

India Solar Energy Market Outlook 2022

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At the recently concluded 26th session of the Conference of the Parties (COP26) in Glasgow, India announced that it will raise its non-fossil energy capacity to 500 GW by 2030. Solar energy will play a key role in achieving this target.

As of November 2021, the nation has cumulatively added 48.56 GW of solar power capacity. From January to November this year, 11.1 GW of solar capacity has been commissioned across the country, which is 250% higher than the figures last year.

The southern region holds the highest share of 43%, followed by northern (30%), western (25%), eastern (2%), and north-eastern (0.4%) regions (see Figure 1). The eastern and north-eastern regions have a negligible share mainly due to the lack of availability of land for setting up solar projects and the heavy dependency on coal.

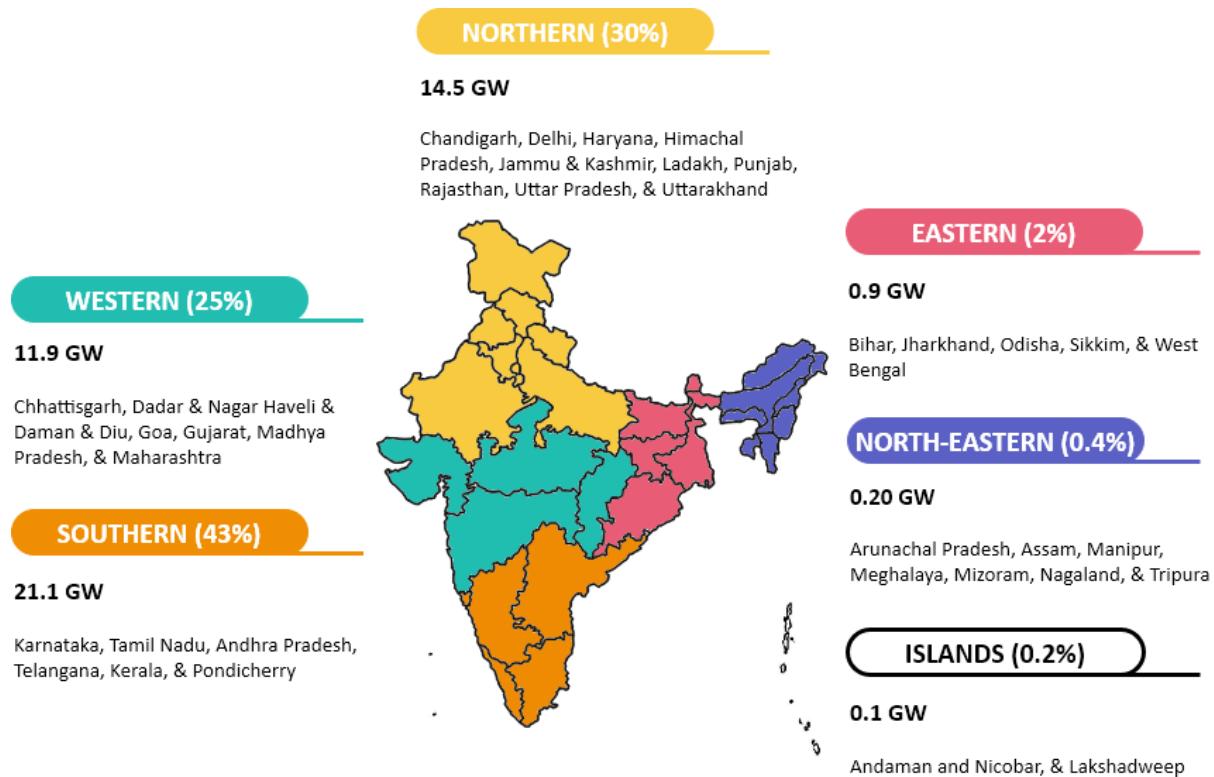


Figure 1: The distribution of solar capacity in different zones (source: CSTEP, data from CEA & MNRE)

India could become the largest solar power producer globally due to its abundant solar potential, ambitious solar targets of the government, and competitive auctions. Rating agencies forecast that the nation will add an additional 8.5 GW of solar capacity by 2022 as large-scale solar projects are in the pipeline. Market research companies anticipate the northern region to surpass the southern region in maximum installed solar capacity in 2022.

The Indian solar industry is slowly transitioning from polycrystalline to bifacial and mono-PERC solar module technologies because of their higher efficiency, longevity, and ability to reduce the balance of system costs. According to experts, bifacial panels and mono-PERC modules would soon gain huge traction in the domestic rooftop photovoltaic (RTPV) and utility-scale solar sectors, respectively. The cost of indigenously manufactured mono-PERC would be about INR 19.54–21.04/W and bifacial modules would be about INR 21.04–22.54/W, close to the price of conventional polycrystalline modules of around INR 18.78/W.

Utility-scale solar holds the largest share (84%) in the overall solar capacity of 48.56 GW, whereas the RTPV sector has mostly remained untapped. Unless the central and state governments make a coordinated effort, achieving RTPV goals would become challenging. An enabling policy framework is essential to bolster RTPV growth in 2022. The government could implement large-scale RTPV programmes under aggregator models—Capital Expenditure (CAPEX), Renewable Energy Service Company (RESCO), and Roof Rent—to offset the negative impact on distribution utility finances.

India has been looking at innovative ways to install solar capacity in agricultural lands, canals, and other water bodies. However, these new and innovative technologies—agrivoltaics, canal top PV, and floating PV—are at a nascent stage of development and have higher installation costs. Hence, the government needs to evaluate the technical potential, frame a consistent regulatory framework, create a domestic supply chain, and explore innovative business models to improve the cost-effectiveness of these technologies.

Eventually, with the rapid development of high performance and low-cost PV technologies, India could continue to play a leading role in the global solar revolution.