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NEW DELHI : India plans to construct the country's second-largest dam at Yingkiong in Arunachal Pradesh to counter China's ambitious water diversion scheme of the river that feeds downstream into the Brahmaputra.

The proposed dam in the upper reaches of Arunachal will be able to store around 10 billion cu. m (BCM) of water, Jal Shakti minister Gajendra Singh Shekhawat said in an interview. By storage, the Indira Sagar dam is the largest in India at 12.2 BCM.

The proposed dam is expected to involve an investment of around 50,000 crore and is part of the proposed Upper Siang multi-purpose storage project that will also generate hydropower.

China's 14th five-year plan has proposed building a massive dam over the Brahmaputra river, known in China as the Yarlung Tsangpo, a development that has raised concerns in India because of the strategic ramifications. India and China relations have deteriorated after troops clashed along the Himalayan border, killing 20 Indian soldiers in June 2020.

Water in the lean season in the Brahmaputra comes from melting snow in the mountains on the Tibetan plateau. India's plan involves releasing water from the dam to maintain water security in case China builds structures to divert water. Also, in the case of China releasing water from its upper reaches, such a dam will also help in storing water to prevent floods.

In response to a query about China's plans to build hydroelectricity projects on the Great Bend, right above Indian territory, where the Brahmaputra takes a U-turn, Shekhawat said, "We have planned a project for its mitigation in Yingkiong for constructing a dam in the upper reaches of Arunachal Pradesh. And probably that is going to be one of India's largest dams. We will hold water in that and will release it in the lean season when there is no rainfall to provide us (water) security."

While run-of-the-river (RoR) projects harness the river's seasonal flows to generate electricity, reservoir projects involve storing water, which addresses the risks associated with seasonal changes in the natural flow and availability of river water. Of the eight river basins in Arunachal Pradesh, Subansiri, Lohit, and Siang are of strategic importance as they are closer to the border with China.

"Dams don't only serve the irrigation purpose or to generate electricity; they also act as a mitigation cushion to prevent floods. Say, if ever from the upper reaches, there is water release, even then we will have a cushion to control release that water," Shekhawat added.

According to Indian planners, precipitation in China contributes only 7% to the flow of three tributaries of the Brahmaputra—Subansiri, Siang and Lohit—that originate in China.

"Brahmaputra river has a huge quantum of 500 BCM (billion cubic metres) of water flowing into it. Of this, more than 75% comes from our catchment area. That's the reason why we are not affected by it a lot. But in the non-monsoon season, when the river gets water from snowmelt,

we don't have water in our catchment area. So if they construct a dam and divert water in the non-monsoon seasons, then it will have an impact from Arunachal Pradesh to Bangladesh. Earlier they (China) had said they were not doing anything. Later they said that they are constructing run-of-the-river hydroelectric projects. And now there is evidence that perhaps they can also work on water transfer," Shekhawat said.

Of the 2,880km length of the river Brahmaputra, 1,625km is in Tibet, 918km in India, and 337km in Bangladesh. Of the total catchment area of 580,000 sq. km, 50% lies in Tibet, 34% in India, and the balance in Bangladesh and Bhutan.

"We have got clarity on other things. There is some small resistance at the local level, which the Arunachal government is working on. The total cost must be around 50,000 crore. Cost is immaterial. It should be constructed," Shekhawat said.

The total hydropower generation potential of India's North-Eastern states, and Bhutan, is about 58 gigawatt (GW). Of this, Arunachal alone accounts for 50.328GW, the highest in India.

Experts said China's plans may not have a major impact on the Indian side.

"Whatever flow of Brahmaputra river happens in India, a majority of it comes from the rainfall that happens in the Indian region. So the water that China intends to use will not have a major impact on the river on the Indian side," said Anjal Prakash, research director, Bharti Institute of Public Policy at the Indian School of Business, Hyderabad.

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