

India solar energy

India is leading the renewable energy revolution, with a strategic emphasis on solar power to meet its growing electricity needs. The 14th National Electricity Plan (NEP14), introduced in May 2023, aims to double the country's electricity generation capacity by 2032, with solar energy poised to play a pivotal role. This blog provides an insightful overview of India's energy landscape, highlighting the significant growth of the solar sector, underscored by government initiatives and the potential for future development. It outlines solar energy's environmental and economic benefits, the government's strategies to boost solar adoption, and the anticipated impact on the global clean energy market.

India's coal-to-clean energy transition led by solar

Source: Central Electricity Authority, Central Electricity Regulatory Commission

The graph shows a big shift to cleaner energy, with solar capacity jumping 24 times in the last nine years, hitting 66.7 GW in May 2023, thus contributing 16% to the overall installed capacity. The government has set a target to elevate this share to 43% of the total installed capacity, as illustrated in the graph above. This is the opposite of what has been seen in the past decade. Until 2022, coal was driving India's power growth. Total power generation, including imports, shot up by 564 TWh between FY2012 and FY2022 (928 TWh to 1,492 TWh). Notably, 83% of this growth (467 TWh) came from more coal power.

Multi-faceted benefits of solar energy

Solar energy offers varied benefits, making it an important player in the pursuit of sustainable and efficient power sources.

The utilisation of solar panels not only facilitates electricity savings but also contributes to environmental preservation and technological progress, marking a significant shift towards a sustainable energy future.

Government initiatives to navigate the challenging landscape

The government is actively promoting the transition to solar power as a key strategy for addressing environmental concerns and meeting the country's growing energy needs. This proactive approach reflects India's dedication to reducing its carbon footprint and embracing cleaner, more environmentally friendly alternatives to conventional energy sources. Some of the initiatives are mentioned below:

An integrated capacity of 8,737 MW has been added under the PLI (Tranche I). The Indian government has approved a substantial expansion in domestic solar PV module manufacturing, allocating a capacity of 39,600



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MW across 11 companies under the PLI Scheme for High-Efficiency Solar PV Modules (Tranche II). With an investment of US\$ 1,686.2 million (Rs. 14,007 crores), this initiative is set to unfold in phases: 7,400 MW by October 2024, 16,800 MW by April 2025 and the final 15,400 MW by April 2026. This move, expected to attract US\$ 11,200.3 million (Rs. 93,041 crores) in investment, would significantly boost the sector, creating over 101,487 jobs, including 35,010 direct and 66,477 indirect roles, and marking a pivotal step towards India's sustainable energy future.

India's bold vision for solar energy leadership

India possesses a significant solar energy potential, with an annual incidence of approximately 5,000 trillion kWh across its landmass, where most regions receive 4–7 kWh per square meter daily. Recognising this, the National Institute of Solar Energy has evaluated the country's solar potential of about 748 GW, assuming 3% of the wasteland area will be covered by solar PV modules.

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Web: <https://kary.com.pl/contact-us/>

Email: energystorage2000@gmail.com

WhatsApp: 8613816583346

