Solar and wind dominate India's capacity additions in 2022

Wind and solar made up 92% of India's power generation capacity additions in 2022

Published date: 17 March 2023

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About

This report analyses findings from Ember's India state RES target and progress tracker, launched early last year. The data tool tracks the monthly progress of Indian states and union territories against their 2022 renewable energy targets, using archive records of state-wide installed renewable energy capacity data from India's Ministry of New and Renewable Energy.

Highlights

92%

Share of solar and wind in India's power generation capacity additions in 2022.

+13.9 GW

Solar capacity additions in one year, comparable to the United Kingdom's total solar fleet in 2021.

33%

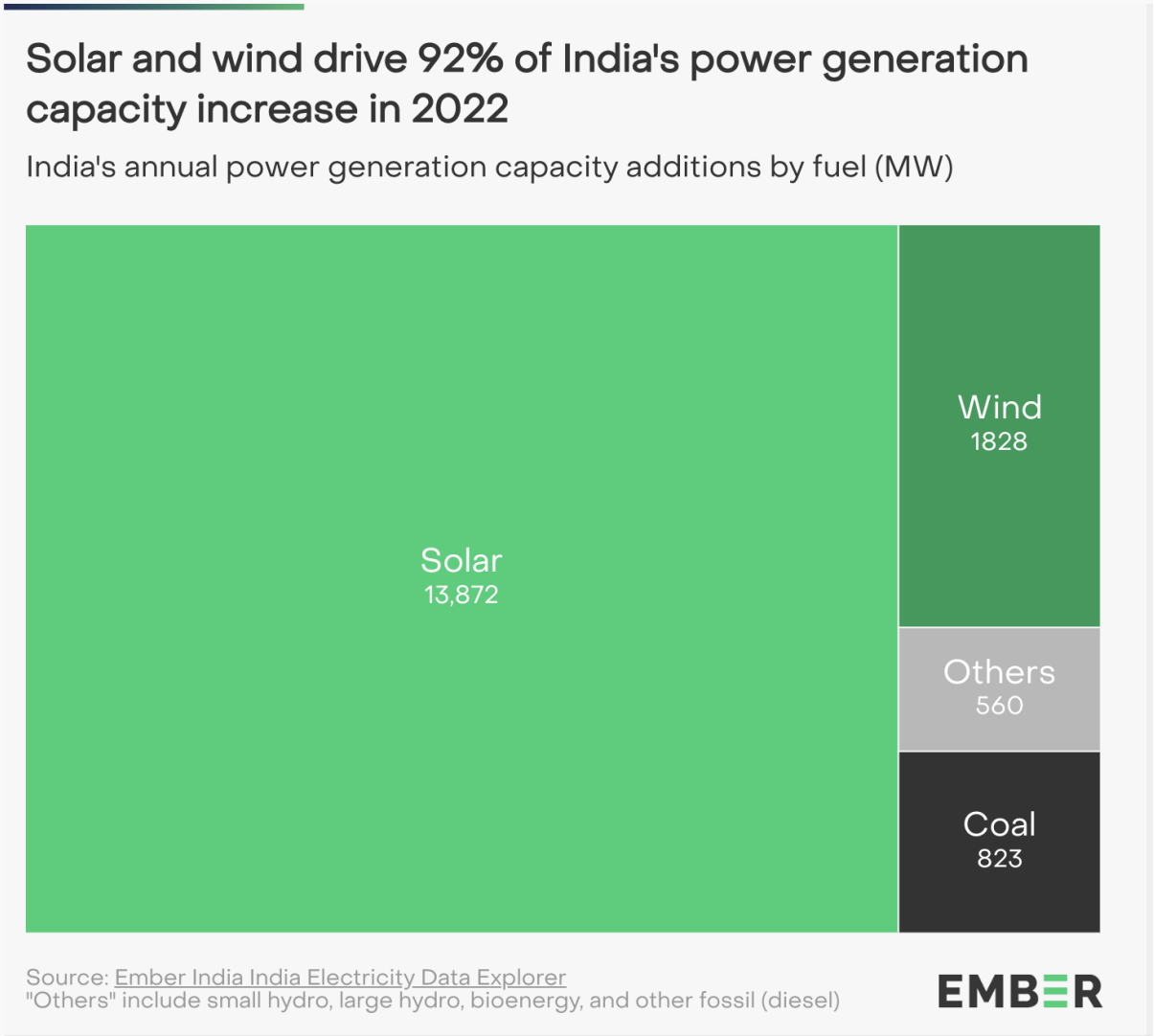
Rajasthan and Gujarat's share of renewable capacity targets for 2030, out of India's national target

