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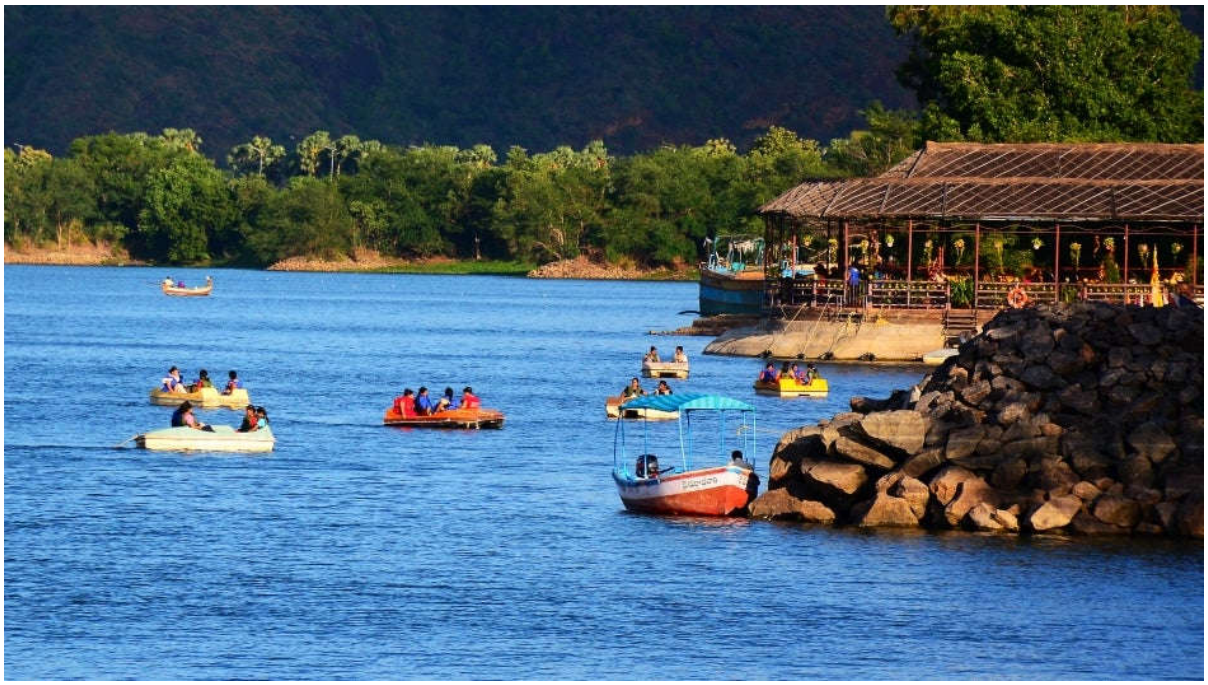
Environmental Flow: How River’s Share of Water Can Preserve Ecosystem, Promote Well-being | The Weather Channel

6-8 minutes



Krishna River

(Mahesh G / BCCL, Vijayawada)

Inaugurating the Bhakra Nangal Dam project in 1954, former Prime Minister Jawaharlal Nehru called dams the ‘temples of modern India’. There is no denying dams have enabled large-scale growth and prosperity the world over. And as India’s population and the economy grew, so did its reliance on dams for water storage and

