South africa pumped hydro storage

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The Palmiet Pumped Storage Scheme consists of two 200 megawatts (270,000 hp) turbine units located 2 kilometres (1.2 mi) upstream of the Kogelberg Dam on the Palmiet River near Cape Town, South Africa.[2] The pumped-storage hydroelectricity plant is capable of responding to a surge in peak power demand in minutes.[3] At night, excess power on the grid generated by conventional coal and nuclear plants is used to pump water to the upper Rockview Dam overlooking Gordon"s Bay.

It is regarded[by whom?] as a forerunner in environmental engineering. The whole Palmiet site is a conservation area and in December 1998 the area was declared a Biosphere Reserve by UNESCO - the first in South Africa.

Eskom has revived a proposal to build a hydropower plant that was mothballed more than a decade ago, one of almost 20 renewable energy projects that are in the pipeline to reduce South Africa’s dependence on coal.

The state-owned utility’s proposed 1.5GW Tubatse Pumped Hydro Storage facility, which will generate power on demand from water-driven turbines, was included in South Africa"s so-called Just Energy Transition Investment Plan released last week.

The transition will be partly funded using US$8.5-billion (R150-billion) in loans and grants that the US, European Union, UK, Germany, France and several institutions have pledged to make available. That"s a small fraction of the $84.5-billion the government says it needs over the next five years to add additional renewable capacity, a third of which is expected to come from private investors.

"Where funding can be made available, Eskom will develop such projects," the utility said in a reply to questions. "Where not, Eskom will look at alternate solutions, possibly using public-private partnership models."

Eskom has little scope to pay for new capacity itself — it owes about R400-billion, isn"t generating enough income to cover its operating costs and interest bill.

The Tubatse project was delayed in 2009 as Eskom forecast stagnant electricity demand. The project will cost R35.9-billion, according to the transition plan, almost double the original estimate of R19.6-billion. Development and construction of such a project typically takes about eight years, the utility said.

Also in the five-year project pipeline are almost 2.6GW of wind and solar generating capacity, which are expected to cost an estimated R48-billion, and R27-billion worth of battery storage capacity.

Eskom also outlined a proposal to build a controversial 3GW gas-fired plant in the eastern port town of Richards Bay. While the government says burning the fuel will be essential to stabilise an unreliable power system, it will find it difficult to access financing for such projects.

Eskom said it is awaiting a determination from the energy department on the greenfield plant and only then will its role and timelines for the project be made clear. — (c) 2022 Bloomberg LP

Nestled in the verdurous Drakensburg mountain range is Africa"s largest water-pumped electricity storage scheme. Ingula is more than just an electricity generating facility, it serves as an example of how eco-friendly principles can be married with development.

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