

The Role of Pumped-Hydro Storage in the Indian Grid

India is planning to install 450 GW of renewable energy (RE) generation capacity by 2030. However, RE is highly intermittent and cannot be dispatched based on real-time demand. Utility-scale energy storage technologies such as battery and pumped-hydro could be the answer to this problem.

The Ministry of Power (MoP), Government of India, recently announced the [promotion of RE and pumped-hydro energy storage \(PHES\) for decarbonising](#) the Indian grid. PHES offers superior features such as continuous generation for six to 10 hours (depending on the storage capacity of its reservoir), high ramping capability (around 1% of its capacity/second), efficiency in the range of 70% to 80%, and long lifespan of 40 to 60 years. Despite these features, the growth of PHES in India has been tepid so far.

The Central Electricity Authority (CEA) estimated a PHES potential of 96 GW in 63 identified sites, but only 3.3 GW of PHES is operational in India to date. The slow pace of PHES development in India can be attributed to two factors: the cost associated with the commissioning of PHES plants and the low cost recovery from the existing pricing mechanism.

In this context, the Center for Study of Science, Technology and Policy (CSTEP) has **developed a differential pricing** mechanism that **could help increase PHES uptake in India**.

CSTEP is conducting a webinar on **30 July 2021** to discuss the role of pumped-hydro storage as a solution to India's green energy transition. The webinar will have two sessions. The first session will be kicked off with a panel discussion on *The Need for Pumped-Hydro Storage in the Indian Grid*. In the second session, CSTEP will present its study on PHES, followed by a panel discussion on *Pricing Mechanisms for PHES*.