Renewables lead India's power market growth

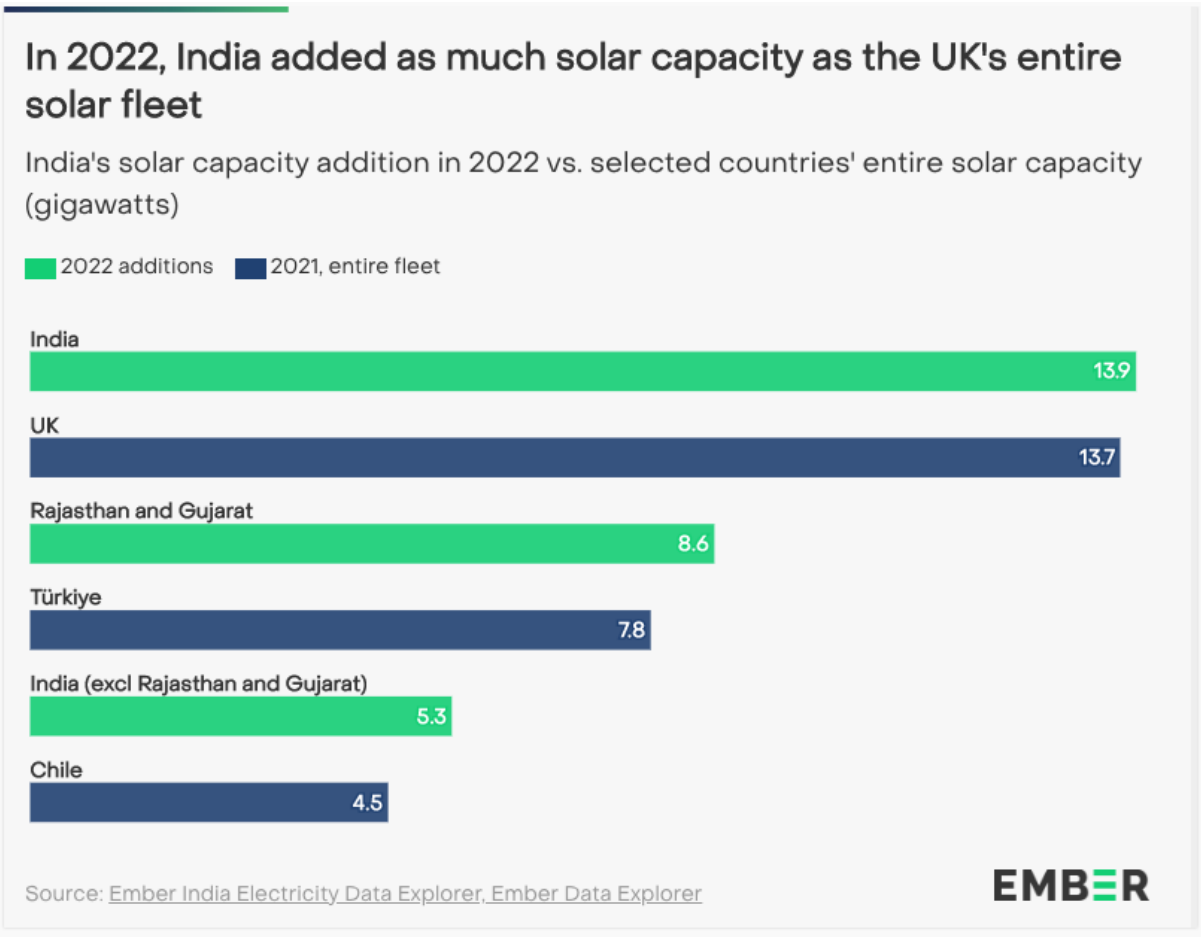
Solar and wind dominate India's power capacity growth in 2022

India saw strong growth in renewable (RES) capacity installations in 2022, setting the stage for the country to assume climate leadership in the run up to this year's G20 summit. Solar and wind dominated India's power generation capacity growth in 2022, accounting for 92% of total capacity additions. Coal accounted for only 5%.

While India's coal capacity additions in 2022 dropped significantly in comparison to the previous year, solar and wind capacity additions increased. Combined, solar and wind added 15.7 GW of new generation capacity in 2022, 17% more than additions in 2021. Coal added less than 1 GW, showing a 78% decrease in additions in comparison to 2021.



Among India's clean power sources, the largest additions have come from solar in recent years. 2022 was no exception: India added 13.9 GW of solar capacity in just one year, comparable to the UK's entire solar capacity in 2021. Rajasthan and Gujarat, the top two states for total solar deployment, together added 8.6 GW, slightly more than Türkiye's entire solar fleet as of 2021. Installations in all the other states combined were still sizable at 5.3 GW, larger than Chile's entire solar fleet.

