



**CLIMATE ENERGY FINANCE**

## India has again lifted its ambition on renewables

*Global finance is entirely available, now we need to see Indian energy policy delivery*

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April 2023 saw the Government of India (GoI) announce exciting plans to treble renewable energy tenders to 50GW pa so as to [add 250GW of RE by 2027/28](#). This was followed by a landmark endorsement of Indian renewables, with Brookfield of Canada announcing it will invest US\$1bn in Avaada Energy, which has aggressive solar expansion plans. These two significant announcements could jointly serve to rebuild strong momentum after 3 years of stalling delivery on the country's energy transformation.

India's overall long term goal has been a clear and consistent 450GW by 2030. But regular changes to policy have undermined investor confidence and delivery badly – for example, the imposition of 40% import duties on China solar modules and a sometimes inconsistent and delayed delivery on government contract commitments.

India is well placed to accelerate its energy transition, and has the clear energy security need to reduce its over-reliance on expensive, inflationary fossil fuel imports. It is the fastest growing large economy in the world, and has tracked strong GDP growth underpinned by 8-11% annual growth in electricity demand, as a key indicator of underlying momentum.

This week saw India's Central Electricity Authority (CEA) report the fiscal year (FY) 2022/23 capacity figures for the 12 months ended 31 March 2023 - Figure 1. India added 15.3GW of renewable energy (flat on FY2022's 15.4GW). Whilst this is 92% of the net capacity system adds overall of 16.6GW, it is still just a third of the annual capacity adds India needs, both in terms of meeting all incremental electricity demand growth each year, and to deliver on Prime Minister Modi's ambitious 2030 450GW target.

**Figure 1: India's Electricity Capacity and Generation (FY2022/23)**

	---- Capacity ----		-- Generation --		Capacity	Increase
	GW	%	TWh	%	Utilisation	GW yoy
Coal-fired	211.9	50.9%	1,211.7	73.2%	65.5%	1.2
Gas-fired	24.9	6.0%	32.7	2.0%	15.0%	0.0
Diesel-fired	0.5	0.1%	0.5	0.0%	12.0%	0.0
Large Hydro	46.9	11.3%	155.7	9.4%	38.0%	0.1
Nuclear	6.8	1.6%	47.5	2.9%	80.0%	0.0
Renewables	125.2	30.1%	198.7	12.0%	19.3%	15.3
Bhutan (Import)	n.a	n.a	9.0	0.5%	n.a.	
<b>Total</b>	<b>416.1</b>	<b>100.0%</b>	<b>1,655.9</b>	<b>100.0%</b>		<b>16.6</b>

Source: CEA, CEF Calculations

Net thermal power capacity adds were just 1.2GW (7% of total), just a tiny fraction of the 20GW annual adds witnessed a decade back. India has had a few years of surplus electricity capacity, but the underdevelopment of new capacity over the last 3 years has seen coal power plant utilisation rates rise from a low of just 52.7% in FY2021 to 65.5% in FY2023. The spare capacity buffer is now gone.

The GoI's announcement last week of 50GW pa of renewable tenders for the next five years is exactly what India needs. Coal plants are really high emissions, add to India's air pollution and water scarcity issues, are finding financing increasingly elusive and are contrary to the spirit of the Paris Agreement. Nuclear and hydro power plants are problematic, given they almost invariably see massive capital cost blowouts and persistent timetable delays. India needs to increase its domestic energy security, diversity of fuel supply and build new capacity at massive scale, really quickly. The national Indian grid is ready. Wind and solar fit the bill - new plants take just 1-2 years to go from tenders to completion. Renewables are zero emissions, low cost and build domestic energy system resilience. And domestic and western capital is standing by, ready, willing and able to accommodate a trebling of annual investments.

With the GoI providing a clear legal structure and derisking the process via transparent, online competitive reverse auctions, Indian domestic energy majors - public and private - working together with global investors have stepped up significantly.

Three to four years ago, the prices required for both solar and wind dropped over 50% to Rs2-3/kWh, way below that of thermal power from existing domestic coal power plants (Rs3-5/kWh). Prices have stayed around these levels despite solar module price volatility and import duties. Solar pricing of Rs2.50/kWh is US\$30/MWh, but this has zero inflation indexation for the full 25 year term, putting the levelised cost of solar at just US\$20/MWh, exceptionally low by global standards.

