

Dams on Himalayan rivers: How good is the science?



■ *Bappaditya Chatterjee*

Quite a large number of dams are being planned on the Himalayan rivers by water planners of the Government of India and of the state governments. But environmentalists feel that its consequence will be catastrophic. In fact, a report submitted to the environment ministry revealed that Tehri dam which is the world's fifth largest had already destroyed the free flowing character of the Bhagirathi. NTPC Ltd, the public sector company, last year announced that work on its 600 Mw Loharinag-Pala barrage project on the Bhagirathi had been suspended in the wake of protests by environmentalist and former Kanpur IIT professor G. D. Agarwal. One argument for dam construction is that it helps hydro power projects and clean energy initiative. "Dams are not to be seen as a permanent solution for hydro-electricity generation. They are technology with a limited life. The Himalayan rivers are well-known for carrying heavy sediment loads which makes the economic life of reservoirs quite low. What is the scenario for the Himalayan

rivers in the post-dam-fill period, which may be about 80-100 years? The Himalaya will remain, the monsoon will come and rainfall will occur even after that. People of India do need the answer to such questions.?" said, Jayanta Bandyopadhyay, Professor and Head, Centre for Development and Environment Policy, IIM Calcutta.

Why environmentalists have been questioning dam construction on Himalayan rivers?

According to Prof. Bandyopadhyay, "Any major engineering intervention in the structurally fragile Himalayas runs the risk of being catastrophic, if ecological sciences are ignored. India has a process of Environmental Impact Assessment (EIA) that clearly indicates a lack of such ecological wisdom. The EIAs are done rather simplistically, and what is worse, consider impacts that are within a radial distance of 10 kms from the dam site. For many hydro-electric dam projects, the outflow point may itself be at a distance much more than 10 kms. We cannot ignore what has now

become known as Strategic Impact Assessment (SIA). In today's context when one can measure environmental changes from thousands of kms above the Earth, our procedures are so outdated!"

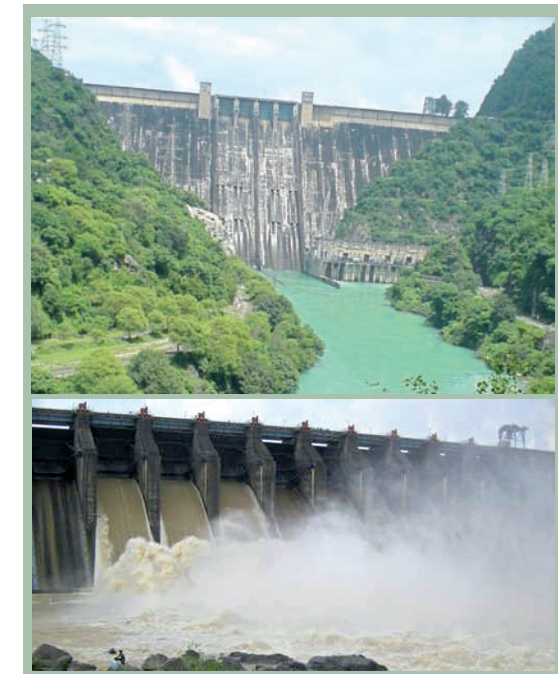
The plan of dam building without respect to ecological sciences cannot simply be justified. "If there will be some disasters, like from seismic activities or extremely intense rainfall in the catchments, we have the unscientific safety valve of putting all that below the carpet of 'natural disaster' and forgetting the lesson that an analytical approach would have brought.", Bandyopadhyay said.

Subrata Sinha, former Dy. DG, GSI and member of Environmental Appraisal Committee of Tehri dam said, "The Tehri case exposes the ecological insensitivity of

research and publications. Thus, most of the engineering interventions stand beyond open scientific platforms. It is so easy to put the blame of failures of engineering on nature."

Dam constructions impact irrigation projects and thereby agricultural activities.

India has created a very large irrigation potential of about 110 mha. About half of the area irrigated is from surface sources. Dams



Professor
Jayanta Bandyopadhyay

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government, inadequacies in the environmental appraisal system, besides the operation of a nexus of corruption. Even a lesser earthquake in the nineties caused cracks in the foundation that were hastily blanketed. A stronger earthquake, quite within the realms of probability may lead to a nightmarish disaster scenario in the fragile Himalayan region and its downstream Ganga basin."

Will it multiply and intensify natural disasters like flood or drought?

Considering the Kosi disaster in 2008 (there was no great rainfall in the catchment of Kosi in Nepal and the embankment failed) creating one of the worst human-made floods in recent history, Prof. Bandyopadhyay said, "The Himalayan rivers have a very complex ecohydrology and great knowledge gaps exist in their understanding.

This is multiplied by the fact that detailed hydrological data on the Himalayan rivers are not made available for open scientific

provide the water but it is used most inefficiently. Prof. Bandyopadhyay said, "India has one of the most inefficient irrigation systems in the world. Simply by increasing end-use efficiency, we can easily add a huge volume of water that can be used for additional supplies, without any dam being constructed. Further, as rivers become diverted more and more, and do not carry much water in the lower parts of the basin, people affected by such human induced water scarcity are correctly asking for compensation. The scientific basis for the economic assessment of dams has changed with recent advances in interdisciplinary water science. In many industrialised countries, hundreds of dams have been de-commissioned as economically useless."

In India, science and economics of water projects do not get their due so easily. Dams act as apparently neutral tools for the vested interests to corner water that may otherwise be used by others. ■