying to build enough new capacity, clean or otherwise, to keep pace with demand growth that some projections put as high as 840 gigawatts of total installed capacity by 2030, while simultaneously shifting the mix of that growth away from coal.

That dual mandate, growth and decarbonization at the same time, is what makes India's experience distinct and, for a firm working across economics, finance and strategy, particularly worth studying closely. The government's commitment, announced at the COP26 summit in Glasgow in 2021, to reach 500 gigawatts of non fossil electricity capacity by 2030 and net zero emissions by 2070, is among the most ambitious targets set by any large economy. The story of whether India hits that target, and how, touches capital markets, industrial policy, state level politics, land rights, and global supply chains for solar modules and batteries all at once. This report aims to give that story the same rigor and the same sourced data we would bring to any client facing research engagement.

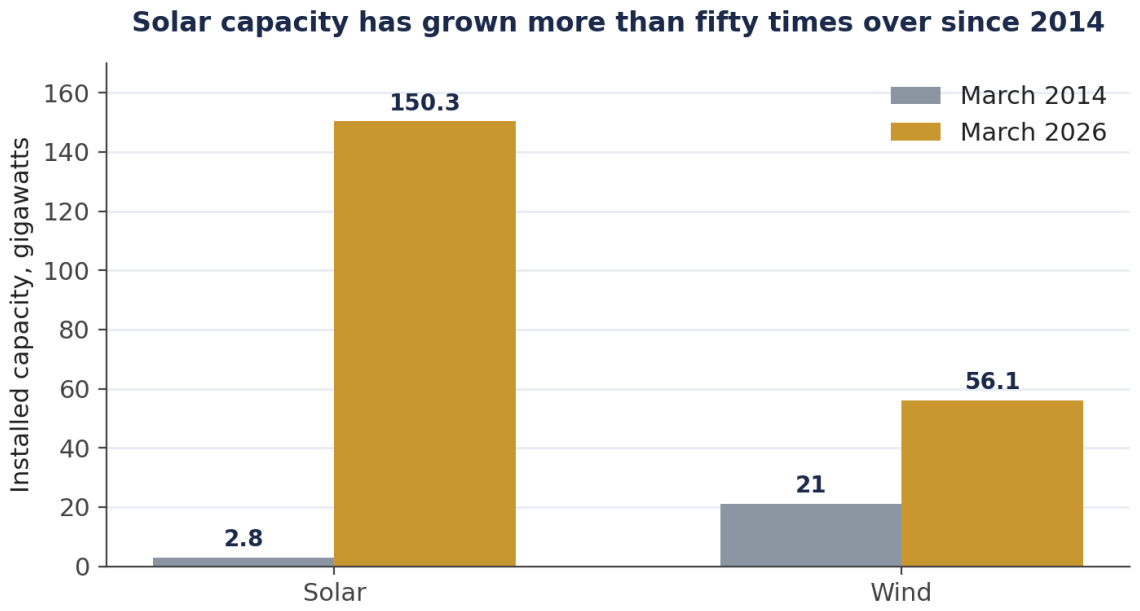
## 2. The Scale of the Build Out

The headline trajectory is striking. According to the Ministry of New and Renewable Energy, India's renewable energy installed capacity, excluding large hydro and nuclear, has grown 3.59 times since 2014, while overall non fossil capacity, which folds in large hydro and nuclear alongside renewables, reached 283.46 gigawatts as of 31 March 2026. That is up from 76.38 gigawatts a little over a decade earlier, an increase of nearly 207 gigawatts.




Source: Ministry of New and Renewable Energy, Press Information Bureau, April 2026

Solar power has done most of the heavy lifting. Installed solar capacity has grown 53.28 times since 2014, from 2.82 gigawatts to 150.26 gigawatts, making it by far the largest single contributor to the non fossil mix. Wind power, the second largest renewable source, has grown more modestly but still substantially, increasing 2.66 times from 21.04 gigawatts to 56.09 gigawatts over the same period. India now ranks third globally in total renewable energy installed capacity, behind only China and the United States, and has overtaken Japan to become the world's third largest solar energy producer.

