# WHAT ARE THE NEW MARKET OPPORTUNITIES FOR INDIAN DEVELOPERS IN SOLAR + STORAGE SPACE?

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Solar-plus-storage technology is set for a promising future in India because of rapidly rising electricity demand, ambitious solar targets, higher solar penetration, and falling prices of solar and storage technologies in the nation.

As of 31 March 2021, the total power generation capacity in India is 382.15 GW, of which 234.7 GW is thermal and 94.4 GW is renewable energy (RE), with nuclear and hydro accounting for the rest. According to estimates by the International Energy Agency (IEA), the electricity demand in India will be higher than that of any other nation in the next two decades because of growing population, urbanisation, and industrialisation. Considering this, the Government of India (GoI) aims to deploy 450 GW of RE (including 300 GW of solar) by 2030. To honour its aggressive climate goals, the Government expects to meet half of the nation's electricity demand with RE, particularly solar energy.

The increasing level of solar penetration in the power grid will create some serious challenges to the grid operations because of the intermittency in solar outputs. Energy storage technologies could be the most effective solution to maintain the balance between power supply and demand in the grid.

## Why is solar -plus-storage the future of India?

Solar power has now become the cheapest source of energy in the country. For instance, in December 2020, a 500 MW capacity solar plant in Gujarat was auctioned at a new low tariff of INR 1.99 per unit. The key reasons behind the reduction in solar tariffs are low-cost financing and the decline in solar module prices.

Also, there are different energy storage technologies available in the market, viz. Batteries, flywheels, pumped-hydro storage, and supercapacitors. For grid-level applications, battery technologies have become the preferred option across the world because of their falling costs and technological innovations in the field. According to studies, lithium-ion batteries (LiBs) have high energy efficiency, high energy density, and a long cycle life compared to other battery technologies.

Studies also estimate the costs of grid-scale LiB storage systems. The estimated tariff rates for co-located LiBs (storing 25% of solar power) and solar-plus-LiBs in 2025 and 2030 are presented in Table 1.

*Table 1: Estimated tariff rates for co-located LIBs and solar-plus-LIBs*

| Type of system | Tariff rates (INR/unit) | | |
|---|---|---|---|
| | 2020 | 2025 | 2030 |
| Co-located LiBs | 1.44 | 1.00 | 0.83 |
| Solar-plus-LiBs | 3.94 | 3.32 | 2.83 |

**HENCE, SOLAR-PLUS-STORAGE IS A VIABLE OPTION TO SUPPLY AFFORDABLE AND RELIABLE POWER TO CONSUMERS.**

## New opportunities for developers

Wide-scale adoption of solar will lead to wide-scale implementation of storage, which in turn will offer opportunities to developers to implement GW-scale storage technologies along with solar. This would also create opportunities for energy storage providers to participate in wholesale electricity markets. Moreover, smart technologies and storage technologies could be deployed in power grids to modernise and stabilise the grid infrastructure.

Developers would also have possibilities to identify suitable locations to deploy storage technologies as they can be deployed in the transmission network or distribution network (near load centres), and co-located with solar generators. For siting the storage, it is essential to evaluate the costs and advantages of multiple locations to determine the optimal siting and have clarity on the expected revenue streams.