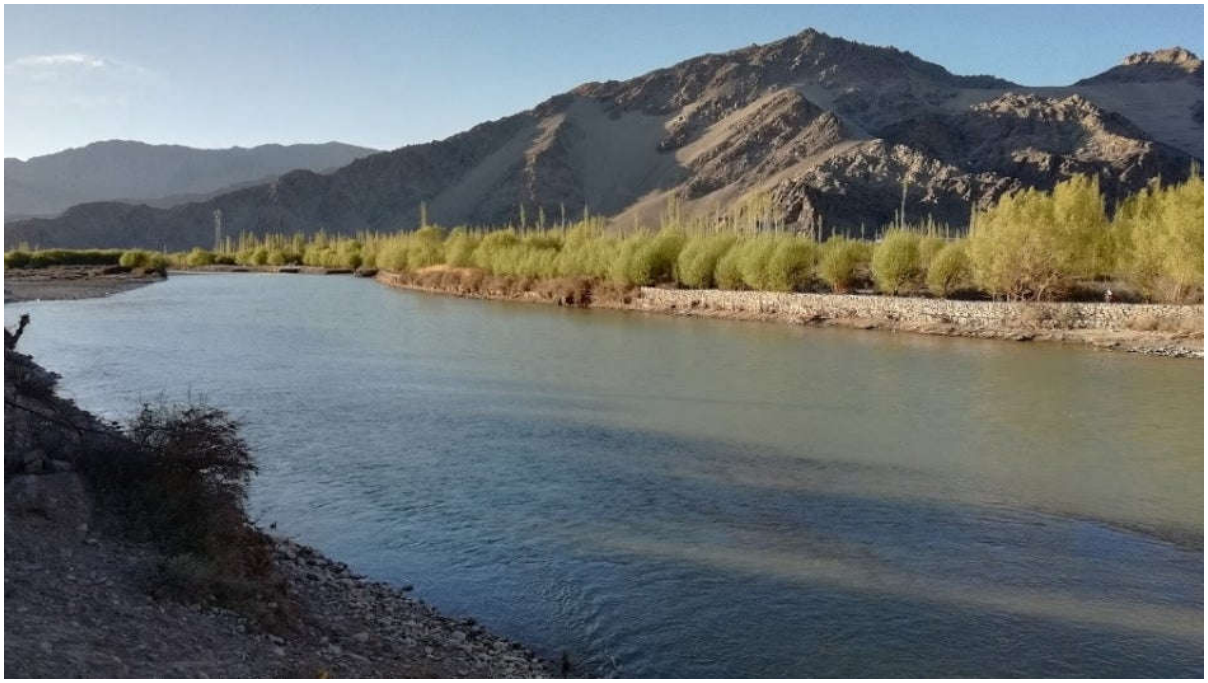
electricity generation.

As a result, damming every single river has now become a natural response. With over 5000 large dams, India is now one of the top three dam-building countries worldwide.

Unfortunately, the rivers due to which these dams exist are today left with very little water to sustain. A recent World Wildlife Fund (WWF) study showed that just one-third of the world's 246 longest rivers remain free-flowing today. As their natural flows are altered—by dams, pollution, obstruction, and diversion—some of the world's great rivers that thrived for millennia are now gradually dying.

But experts think that the concept of e-flows might provide a way out.

What is e-flow?



Indus River

(IANS)

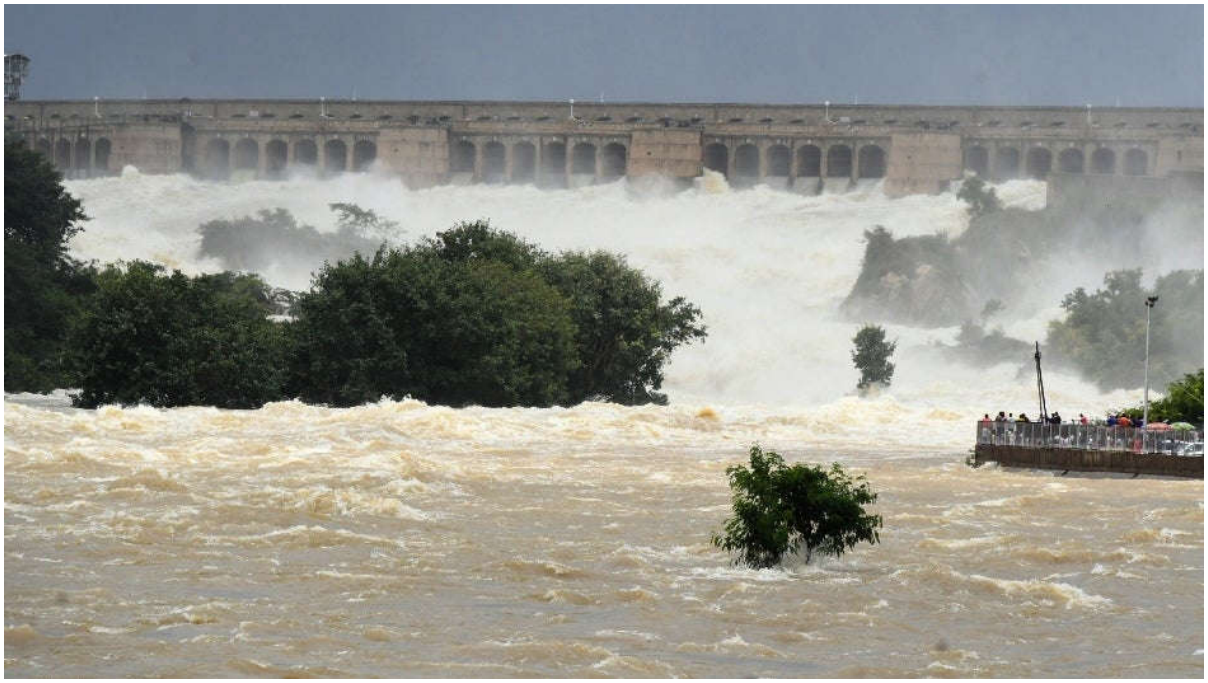
Though definitions vary, it is generally agreed that environmental