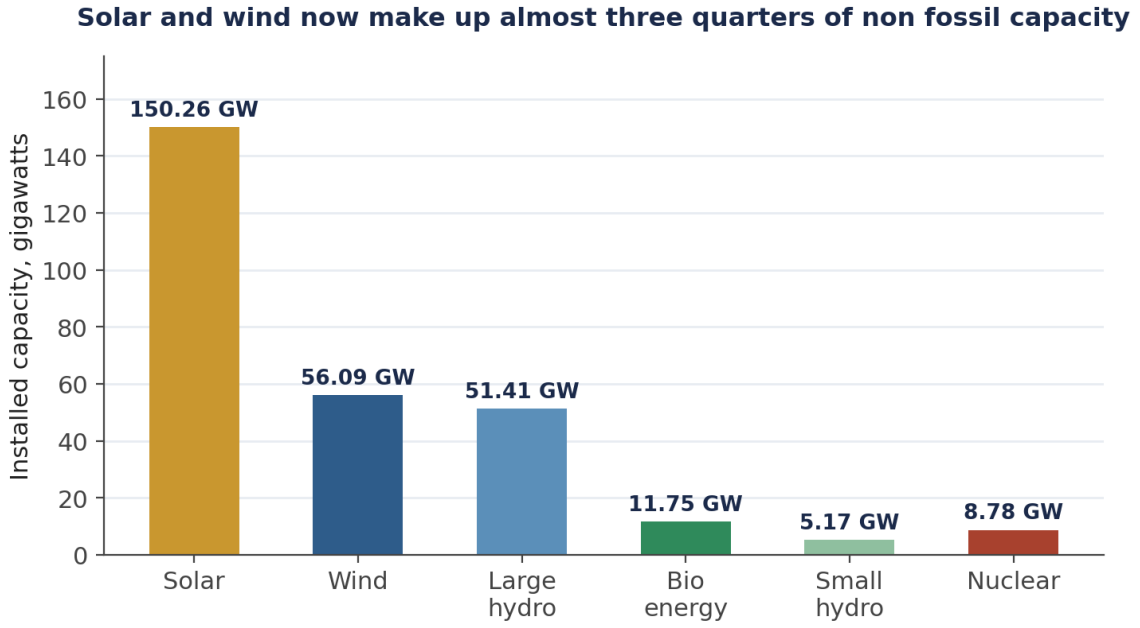



Source: Ministry of New and Renewable Energy; IBEF, Renewable Energy Industry Report, 2026

The pace of that build out has itself accelerated sharply in the most recent fiscal year. India added 55.29 gigawatts of non fossil capacity in the 2025 to 2026 fiscal year, the highest single year addition the country has ever recorded, and well above the 16 to 18 gigawatts a year that characterized capacity additions for much of the preceding decade. Wind capacity additions told a similar story, with 6.05 gigawatts installed in 2025 to 2026, also a record, up from 4.15 gigawatts the year before.

## 3. What Powers India's Non Fossil Mix Today

Within the 283.46 gigawatt non fossil total, solar and wind together now account for roughly three quarters of capacity. The full breakdown as of March 2026 includes 150.26 gigawatts of solar, 56.09 gigawatts of wind, 51.41 gigawatts of large hydro, 11.75 gigawatts of bioenergy, 5.17 gigawatts of small hydro, and 8.78 gigawatts of nuclear power.



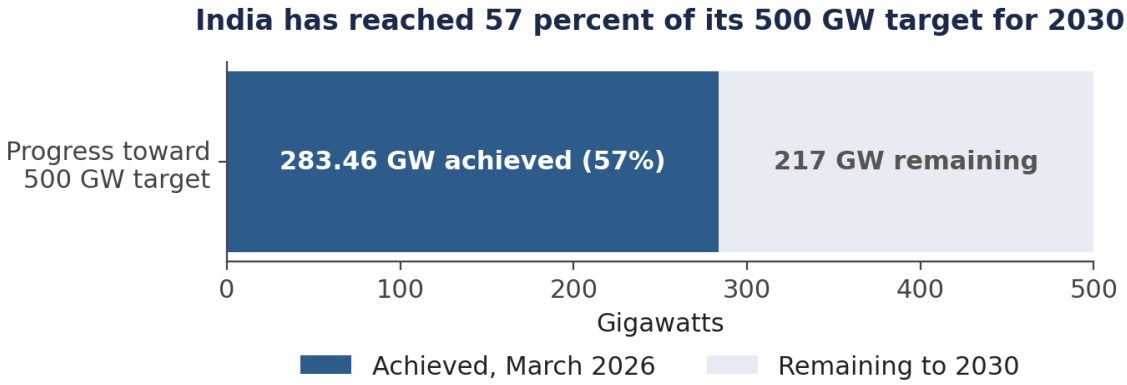

Source: Ministry of New and Renewable Energy, data as on 31 March 2026

This mix reflects deliberate policy choices as much as resource availability. Solar's dominance owes much to a sustained, multi year decline in module costs, an aggressive national auction program run through the Solar Energy Corporation of India, which has awarded 47 solar parks totaling more than 25 gigawatts of capacity, and a production linked incentive scheme that has allocated 19,500 crore rupees, roughly 2.6 billion dollars, to boost domestic manufacturing of high efficiency solar modules, with 48 gigawatts of module manufacturing capacity awarded to date. Wind, by contrast, faces more binding land and regulatory constraints, which is part of why a dedicated task force was constituted in January 2026 specifically to address land, right of way, and grid allocation issues slowing wind project construction.

It is worth noting that coal still supplies the largest share of actual electricity generated in India, even as its share of new capacity additions continues to shrink. Total installed power capacity across all sources stood at roughly 510 to 520 gigawatts in early 2026, of which non fossil sources made up around half, a milestone India reached five years ahead of its own Paris Agreement schedule. Coal fired generation declined by close to 3.7 percent in the 2025 to 2026 fiscal year, an early but meaningful signal of the structural shift now underway in India's underlying generation mix, not just its installed capacity.

