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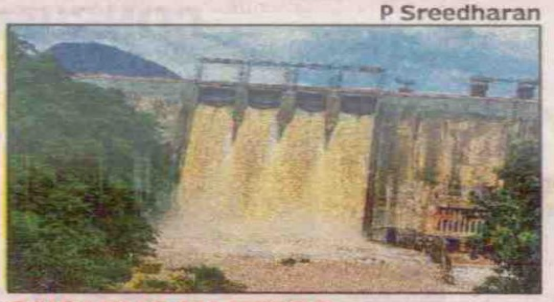
Water level rises swiftly in dams

Sakthivel.K@timesofindia.com

P Sreedharan



GUSHING WATERS

Coimbatore: Dams in and around Coimbatore district are filling up fast, as rain continues to pound catchment areas in the western ghats.

Water level in the Pillur dam has risen by 10ft in three days, while Siruvani dam recorded a swift rise in its water level by more than 3ft in a single day on Wednesday. As rain appears relentless in the Western Ghats, an official with Water Resources Department said the dams would receive even more water in the coming days.

Water level in the Pillur dam stood at 97ft against the full reservoir level of 100ft on the day. The inflow was recorded at 16,919 cubic feet per second (cusecs). At least 23,104 cusecs of water is being released into the Bhavani river for drinking water purposes.

According to the official, the inflow started increasing on Monday, with heavy rain lashing the catchment areas.

In the Siruvani dam, water level stands at 38.67ft against its maximum storage capacity of 49.53ft. "With this water level, if we draw 50-70 million litres of drinking water to the city a day, we could draw it consistently for another three to four months. However, we expect heavy rain till Friday," the official said.

Water level in the Aliyar dam in Pollachi has also increased by 8ft in the past three days. This dam is the primary water source for 289 villages across Coimbatore and Tirupur, as well as some areas of Coimbatore city.

Southwest monsoon is intensifying in the Nilgiris by the day, replenishing the dams in the tourist retreat too. With heavy rain lashing catchment areas, water level in the Parsons Valley reservoir, Avalanche dam, Upper Bhavani dam and Emerald dam is on the rise.

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MINT CURATOR

Hydropower faces a worsening dry spell in much of the world

We must end the enduring neglect of this form of renewable energy

DAVID FICKLING
is a Bloomberg Opinion columnist covering climate change and energy.

Climate change may have begun to hit many of the world's dams REUTERS

The world's biggest source of renewable energy has been going through a dry patch. Generation from solar farms roughly tripled between 2018 and 2023, while the output of wind turbines almost doubled. That provided enough extra clean energy to power Japan and Russia put together. Meanwhile, the hydroelectric dams that generate about one-seventh of the world's electricity stood still: The additional 52 terawatt-hours in 2023 was only enough to fuel Greece.

That's not surprising. Hydro's problems resemble those of the other veteran form of clean power, nuclear. Unlike wind and solar, it's been an established technology for decades, so much of its growth potential has already been exploited. Like nuclear, it's dependent on the building of costly and time-consuming projects to move forward, and shows little sign of reducing its costs. Compounding problems, a drought related to La Niña in 2022 and 2023 caused a collapse of generation in China, home to about a third of the world's hydro dams.

It would be nice to dismiss this as a temporary setback. When drought conditions recede, generation should surge back, as we appear to be seeing in China now, where wetter weather has been filling reservoirs and drove coal to an estimated record-low 53% share of generation in May. A recent study of 610 US hydropower projects shows there may be more long-lasting issues.

The productivity of a power plant can be measured by its capacity factor—the kilowatt-hours it generates as a proportion of a theoretical maximum. For 24/7 nuclear facilities, this is close to 90%, while for solar panels, which mostly operate for a few hours around midday, it's 15-20%.

Hydro facilities typically have capacity factors in the region of 40%—but it's a mistake to assume that figure remains fixed in the long term. The US study found that four out of five plants saw declines between 1980 and 2022, with the cumulative fall representing nearly a quarter of generation, equivalent to closing down a Hoover Dam-sized project every two to three years.

That's a worry. We need to increase the power we produce from clean sources over the coming decades. If existing facilities are getting less productive, we're going to need more new plants if we want to keep pushing fossil fuels out of the mix, especially if EVs and data centres cause us to consume more electricity in general.

Why should this be happening? One well-known factor is that climate change itself may be reducing the availability of the fresh water on which hydro dams feed. In the Alps, hotter and drier summers are likely to lead to thinner snow cover. In the Himalayas, glaciers that currently provide vast natural batteries trickling water into the catchments of hydro reservoirs from China to Pakistan are receding.

The most worrying fact about the US study is that it doesn't even depend much on this effect. Water shortage explained the measured decline at only a fifth of the plants studied. A big share of the shortfall appears to derive from a change in the way dams are used. Non-energy considerations —such as river ecology, flood management, boating and fishing, and the supply of water for irrigation, industry and homes —appear to be growing in importance.

A plant operator may want to run a dam just for electricity production, but plenty of other interest groups may regard a reservoir as a shared public asset, and want a say in how it's managed. That's likely to be a fraught issue in places like South Asia, where farmers are voracious consumers of water and will demand more allocations as climate effects kick in.

To that group can now be added another: renewable power generators. As fossil fuels are pushed out of the generation mix— falling to less than a third of the total in the EU last year, for instance—hydro will more and more be called on to balance out fluctuations from wind and solar power.

In Europe, North America and the Pacific, almost all dams currently under construction are for so-called pumped storage, which can force water uphill with cheap midday power before discharging it back to generate electricity in peak hours. Even conventional dams will find themselves used more flexibly to back up wind and solar. As a result, they're likely to generate less than they would if run flat-out.

That's going to be a challenge. If we're going to zero out our emissions, the world has three decades to roughly double the fleet of dams that it has been building up since the 19th century. The pace of construction is less than half of what's needed—and the shortfall will be even worse if current plants are operating less efficiently. Hydro is probably the most controversial and most neglected form of renewable power. We can't afford to ignore it, though.