flow (e-flow) is a system to evaluate the quantity, timing, and quality of water flows for sustaining the well-being of humans and ecosystems throughout the length of a river.

"The idea of e-flows is highly relevant to India. Long stretches of our rivers are highly degraded, partly because a large fraction of the natural flows are diverted while the quality of water flowing into rivers is very poor. If rivers carry adequate flows to meet the environmental needs, they will be healthy and be able to serve the environmental, social, cultural and religious requirements," says Dr Sharad K Jain, Director, National Institute of Hydrology, Roorkee.

How the concept of e-flow was born

Over the past century, as nations mastered the dam and embankment technology, many started to consider the water left untapped to flow into the sea a 'waste'. As this notion caught on, many streams and small rivers across the globe began running dry for most of the year. What's even more worrying is that, in recent decades, even large rivers like the Godavari, Indus and Yellow river have stopped flowing during dry seasons.



Krishnaraja Sagar dam

(IANS)

Almost all the rivers across the world witnessed excessive alterations in their flow regimes over the past century. Despite allocating the 'minimum flow', research suggests that many rivers and the dependent ecosystems have deteriorated vigorously. As the phrase suggests, minimum flow means leaving just enough water in a river not to let it dry. Unfortunately, the concept also encouraged the maximum extraction of water.

E-flow is evolved from the concept of minimum flow and improves upon that idea tremendously. Maintaining e-flow ensures ecological integrity and downstream human needs that cannot be fulfilled with minimum flows. With modern computing abilities, scientists can develop models to project future impacts and estimate e-flow. Now, only the legal mandate is lacking to ensure nature's share of water remains in the river.

In October 2018, the central government notified the e-flows for the Ganga to be strictly maintained at different stretches. Assessments are being carried out on other significant rivers across India to determine the necessary e-flow. Strict implementation of the e-flow regulations is key to preserve our lifelines and ensure water security.

What happens if we continue to ignore e-flow

A river is not restricted only to provisioning services—providing for irrigation, power generation, domestic, and industrial use. It fulfills multiple social, cultural, ecological and hydrological functions. From the Ganga to the Kaveri, the religious and cultural importance of rivers in India is undeniable. Disappearing rivers would also mean a

profound spiritual loss for a large number of Indians.

Narayani River in Chitwan, Nepal

(Sunil Sharma/Xinhua/IANS)

Moreover, dry rivers bring down groundwater levels while affecting the water cycle and microclimate in the region. Failing to maintain e-flows means more disruptions in the natural water cycle as well as the ground and surface water availability. Maintaining e-flow also helps the river to naturally clean moderate amount of pollutants that flow into it.