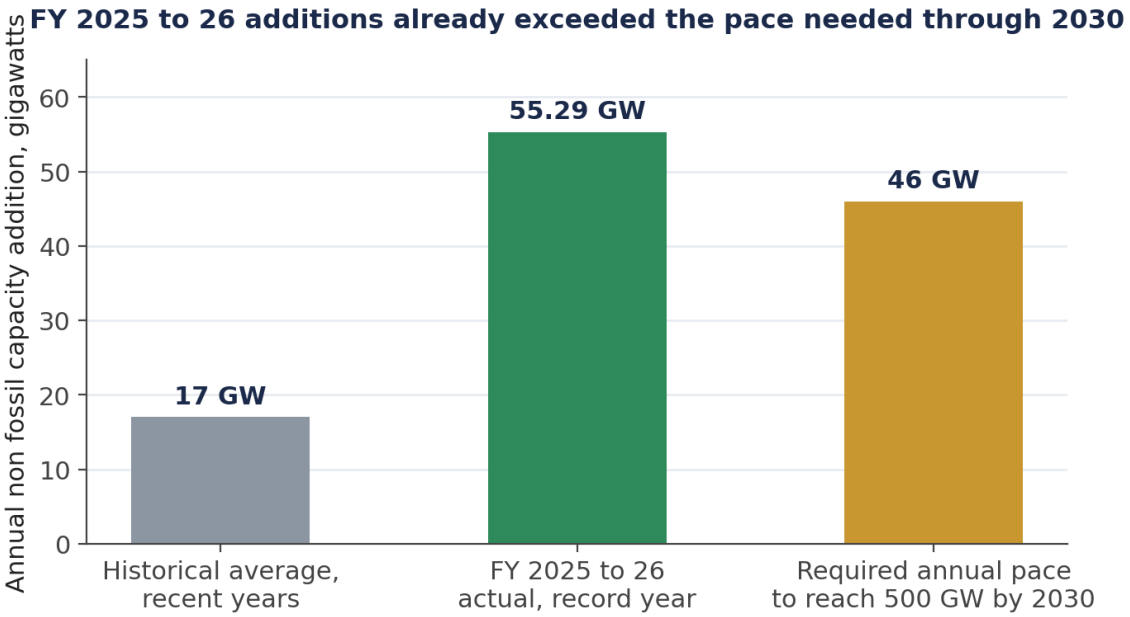
## 4. Progress Toward the 500 Gigawatt Target

Measured against the government's headline target of 500 gigawatts of non fossil capacity by 2030, India has now crossed the halfway mark, reaching 283.46 gigawatts, or roughly 57 percent of the goal, as of March 2026. The original framework behind that target envisioned 280 gigawatts of solar, 140 gigawatts of wind, 45 gigawatts of large hydro, 25 gigawatts of small hydro, and 10 gigawatts of biomass and waste to energy capacity, though actual deployment has run somewhat ahead of plan on solar and behind on wind relative to those original sub targets.




Source: Ministry of New and Renewable Energy, Central Electricity Authority

The more important question is not how much has been built so far but whether the remaining 217 gigawatts can be added in the four years left before 2030. Reaching the target requires sustained annual additions of roughly 46 gigawatts a year between now and 2030. Encouragingly, India has already exceeded that pace once, adding 55.29 gigawatts in the 2025 to 2026 fiscal year alone, comfortably above both the historical average of the preceding decade and the rate now required to stay on track.



