

# Budget 2022: Renewable energy, energy storage and hydrogen – mantra for India's decarbonization journey

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India is the third largest energy consuming country in the world. (File Photo: PTI)

**By Anish Mandal**

The upcoming budget will be pivotal for the energy sector in India. With the latest net zero commitments made by India in the COP26 summit, the country has an ambitious target which requires decisive and dedicated measures in the direction of energy transition.

India is the third largest energy consuming country in the world. Rapid electrification in the recent years has resulted in improving electricity access in remote regions resulting in increasing consumption. Over the last two decades, India has been responsible for more than 10% of the increase in global energy demand, however, on a per capita basis, India's energy use is less than half of the world average. Rising incomes and improving standard of living on the back of overall economic development, urbanization and industrialization are expected to increase energy consumption going forward.

On the other hand, despite low per capita emissions, India remains the third largest GHG emitter globally, indicating the need for meeting energy demand in a more carbon efficient manner as India's energy demand grows over the next few decades. Energy sector alone accounts for more than a third of the total emissions owing to a coal dominated generation mix.

While a decisive policy push from the Government has improved the share of renewables, there is still a long way to go for developing adequate clean energy capacity in the country. Channeling public and private investment in the renewable energy sector will be crucial to enabling large scale capacity additions. Renewable energy technologies need to be broadened beyond the emphasis on on-shore wind and ground-mounted solar. Offshore wind, floating solar and rooftop solar all have significant potential in India and need to be pursued in parallel along with the promotion of domestic

manufacturing capacity. In addition to renewable energy projects, adequate planning and investment is also required for supporting transmission infrastructure to enable smooth evacuation of power and a properly conceived electricity market to integrate renewables on a dispatchable basis on to the grid.

As large amounts of intermittent solar and wind energy sources are integrated onto the grid, deployment of battery storage resources will also be required to balance the variability of generation. It is estimated that substantial battery storage (upwards of ~1000 GWh) and pumped storage (upwards of ~20 GW) will be required to tackle the high penetration of variable RE by 2050. A comprehensive policy framework is therefore required covering regulatory, financial and taxation, operational and technical aspects of grid scale battery storage. Given the large demand potential, additional fiscal incentives could be designed going forward to upscale local manufacturing.

Distribution utilities and large industrial and commercial consumers have been mandated to procure certain minimum amount of renewable energy in the form of Renewable Purchase Obligations. Net zero ambitions by the corporates and India's energy transition goals has paved the way for renewables only capacity addition going forward. Regional integration and tapping of renewables resources of the region needs to be explored and incentivized through appropriate policy and regulatory measures before the country exhausts its feasible indigenous potential (~750 GW solar, Onshore wind ~300 GW, Offshore wind ~130 GW).

Falling tariffs for renewable energy further opens door for use of green hydrogen especially in harder to abate sectors where electrification is either infeasible or uneconomical. Currently, high cost of electrolyzers hinder the uptake of hydrogen in face of cheaper and carbon intensive sources of energy. Large scale production capacity driven by fiscal incentives in the form of PLI scheme for electrolyzers, export incentives and other regulatory measures such as green hydrogen mandates for energy intensive industries would be instrumental in moving India towards a green hydrogen manufacturing hub for the global market. While there has been a substantial reduction in renewable solar tariffs, a carbon tax could be evaluated going forward for taxing the GHG emissions from conventional energy sources. This would help in sending a price signal to the market and elicit a gradual change in power procurement from non-green sources of power.

As more and more conventional coal based thermal stations are forced to retire, suitable policies and budgetary provisions would have to be made for just transition of the coal mines and technologies need to be explored for repurposing of the existing coal based thermal stations.

The Government will have to play an important role in creating a conducive environment for private participation and pumping the necessary resources for accelerating the energy transition in India. The budget, 2022 will also be instrumental in sending signals to the market regarding the Government's commitment to meeting the country's Net Zero targets.

(Anish Mandal is Partner at Deloitte India. The views expressed are author's own.)