



## How India's Visionary Leadership is Driving

# GLOBAL SOLAR GROWTH

This year, India achieved a significant milestone in its energy transition journey by reaching 50% of its installed capacity from non-fossil fuel sources; five years ahead of its 2030 target of reaching 500 GW of non-fossil capacity. In this, India's cumulative solar capacity currently stands at ~123 GW, surpassing Japan to become the world's third-largest solar power producer. These achievements proudly demonstrate India's leadership in driving clean energy solutions for the world.

The country's solar growth is a notable case study, particularly because it is comparatively nascent, evolving over just about a decade. With progressive policies and schemes by the government and strong participation from the power industry, the solar segment has transformed significantly.

## From Clean Energy to Cost-Effective Power

Solar has always been one of the cleanest sources of power generation. However, at the start of the century, it was expensive and not mainstream. Its use was limited to (i) applications focused purely on emission reductions, (ii) remote or hilly areas where transporting electricity was difficult, and (iii) diesel replacement.

From the early 2010s, improvements in technology and manufacturing scale reduced power generation costs substantially, making grid parity achievable. Continuous improvements in solar panel efficiency and large-scale project deployment accelerated the trend. By the 2020s, 300 MW had become a standard project size, which enabled further engineering optimizations, reducing the cost of generation.

Today, the cost of solar power is lower than the variable cost of coal-based power and has become the cheapest source of generation in India. With increased RE power on the grid, energy storage has become essential for grid stability and reliability. In particular, managing the evening peak is critical for safe grid operation. Solar combined with 2-4 hours of storage offers a cost-effective solution, allowing daytime generation to be dispatched during evening peaks (6-10 pm).

## Energy Storage: The Next Frontier

India, the world's fourth-largest economy, is set to become the third-largest within a few years. With rapid urbanisation, expanding infrastructure, and its growing footprint as a global manufacturing hub, the country's energy demand will rise sharply. While solar can meet a significant share of this demand, large-scale storage will be critical to ensure grid stability and reliability.

Recognising this, energy companies are scaling their capabilities in Battery Energy Storage Systems (BESS) and Pumped Storage HydroPower (PSH), both as standalone and hybrid projects with RE assets. Solar plus storage in particular presents as a promising solution to stabilise the power grid and accelerate adoption of renewable energy. The integrated solution is currently being embraced by the government and the power industry to unlock its full potential.

## Pioneering Global Initiatives

India has also extended its leadership beyond its borders through pioneering initiatives. The International Solar Alliance (ISA), launched by India and France, is mobilizing investment and accelerating solar energy deployment worldwide, with India playing a pivotal role in setting benchmarks and fostering collaboration. Similarly, the One Sun, One World, One Grid (OSOWOG) initiative aims to build a transnational grid capable of transmitting solar power across borders, enhancing global energy security while promoting a shared, sustainable future.

## Ambitious Targets and Policy Framework

India's ambitious RE goal is backed by an enabling policy environment. The growth and increased investment in the solar sector are driven by several initiatives such as incentives for domestic manufacturing, promoting solar parks, waiver for Inter-State Transmission System (ISTS) charges, and robust auction mechanisms. The National Solar Mission laid the foundation for India's rapid expansion of solar capacity across states and set the tone for its long-term clean energy strategy.

Recognising that energy transition cannot be worked upon in silos, India has encouraged public-private partnerships (PPP) in the sector. This has enabled a collaborative approach to tackling challenges that tend to hinder the progress of large-scale solar projects.

## Looking Ahead

India's solar journey is not only about utility-scale projects but also about inclusivity. Several reforms on the distributed segment side (rooftop, solar pumps and small-scale grid-connected projects) under government schemes such as the PM Surya Ghar Yojana and PM Kusum Yojana play a key role in helping with the transition to clean solar energy.

In addition, the recent GST reform reducing tax on renewable equipment from 12% to 5% is a transformative step that will encourage domestic manufacturing, lower project costs, and accelerate renewable capacity growth by making clean energy more competitive and attractive for investors, DISCOMs, and consumers.

India's solar growth story is a shining example to the world, showcasing the results of turning bold ambitions into action through a collaborative approach between the government and the industry. Solar will remain central not only to achieving the nation's RE and net-zero goals but also as a key lever for global climate action.



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