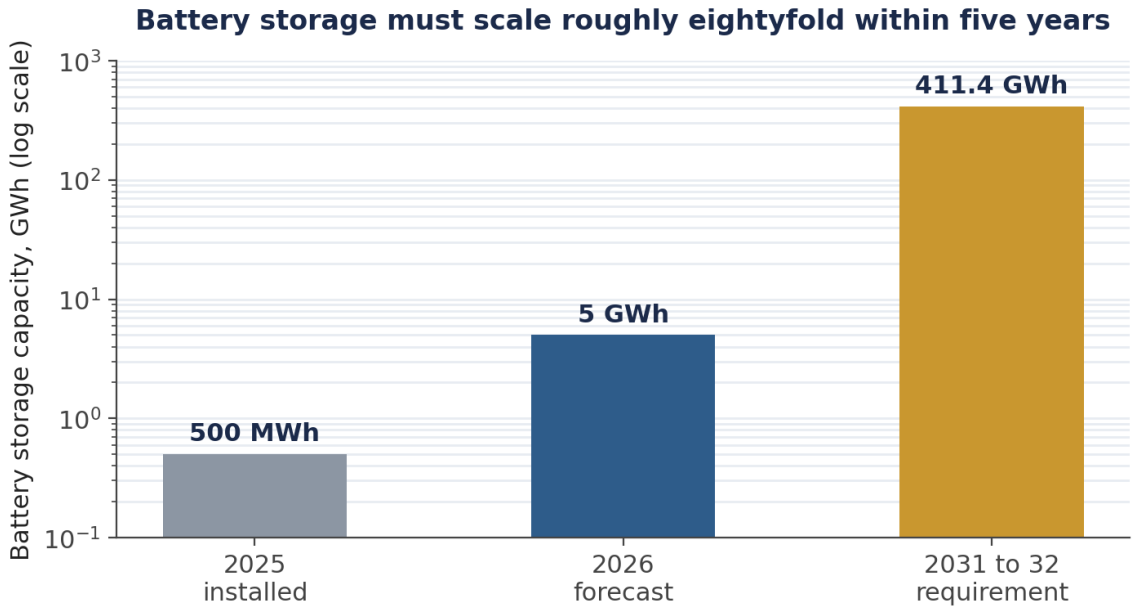

Source: Ministry of New and Renewable Energy; analyst estimates of required annual pace to 2030

## A Record Year, but Not Yet a Trend

Whether 2025 to 2026 marks the start of a sustained new pace or a single strong year remains an open question. The same factors that allowed for record additions, falling module costs, a deep project pipeline built up over several years of tendering, and supportive policy on transmission charge waivers, will need to persist for the target to remain credible. Industry analysts broadly agree the pace is achievable but contingent on resolving the grid, storage, and land constraints discussed in the following two chapters.

# 5. The Battery Storage Bottleneck

If there is a single constraint most likely to slow India's renewable transition, it is storage rather than generation capacity itself. Solar and wind are intermittent, generating power only when the sun shines or the wind blows, and as their share of the overall generation mix rises, the grid's ability to store and dispatch that power during periods of low generation becomes increasingly critical. India's Central Electricity Authority estimates the country will need 411.4 gigawatt hours of total energy storage by 2031 to 2032 to integrate an anticipated 364 gigawatts of solar and 121 gigawatts of wind capacity, split between 236.2 gigawatt hours of battery storage and 175.2 gigawatt hours of pumped hydro storage.




Source: Central Electricity Authority, National Electricity Plan; India Energy Storage Alliance

Current deployment, while growing extremely quickly in percentage terms, remains a small fraction of that eventual requirement. India added 4.6 gigawatt hours of battery storage capacity in the first quarter of 2026 alone, a 941 percent increase over the previous quarter, bringing cumulative installed battery storage to roughly 5.9 gigawatt hours. Industry forecasts suggest installed capacity could reach approximately 5 gigawatt hours by the end of 2026 as a whole, a tenfold increase over 2025, but even that trajectory implies the country is still operating at roughly one to two percent of its eventual 2032 storage requirement.

## Execution Risk Is Concentrated in Storage Tenders

The gap between tendered and operational storage capacity remains wide. Between 2022 and May 2025, India auctioned approximately 12.8 gigawatt hours of battery storage capacity, yet only around 219 megawatt hours, well under 2 percent of that auctioned volume, had actually become operational by that point. Regulatory delays have compounded the problem: in January 2025

India's Central Electricity Regulatory Commission cancelled a 500 megawatt, 1,000 megawatt hour standalone storage tender issued by the Solar Energy Corporation of India after prolonged delays in signing project agreements. On the more encouraging side, battery storage costs have fallen sharply, with tariffs dropping from roughly 1.08 million rupees per megawatt per month in 2022 to around 221,000 rupees per megawatt per month in recent tenders, a decline of nearly 80 percent that should make the remaining buildout considerably more affordable than current installed costs would suggest.

# 6. Financing the Transition

Capital, not just policy intent, will ultimately determine whether India reaches its 2030 target. The Indian Renewable Energy Development Agency estimates the country needs approximately 30.54 trillion rupees, or roughly 366 billion dollars at current exchange rates, in cumulative investment between 2023 and 2030 to build out the full 500 gigawatt non fossil capacity target, inclusive of associated transmission and storage infrastructure.

Recent investment levels, while substantial in absolute terms, still imply a meaningful step up is needed to hit that cumulative figure. India attracted roughly 22.3 billion dollars, around 2 trillion rupees, in renewable energy investment in 2025 alone, supporting the addition of 50 gigawatts of new capacity at an implied capital cost of around 40 million rupees per megawatt. Public sector financial institutions, including the State Bank of India, Power Finance Corporation, and IREDA itself, have collectively committed about 10.79 trillion rupees to renewable energy projects since 2014, including approximately 2.68 trillion rupees in the 2024 to 2025 fiscal year alone, a sign that domestic public capital is scaling up alongside the broader build out.

## Where the Next Wave of Capital Needs to Go

A growing share of required investment is shifting away from pure generation capacity and toward the storage and transmission infrastructure needed to actually use that generation reliably. Analysts estimate that scaling battery storage to meet India's eventual 2032 requirement could alone require somewhere between 200 billion and 500 billion dollars in cumulative capital through the mid 2030s, an order of magnitude comparable to the entire renewable generation buildout itself. For investors and lenders, this implies the most attractive entry points over the next several years may increasingly sit in storage, transmission, and grid balancing assets rather than in standalone solar or wind generation, where competition and falling tariffs have already compressed returns considerably.

