Business Standard

12 Gw pumped storage hydropower projects get govt's green signal

Pumped storage hydropower is a type of hydroelectric energy storage that uses water stored in two reservoirs at different elevations to generate electricity

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Photo: Bloomberg

The Ministry of Environment, Forest, and Climate Change (MoEFCC) has given the environment-related go-ahead to pumped storage hydropower projects with a capacity of 11.98 gigawatts (Gw).

This marks the largest tranche of these new-tech energy storage projects to be approved in one go in the country. The clearance has been granted for eight projects, with an investment of Rs 81,981 crore, spread across five states, according to the notifications posted on the Parivesh portal of MoEFCC.

Pumped storage hydropower is a type of hydroelectric energy storage that uses water stored in two reservoirs at different elevations to generate electricity. When there is excess electricity available, such as during off-peak hours or from renewable sources like solar and wind, it is used to pump water from the lower reservoir to the upper reservoir. When there is a demand for electricity, the water is released from the upper reservoir back down to the lower reservoir, passing through turbines that generate electricity.

According to the minutes of the meeting of the 5th Expert Appraisal Committee (EAC) on River Valley and Hydroelectric Projects in December 2023, Greenko Energy's proposal for a 3.66 Gw project in Uttar Pradesh's Sonbhadra district was the largest project to receive an environment clearance recommendation.

Two projects with capacities of 1.2 Gw each, belonging to Sterlite Grid and Gandhwani Energy in Chhattisgarh, received recommendations. One project of Oju Subansiri Hydro Power Corporation of 2.22 Gw for Arunachal Pradesh and one project of JSW Energy of 1.5 Gw for Maharashtra were also given the nod.

The Non-Conventional Energy Development Corporation of Andhra Pradesh Limited's (NEDCAP's) 1.2 Gw project in Annamayya district was given terms of reference (ToR) clearance. NEDCAP's 1 Gw project in YSR district also received an environmental clearance nod.

According to the ToR documents, a land area totaling 2,507 hectares has been allocated for the projects. The operationalisation of the project is anticipated within the next 3-4 years.

The only project to be deferred by the committee was JSW Energy PSP Six's 1.68 Gw project in Sonbhadra district of Uttar Pradesh. The committee has sought comments from the Central Electricity Authority on the overlapping of the project with the Kandhaura Closed Loop Pumped Storage Project (1.68 Gw) and Sonbhadra Pumped Storage Project (1.2 Gw).

The EAC recommended that the establishment of two pumped storage projects in such close proximity where project components are overlapping may lead to an ecological disaster. From an ecological and social sustainability point of view, the development of such projects is not advisable in such a manner.

Greenko Energy is constructing two integrated renewable energy storage projects (IRESP) — Pinnapuram Pumped Storage Project and the Saundati Pumped Storage Project — with a total pumped storage capacity of 2.46 Gw. Apart from this, Greenko Energy is planning two Integrated Renewable Energy Projects, and one among these is at Pinnapuram, Andhra Pradesh. The project consists of 2 Gw of solar, 400 Mw of wind, and 1.2 Gw of hydro pumped storage, according to the company's website.

JSW Energy has received a hydro pumped storage project from the state-owned Power Company of Karnataka Limited for the procurement of 2.4 GWh for a period of 40 years. According to JSW Energy's Annual Report 2023, its total renewable capacity of 5.9 Gw constitutes 61 per cent of total capacity. In the

energy storage space, the company has a locked-in capacity of 3.4 GWh of projects across both pumped storage (2.4 GWh) and Battery Energy Storage (1 GWh), said its annual report.

JSW is reportedly in the process of developing a 1.5 Gw hydro pumped storage project in the Igatpuri district in Maharashtra.

First Published: Jan 18 2024 | 9:02 PM IST

Page URL :https://www.business-standard.com/industry/news/centre-approves-nearly-12-gw-pumped-storage-hydropower-projects-124011800894_1.html