Global investors want to invest at scale. Working in partnership with leading Indian domestic corporates, the GoI is able to facilitate this. The domestic counterparts lead on solving the project engineering, procurement and construction (EPC), including land acquisitions and grid access issues. The GoI also dramatically alleviated EPC challenges with ultra-mega solar power parks where the scale, land acquisitions and grid connection were centrally resolved. The GoI targets 40GW of solar parks across 57 sites by March 2024, with this strategy well advanced, with 10GW already operational.

The above conditions have combined to create an investment environment really conducive to mobilising global capital into India at scale. Global equity investor interest in Indian renewables is building, and the deals outlined below indicate a demonstrably positive trend.

April 2023 saw one of the largest foreign investments to-date in Indian renewables.

Canadian investor Brookfield announced it will be investing US\$1bn in [Avaada Energy](#). Avaada has commissioned solar projects to the tune of 2.9GW and has a further pipeline of 1.5GW. Avaada's solar cell/module manufacturing plans include a state-of-the-art facility with an annual production capacity of 5GW, expected to become operational in 2023. It intends to scale up its capacity to 10GW by 2030. In August 2022, Avaada signed a MoU with the Rajasthan state government to invest ₹40,000 crore (US\$5bn) in a renewable energy powered green ammonia facility at Kota, for domestic use.

This builds significantly on the foreign investment momentum evidenced in March 2023:

- [Malaysia's Petronas acquired a 20% stake in NTPC's RE division](#) for US\$460m, valuing the entire unit at US\$2.3bn. NTPC plans to use the proceeds from the sale to expand its non-fossil businesses, having earmarked investments of US\$30 billion this decade to raise the share of non-fossil energy in its portfolio to 45% from the current 9%.

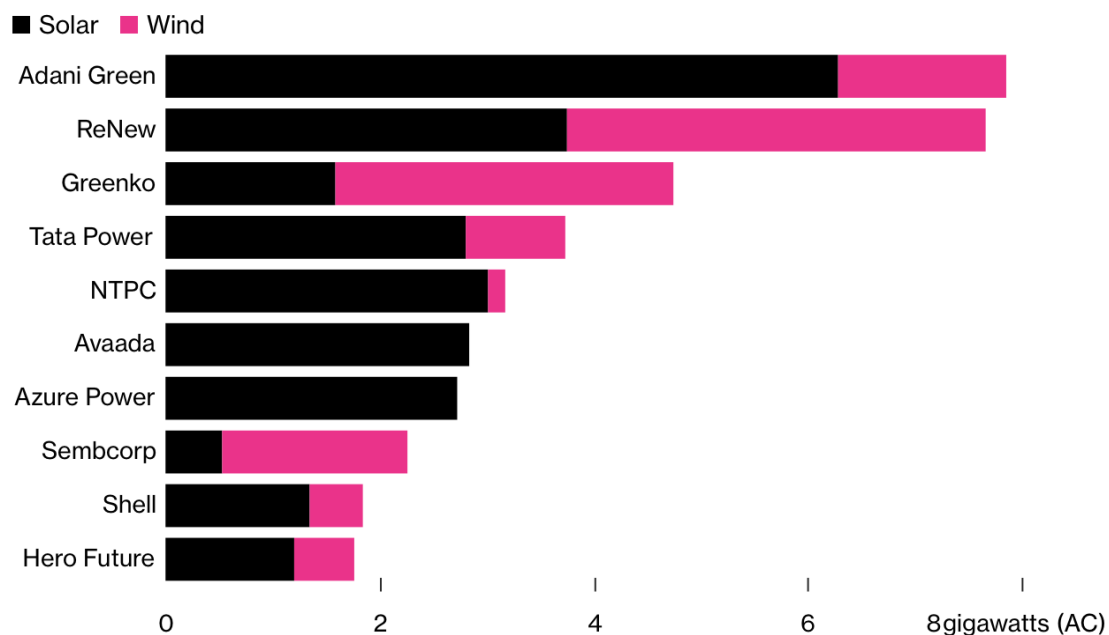
- [Copenhagen Infrastructure Partners](#) (CIP) announced a partnership with Indian developer Viivid Renewables to develop more than 1.8GW of renewable projects.
- It also saw the [deal completion](#) of an August 2022 MoU of a [US\\$500m investment by BlackRock Real Assets and Abu Dhabi's Mubadala Investment Company](#) into a 11% stake in the renewables arm of Tata Power, valuing these 4.9GW of renewables assets at an estimated US\$4.3bn. Tata's goal is to top 20GW of renewables over the next five years. Tata Power shares have more than doubled in the last five years, almost double the return of the overall Indian stock market.
- [Greenko Group raised US\\$700m of new equity](#) from the founders, along with existing shareholders GIC, Abu Dhabi Investment Authority, and Japan's Orix Corp.
- [JSW Energy](#) acquired the 1.75GW renewable energy portfolio of Mytrah Energy India at an enterprise valuation of ₹10,530 Crores (US\$1.3bn).
- The [state-owned IndianOil](#) announced an exceptionally ambitious target for 200GW of renewable energy capacity by 2050, supporting 2Mtpa of green hydrogen capacity.