# 7. Grid, Land and Power Purchase Agreement Constraints

Capacity addition statistics, however impressive, mask a set of execution bottlenecks that have repeatedly slowed individual projects even as the aggregate build out has accelerated. Land acquisition remains one of the most persistent obstacles, particularly for wind projects, which require larger and often more contiguous tracts of land than solar installations and face more complex right of way negotiations. The dedicated task force constituted in January 2026, bringing together India's grid operator, central transmission utility, the National Institute of Wind Energy, state departments, and industry associations, is a direct policy response to these recurring delays.

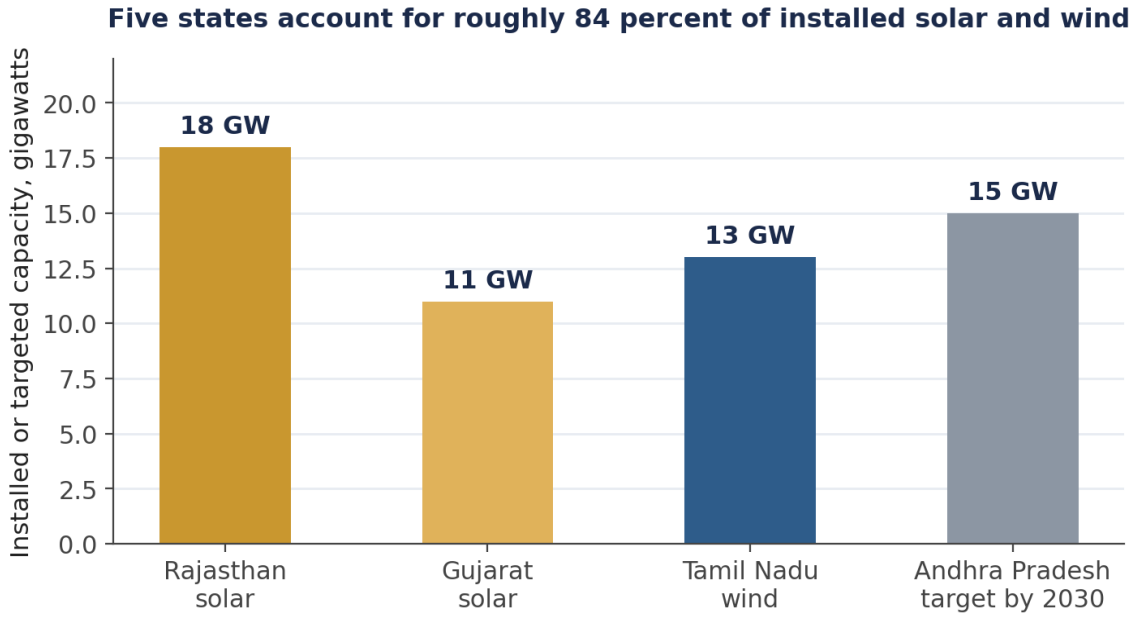
Transmission infrastructure has struggled to keep pace with generation capacity in several high solar states, leading to curtailment, where generated renewable power cannot be evacuated onto the grid and is effectively wasted, and to underutilized capacity that depresses returns for developers. States including Rajasthan and Gujarat, which host some of the country's largest solar parks, have seen some of the most acute curtailment issues. The Green Energy Corridor program, now in its second phase, is intended to address this gap, alongside extensions of waivers on inter state transmission system charges for new renewable and storage projects.

## The Power Purchase Agreement Bottleneck

Perhaps the least visible but most consequential constraint sits in the contracting process itself. An estimated 40 to 55 gigawatts of renewable and hybrid capacity, both generation and storage, are currently facing delays in finalizing power purchase agreements, the contracts between developers and electricity distribution companies that make a project bankable in the first place. Distribution companies, anticipating further declines in tariffs as technology costs keep falling, have in some cases delayed signing agreements even after winning bids, leaving developers who have already incurred development costs in limbo. Resolving this bottleneck is less a matter of new capital or technology than of regulatory and institutional reform within India's electricity distribution sector, which remains financially strained in several states and therefore cautious about locking in long term purchase commitments.

# 8. State Spotlight: Where the Capacity Is Concentrated

India's renewable build out is highly concentrated geographically. Five states, Gujarat, Rajasthan, Maharashtra, Karnataka, and Tamil Nadu, together account for approximately 83.7 percent of the country's total installed solar and wind capacity, reflecting a combination of favorable solar irradiation, wind resource availability, available land, and proactive state level policy.