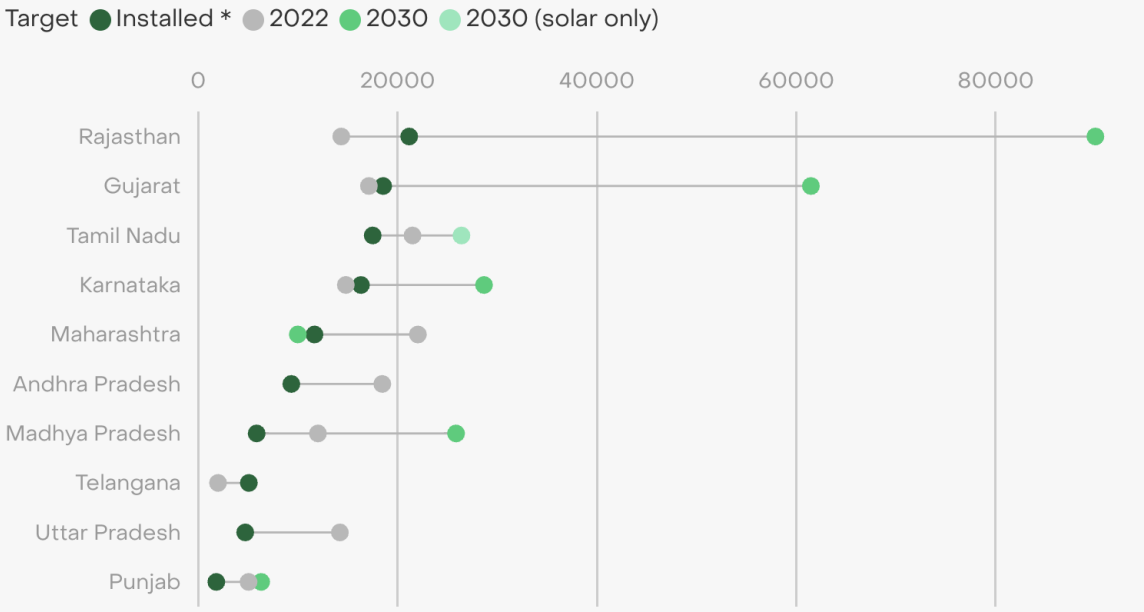


Combining wind and solar together, Rajasthan added 6.7 GW of additional capacity. This addition accounts for 43% of India's total solar and wind capacity deployments in 2021. This was the largest ever annual combined solar and wind capacity addition at the state level in India's history.

Growth in solar and wind capacity is expected to be concentrated in Rajasthan and Gujarat, which both have ambitious targets for 2030. Rajasthan and Gujarat together account for one third of India's total RES capacity target of 450 GW, most of which are solar and wind.

Rajasthan and Gujarat will continue to lead India's renewable capacity additions by 2030

RES capacity targets of the top ten RES states in India (megawatts)



Source: MNRE, State announcements (see "About data" section in the main article)
* As of December 2022

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"India, especially the states of Rajasthan and Gujarat, have demonstrated to the world that rapid deployment of solar and wind is not only possible, but also already happening. As the country presides over the G20 presidency this year, India is well-positioned to take climate leadership as a prime example on the possibilities of enabling clean power generation by unleashing solar and wind power"

Uni Lee
Data Analyst (Asia), Ember

Rajasthan plans to reach 90 GW of RES capacity by 2030. To meet this goal, Rajasthan would have to add 8.6 GW of RES capacity every year for the next eight years. This would mean surpassing the 2022 installation record in upcoming years. Rajasthan's RES capacity reached 21 GW by the end of 2022, easily beating its 2022 target.

Gujarat's 2030 target is about two thirds of Rajasthan, with an aim to reach 61 GW of RES capacity. To reach this goal, Gujarat would need to add 5.4 GW of RES capacity every year. Rajasthan's success with solar acceleration shows that it is realistic for Gujarat to meet that target. Gujarat's RES capacity reached 18.6 GW by the end of 2022, exceeding its 2022 target.

Supporting materials

About the data

Throughout 2022, Ember tracked state-level capacity additions against their 2022 targets for renewable energy sources (solar, wind, small hydro and bioenergy) in its Indian state RES target and progress tracker.

Ember also tracks 37 Indian states and union territories' power generation and capacity data from the Central Electricity Authority and Ministry of New and Renewable Energy (MNRE). The data can be easily explored and accessed from Ember's India Electricity Data Explorer. The data tool is updated every month.

Information on state-level targets for 2030 are collected from the following sources:

- Rajasthan's Solar Energy Policy 2019
- Mamta Verma, Principal Secretary of the Energy and Petrochemicals Department in the Gujarat government
- Tamil Nadu Generation and Distribution Corporation (Tangedco)
- Punjab's draft of new Renewable Policy, according to Mercom India
- Uttar Pradesh's Vision 2030
- Madhya Pradesh energy and renewable energy department's principal secretary, Sanjay Dubey, according to SolarQuarter Madhya Pradesh
- Energy Minister Sunil Kumar Karkala, according to Economic Times

Acknowledgements

Contributors

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Header image

A solar field under broad daylight in Gujarat, India

Credit: Ashley Cooper / Alamy Stock Photo