Additionally, the domestic Indian debt markets are seeing increased if still modest capacity building. March 2023 saw the [Japan Bank for International Cooperation \(JBIC\)](#) work together with MUFG Bank to sign a loan agreement of JPY15 billion (US\$112m) with the GoI's SJVN Limited for solar investments. [IFC](#) issued a US\$50m sustainability-linked bond to Tata Cleantech Capital.

After skyrocketing in recent years, Adani Green - the top renewable energy firm in India - has seen its share price collapse 60% this year after the [Hindenburg accusations of the largest corporate con in world history](#). The chart below highlights the top ten renewable energy developers across India. While the setbacks at the Adani Group are very material, the [silver lining for India](#) is that there are a plethora of well established competing firms able more than able to lift the pace, absent the dominance in Indian energy dealflow of the Adani's 'first amongst equals' presence.

## Adani Green and ReNew Vie For First Place

Top owners of commissioned wind and solar capacity in India



Source: BloombergNEF, company disclosures, news reports  
 Note: Data as of February 22, 2023. For projects planning to use a mix of wind and solar – where the split is unknown – capacity is equally divided between wind and solar. Avaada's solar capacity is converted from DC to AC assuming a DC/AC ratio of 1.3.

As [JMK Research](#) has highlighted, a number of significant requests for selection (RfS) and tenders were initiated across India in March 2023, totalling 4.6GW. This includes the procurement of [1,000MW x 8 Hours Storage](#) for 40 Years from Pumped Hydro Storage by the State Government of Karnataka, a [SECI RfS for 2,000MW of solar projects](#) in India, and 1,200MW of solar + storage projects being sponsored by the State Government of Rajasthan, a [100MW floating solar RfS](#) by the State of Jharkhand, a [500MW wind tender from the State Government of Gujarat](#), and others. This level of activity needs to be maintained every month to build out the investment pipeline needed for 50GW pa.

India's focus on solar manufacturing self-sufficiency have taken many years to reach this point, but in March 2023, [successful bidders](#) were confirmed for the [US\\$2.4bn, phase 2 of the solar Performance Linked Incentives \(PLI\) scheme](#) to build Indian manufacturing self-sufficiency and reduce overreliance on Chinese supply chains. Eleven firms will receive five years of GoI financial support, including Reliance Industries (6GW), Hyderabad-based Shirdi Sai Electricals (6GW), US-based thin film solar leader First Solar (3.4GW), Tata Power Solar (6GW), Vikram Solar (2.4GW), Waaree Energies (6GW), ReNew Solar (4.8GW), Avaada Ventures (3GW), JSW Renewable (1GW), Ampin Solar (1GW) and Grew Energy (2GW), for a total of 39GW under the second tranche.

India has also continued to invest heavily in grid transmission modernisation and expansion, particularly enhancing the [Inter State Transmission system \(ISTS\)](#) to better support variable renewable energy (VRE) integration, with a targeted Rs75,000 crore (US\$9bn) investment to FY2025.

The GoI's announcement last week of 50GW pa of renewable tenders over the next five years is just what India needs. It will give domestic manufacturers, finance and EPC developers the clarity to lift their ambitions and invest confidently. If the country is to achieve its headline goal of 450GW by 2030 we need to see more of this resolve on the part of the government – a concerted commitment to decarbonisation, coupled with a stable targeted, consistent, ambitious and sustained policy implementation to back it up. This is also a pre-requisite to sustaining India's continued strong economic growth. The transformative benefits of cheap, clean energy for the Indian people and economy demand that the government continues to deliver.

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