Source: State renewable energy departments; FactoData state capacity rankings, 2026

Rajasthan leads the country in operational solar capacity with roughly 18 gigawatts installed and a stated target of 25 gigawatts by 2030, anchored by some of the world's largest solar parks. Gujarat follows closely with around 11 gigawatts of installed solar capacity and is in the midst of developing the Khavda Solar Park, envisioned as one of the largest renewable energy parks in the world once fully built out. Tamil Nadu, by contrast, has built its renewable position primarily around wind, with roughly 13 gigawatts of operational wind capacity concentrated along its coastline, reflecting some of the strongest and most consistent wind resources in the country. Andhra Pradesh, while currently smaller in absolute terms, has set a target of 15 gigawatts by 2030 and is pursuing a broad based renewable policy across solar, wind, and hybrid projects.

## Why Geographic Concentration Matters

This concentration creates both efficiency and risk. On one hand, clustering capacity in resource rich states allows for more efficient use of transmission infrastructure and specialized project development expertise. On the other, it means that policy instability, land disputes, or grid constraints in any one of these five states can have an outsized effect on national capacity addition figures. It also means that states outside this leading group, many of which have weaker solar or wind resources but significant electricity demand, will likely depend more heavily on inter

state power transmission and storage to access clean power, reinforcing the importance of the transmission investment discussed in earlier chapters.

## 9. Green Hydrogen and the Next Frontier

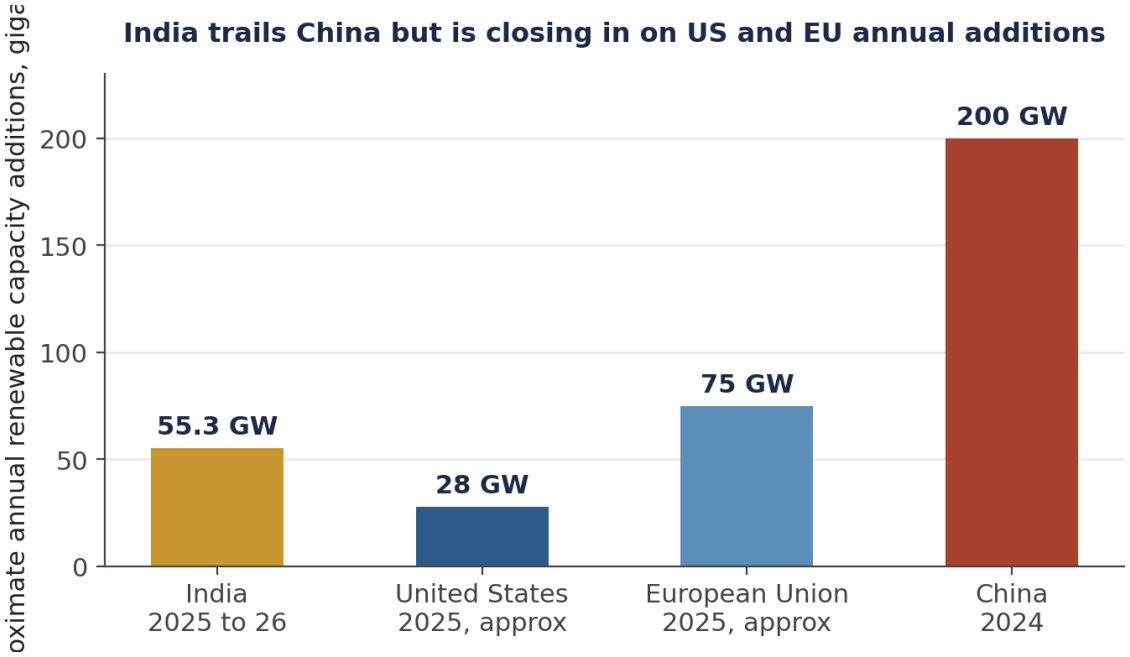
Beyond electricity generation, India has staked out an ambitious position in green hydrogen, viewed by policymakers as a critical tool for decarbonizing harder to electrify sectors such as heavy industry, shipping, and long haul transport. The National Green Hydrogen Mission, approved by the Union Cabinet in January 2023 with an outlay of 19,744 crore rupees, roughly 2.4 billion dollars, targets production of 5 million metric tonnes of green hydrogen annually by 2030, supported by an estimated 125 gigawatts of additional renewable energy capacity dedicated specifically to hydrogen production.

Early implementation has focused on building domestic electrolyser manufacturing capacity through the Strategic Interventions for Green Hydrogen Transition program, known as SIGHT. Under its first phase, the program has allocated electrolyser manufacturing capacity totaling 412,000 tonnes to a group of companies including Reliance Industries, ACME, Ohmium, and Larsen and Toubro, an early signal of the industrial base the government hopes will eventually make India cost competitive in green hydrogen production and export.

Green hydrogen remains, for now, a much smaller and earlier stage program than the core electricity transition discussed elsewhere in this report, but its scale, 125 gigawatts of associated renewable capacity alone, is roughly equivalent to a quarter of India's entire current non fossil installed base. Its success or failure over the remainder of the decade will meaningfully shape both the total renewable capacity India needs to build and the export oriented industrial strategy the government has attached to its broader energy transition.