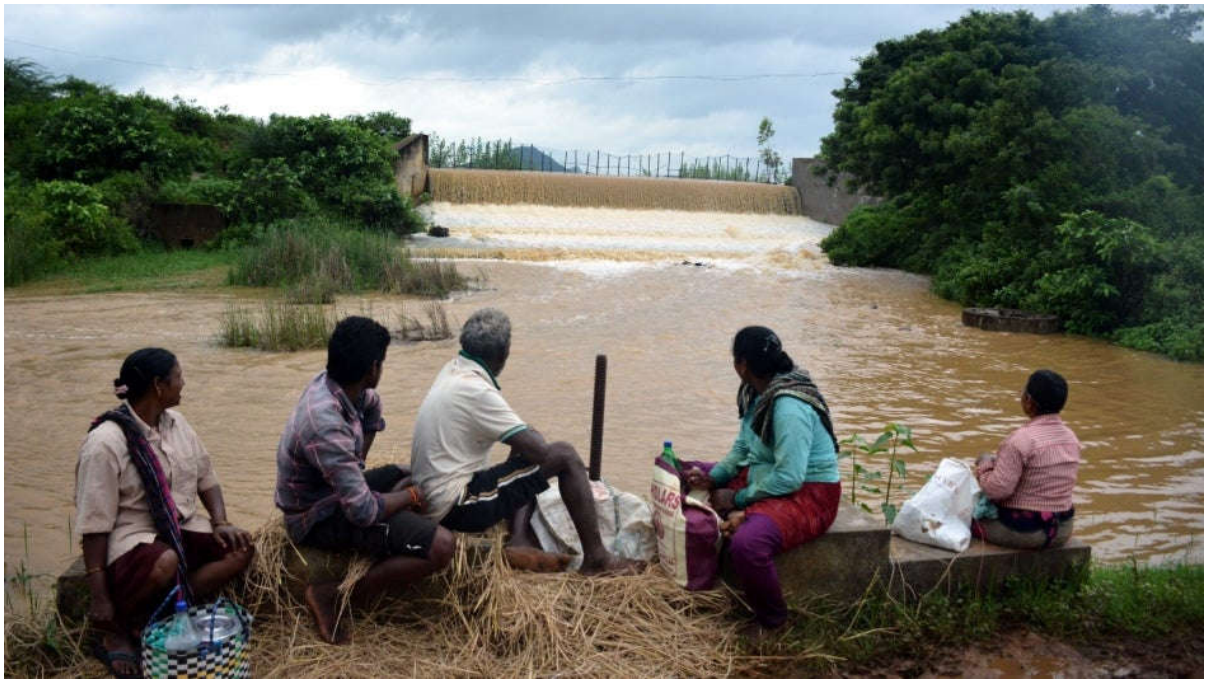
The environmental flow is not just about providing for human needs but also includes the needs for nature. One-third of the global vertebrate population depends on these freshwater systems for survival and studies show a 55% decline among them in just three decades from 1970-2000. An abrupt change in the flow due to dams or embankment spell doom on downstream species who often fail to adapt.

Aquatic species are the major losers due to drying rivers. Estimates

that 40% of fish species live in the rivers and lakes that constitute less than 0.01% of the world's total surface water. Altered flow disrupts hydraulic connectivity, as they did in the case of Hilsa fish, whose landing declined by approximately 90% in mid-Ganga due to dams like Farakka. Besides, the introduction of alien species due to altered flow puts aquatic ecosystems in grave danger.

The loss of fish doesn't just disrupt the ecological resilience of a region, it also affects vulnerable fishing communities living downstream, raising grave economic concerns.

Recognising the environment's share of water



Godavari river

(Sarath Kumar A / BCCL, Vishakhapatnam)

"Several steps are required to integrate e-flows into policy decisions. First, one needs to estimate the e-flow requirements for various river reaches. Next, you have to determine the amount of river water to divert at different times so that adequate flow remains in the river. It is also necessary to understand the implications of

groundwater withdrawal and regulate both surface water and groundwater," explains Dr Jain.

Numerous tools are available today to estimate and maintain e-flow. Dr Jain says that awareness about e-flows is rising and policy decisions are being made based on the concept. With courts passing orders for strict implementation of e-flows, he is confident that the water sector will gradually evolve for better in India. As the United Nations calls on nations to ensure 'water for all', the time has come to spare some water for the rivers themselves.