# 10. How India Compares Globally

Placed in global context, India's renewable build out is rapid by almost any historical standard, yet still trails the scale of additions underway in China and sits closer to, though still somewhat behind, the pace seen in the United States and the European Union. China added more than 200 gigawatts of renewable capacity in 2024 alone, a figure that dwarfs India's record 55.29 gigawatts in the 2025 to 2026 fiscal year, while the European Union has been adding roughly 75 gigawatts a year in recent years and the United States, despite a much larger existing base of over 300 gigawatts of renewable capacity, has been adding somewhere in the range of 25 to 30 gigawatts annually.




Source: National energy agencies and industry estimates; figures are approximate and reflect differing measurement methodologies across countries

These comparisons need some care in interpretation, since countries define and measure renewable capacity additions somewhat differently, and figures from different sources can vary by several gigawatts for the same country and year. The broader picture nonetheless holds: China remains in a category of its own in absolute scale, reflecting both a far larger overall power system and a manufacturing base that supplies a large share of the world's solar panels and battery cells. India's position, third globally in total installed renewable capacity and closing the gap with the United States and the European Union on annual additions, reflects a transition that started later than China's but has accelerated meaningfully over the past three years.

## A Manufacturing Dependency Worth Watching

One underappreciated dimension of this comparison is supply chain dependency. Despite India's production linked incentive schemes for solar modules and, increasingly, batteries, a large share

of the underlying cells, wafers, and battery components used in Indian renewable projects are still imported, predominantly from China. This leaves India's renewable build out, like that of most countries outside China, exposed to geopolitical disruption, trade policy shifts, and currency risk in its supply chain even as the country builds out installed capacity at record pace. Closing this manufacturing gap, not just the capacity gap, is likely to be one of the more consequential industrial policy questions for India over the remainder of the decade.

# 11. Strategic Implications

## For Investors and Project Developers

The most attractive risk adjusted returns in India's renewable sector appear to be migrating away from standalone solar and wind generation, where tariffs have compressed sharply due to intense competition in auctions, and toward storage, hybrid renewable plus storage projects, and transmission infrastructure, where capacity remains scarce relative to need. Developers able to navigate the land acquisition and power purchase agreement bottlenecks described in this report, rather than simply winning auctions, are likely to capture a disproportionate share of value as execution, not capital availability, becomes the binding constraint on the sector.

## For Policymakers

Sustaining the record pace of capacity addition achieved in the 2025 to 2026 fiscal year will depend less on new generation targets and more on resolving the storage, transmission, and contracting bottlenecks identified throughout this report. Extending and clarifying transmission charge waivers for storage projects, accelerating the resolution of power purchase agreement disputes between developers and financially strained distribution companies, and providing greater certainty on land acquisition processes for wind projects would likely do more to keep India on track for 2030 than any further increase in headline capacity targets.

## For a Student Led Consulting Firm

India's renewable transition offers an unusually rich case study for the kind of analytical work Altivus aims to produce: a policy driven industrial transformation with clear, well documented government targets, genuinely contested execution risks, and meaningful divergence between official capacity statistics and on the ground project economics. Tracking the gap between announced capacity and actually operational, bankable projects, particularly in storage, is likely to remain one of the more useful and differentiated angles available to analysts covering this sector over the next several years.

# 12. Outlook and Scenarios, 2026 to 2030

## Scenario One: On Track

In the most likely scenario based on current trends, India sustains annual non fossil capacity additions in the 45 to 55 gigawatt range through 2030, supported by continued module and battery cost declines, expanded transmission infrastructure under the Green Energy Corridor program, and gradual resolution of power purchase agreement bottlenecks as distribution company finances stabilize. Under this path, India reaches somewhere between 450 and 500 gigawatts of non fossil capacity by 2030, falling near or just short of the headline target but representing a transformative shift in the country's generation mix regardless of whether the precise number is reached.

## Scenario Two: Storage Constrained

A less favorable scenario sees generation capacity continue to scale on pace while battery storage and pumped hydro deployment fail to keep up with the 411 gigawatt hour requirement identified by the Central Electricity Authority. Under this path, curtailment rises across high solar states, grid stability concerns prompt more conservative renewable integration policies from system operators, and the effective utilization of installed renewable capacity declines even as headline gigawatt figures continue to look strong, masking a less favorable underlying reality for both investors and the electricity system as a whole.

## Scenario Three: Accelerated, Export Oriented Transition

A more optimistic scenario involves India successfully scaling both domestic battery and solar manufacturing alongside its green hydrogen program, reducing import dependency, exceeding the 500 gigawatt target ahead of schedule, and emerging as a meaningful exporter of green hydrogen and renewable equipment to other developing economies by the early 2030s. This path requires sustained policy continuity across at least one more national election cycle, continued foreign and domestic capital inflows at or above current levels, and faster resolution of the land and grid bottlenecks than has been achieved to date, making it plausible but by no means assured.

## Conclusion

India's renewable energy transition has moved from aspiration to demonstrated execution at scale. A near fourfold increase in non fossil capacity since 2014, a record breaking year of additions in 2025 to 2026, and an early achievement of the country's Paris Agreement commitments all point to a program that has consistently outperformed skepticism about its pace. At the same time, the remaining path to 500 gigawatts by 2030 runs through a set of constraints, storage capacity, financing at scale, land acquisition, and power purchase agreement execution, that are considerably harder to solve through policy announcements alone than the generation capacity additions that have defined the story so far.

For investors, policymakers, and analysts tracking this sector, the headline capacity number will likely become a progressively less useful indicator of real progress over the next four years. The more important figures to watch are the ones explored throughout this report: gigawatt hours of operational, not just tendered, battery storage, the pace of transmission corridor completion, and the share of awarded renewable capacity that actually converts into signed, bankable power purchase agreements. On those measures, the next four years will determine whether India's renewable transition becomes a model for other large, fast growing economies or a cautionary tale about the gap between ambition and grid reality.

# Appendix A: Data Tables

## Table A1: Non Fossil Capacity Growth

| Period | Non fossil capacity | Of which solar |
|---|---|---|
| March 2014 | 76.38 gigawatts | 2.82 gigawatts |
| February 2023 | 169.0 gigawatts (renewables only) | 64.38 gigawatts |
| March 2025 | 217.6 gigawatts | approximately 106 gigawatts |
| March 2026 | 283.46 gigawatts | 150.26 gigawatts |
| 2030 target | 500 gigawatts | 280 gigawatts, original framework |

## Table A2: Non Fossil Capacity Mix, March 2026

| Source | Installed capacity | Share of non fossil total |
|---|---|---|
| Solar | 150.26 gigawatts | 53.0 percent |
| Wind | 56.09 gigawatts | 19.8 percent |
| Large hydro | 51.41 gigawatts | 18.1 percent |
| Bioenergy | 11.75 gigawatts | 4.1 percent |
| Small hydro | 5.17 gigawatts | 1.8 percent |
| Nuclear | 8.78 gigawatts | 3.1 percent |

## Table A3: State Leaders in Solar and Wind

| State | Lead source | Installed or targeted capacity |
|---|---|---|
| Rajasthan | Solar | 18 gigawatts operational, 25 gigawatts targeted by 2030 |
| Gujarat | Solar | 11 gigawatts operational, expanding via Khavda Solar Park |
| Tamil Nadu | Wind | 13 gigawatts operational, coastal concentration |
| Andhra Pradesh | Mixed | 15 gigawatts targeted by 2030 |

## Appendix B: Glossary of Key Terms

- Non fossil capacity: installed electricity generation capacity from sources other than coal, oil, or natural gas, including solar, wind, hydro, bioenergy, and nuclear power.
- Gigawatt, GW: a unit of power equal to one billion watts, commonly used to measure large scale electricity generation capacity.
- Gigawatt hour, GWh: a unit of energy equal to one billion watt hours, commonly used to measure storage capacity or total electricity generated over time.
- Battery energy storage system, BESS: a system that stores electricity in batteries for later use, helping balance supply and demand on the grid, particularly to manage the intermittency of solar and wind power.
- Curtailment: the deliberate reduction of renewable power output below what could otherwise be generated, typically because the grid lacks the capacity to absorb or transmit the available power.
- Power purchase agreement, PPA: a long term contract between an electricity generator and a buyer, typically a distribution company, that sets the price and terms under which power will be sold, and which is usually required to make a renewable project bankable.
- Production linked incentive, PLI: a government scheme that provides financial incentives to manufacturers based on incremental production, used in India to encourage domestic solar module and battery manufacturing.
- Green Energy Corridor: a government program to build dedicated transmission infrastructure connecting renewable energy generation sites, often in remote areas, to the main electricity grid.
- Inter state transmission system, ISTS: the network of high voltage transmission lines that carries electricity between Indian states, with certain charges waived for qualifying renewable projects to encourage development.
- Green hydrogen: hydrogen produced by splitting water using electricity generated from renewable sources, viewed as a key tool for decarbonizing industries that are difficult to electrify directly.
- Electrolyser: a device that uses electricity to split water into hydrogen and oxygen, the core technology used to produce green hydrogen.
- Pumped hydro storage: a form of energy storage that pumps water to an elevated reservoir when electricity is abundant and releases it through turbines to generate power when needed, functioning as a large scale, long duration battery.

## Sources and References

*This report draws on primary data and analysis from India's Ministry of New and Renewable Energy, the Press Information Bureau of India, the Central Electricity Authority and its National Electricity Plan, the Indian Renewable Energy Development Agency, the India Brand Equity Foundation, the India Energy Storage Alliance, Mercom India Research, the Institute for Energy Economics and Financial Analysis, and industry commentary from Discovery Alert and FactoData. All figures are the most recently available at the time of writing and are subject to revision as underlying institutions update their datasets.*

*Prepared by the Altivus Research Desk. For questions or feedback on this report, please reach out through Altivus.*