

Interlinking of Indian rivers - An assessment

Pravin D. Nemade and S. N. Patil

Introduction

The National Water Policy 2002 recognises water a prime natural resource for humans and, hence, a precious national asset. Nowadays, it is hard to find freshwater due to growth in population, agricultural and industrial activities, and contamination of water resources. By 2020, the global population is expected to reach up to 7.9 billion and the world may face great scarcity of fresh water. Though India receives about 4000 km³ of water as precipitation annually, it is in the threshold of water stressed condition due to mismanagement.

In terms of the total annual precipitation per unit land surface, India stands well above the global average. However, by hiding the very significant variations in the level of precipitation, the figure of the gross annual precipitation over the country as a whole provides an unrealistic picture of the actual situations with respect to the availability of water prevailing in the various parts of the country. The influence of the Southwest monsoon in the making of the climate of South Asia results in a wide spatial variation in the levels of precipitation from the east to the west and acute temporal variation through the concentration of heavy precipitation during the 2.5 months of Monsoon period spread over July, August and September. The variability is exemplified by a comparison of the numbers of rainy days in parts of Rajasthan in the Northwestern boundary of India, where it is just 5, and in some areas in the Northeastern

India, where it is about 150.

Similarly, the average annual precipitation ranges from about 200 mm in some locations in the western parts of India to about 11,000 mm in the Northeast. Wide temporal inequity in precipitation, on the other hand, is caused by about 80 percent of the precipitation occurring within a short span of 2.5 months from July to September. Due to this spatial and temporal variability in concentration of rainfall, rivers in some parts of the country experience regular annual Monsoon inundations, often described as flood disasters. On the other hand, areas with lower precipitation are increasingly facing water scarcity, and as conservation measures have dwindled, they become unable to meet the diverse and growing demands of water. Much of this human induced water scarcity is often described as droughts.

Planning for the future

Some of the important factors that govern water-availability are rainfall, amount of utilizable water resources and population pressures. India's average annual rainfall is about 4000 bcm, of which 3000 bcm is concentrated over the monsoon months. Moreover, the spatial distribution is uneven, ranging from 10cm in W. Rajasthan to 1100cm in Cherapunji. Our rivers carry 90% of their total flows during monsoon months and only 10% at other times of the year. Demands for water in rural areas, industrial

and power sector, and for drinking are expected to increase substantially. If no corrective measures are adopted, the current annual per capita water availability of 1870 m³ will be reduced to about 1340 m³ by 2025. According to R.K.Pachauri, Director-General of Tata Energy Research Institute, nearly 60% of the country's population will be living in water-stress conditions by then.

Floods and Droughts

The recurrent flood and drought situations demand a reliable solution. On one hand, 34 million hectares (Mha) are flood-prone of which 23 mha are in the Ganga-Brahmaputra-Meghna basins in the states of UP, Bihar, W. Bengal and Assam – where the average annual total damage has been Rs. 972 crores (1953-1995). On the other hand, the drought prone area is estimated to be 51.12 Mha. In the year 2000-2001, eight states were affected involving 146.3 million people and 21.1Mha of cultivated area.

Interlinking of rivers

The interlinking of rivers has been perceived as a remedy to these persistent problems. The project envisages transfer of water from surplus to water-deficit areas for domestic, agricultural, industrial and other activities. The proposed project has the Himalayan and peninsular components. The Himalayan component entails construction of reservoirs and canals on the main tributaries of the Ganga and the Brahmaputra to transfer excess water to the west. The Peninsular river interlinking has two components, one of interlinking the Peninsular rivers themselves and the other of linking the Ganga to the Peninsular rivers.

Water is proposed to be transferred either by gravity flows (tunneling through

mountains) or by lifting across natural barriers. This project has been designed with the concept that it will improve the living status of people in India, ushering growth in our economy. The completion of this project will result in constant water supply for domestic use, agriculture and industries along with flood control, regulation in water flow etc. The interlinking project is to bring an extra 34 Mha of land under irrigation using 173 BCM of additional water created in this project. Production of hydro-power (34 Gigawatts) is also expected, which may be inexpensive and eco-friendly.

The present proposal for interlinking of rivers in India has its conceptual root in similar proposals made earlier. In the nineteenth century, Sir Arthur Cotton proposed such links for promoting inland navigation for better transportation. The idea was later revived in 1972 by Dr. K. L. Rao to address the issue of water scarcity in South India. The 'Ganga Cauvery Link Canal', as proposed by Rao was aimed at both irrigation and power generation. In 1977, Captain Dastur, an aircraft pilot, proposed 'an impressionistic' plan for the construction of a pair of canals. Better known as 'Garland Canal' scheme, it envisaged the construction of a 4200-km long Himalayan Canal and 9300 km long Southern Garland canal, with the connection between the two systems through two pipelines passing by Delhi and Patna.

In August 1980, the Indian Ministry of Water Resources framed a National Perspective for Water Development and the National Water Development Agency (NWDA) was established in 1982, to carry out studies in the context of the National Perspective. The National Perspective has two main components; the Himalayan rivers development and the Peninsular rivers development

According to the information available in the Report of the NCIWRDP, the interlinking proposal aims at providing large-scale human-induced connectivity for water flows

in almost all parts of India, through a total of 31 links on both the Himalayan and the Peninsular components. However, the issue gained renewed currency in political, legislative and civil domains after the Supreme Court of India, in connection with a Public Interest Litigation, passed an order on 31 October 2002 for the completion of the interlinking of rivers within a period of 12 years.

Why should the rivers not be interlinked

Diverse opinions emerge from different quarters about river diversion, apprehending that it would disturb the entire hydrological cycle by stopping the rivers from performing their normal ecological functions. This project will change the composition of the sediment load, river morphology and the shape of the delta formed at the river mouth. The fate of interlinking of river systems in Australia during mid-1940s, which affected the environment with rivers turning saline, natural eco-system withering away, and water along the natural course of the river drying up, is well known.

Construction of dams and canals will dislocate villages, flood towns and cut through millions of hectares of agricultural land. The large network of dams and canals will also alter natural drainage such that occasional flooding and waterlogging will inundate millions of hectares of agricultural land. Moulding of natural flood-water will reduce land fertility gradually and over the years the fertile land will change into desert, affecting agricultural production. An increase in agricultural activities may result in increase in nitrogen compounds and methane, which may affect the ozone layer in the atmosphere. Due to the high cost involved, there are talks about privatization of this project; but by allowing the private sector to invest, the rights of the people for water resources may be affected. Before looking for a loan from the World Bank or

the Asian Development Bank, it is necessary to consider whether we will be in a financial and physical position to repay the loan as we are already running in debt. India is having water-related conflicts among its states, e.g. Haryana and Punjab, and Karnataka and Tamil Nadu. Already Bihar, West Bengal, Maharashtra, Kerala, Assam, Punjab and Rajasthan have opposed this proposal. Bihar has always argued that its water needs have not been met with from the Ganga.

The proposed canals will carry water through many neighbouring states and each state will claim a portion of water, which may be a big problem to be tackled. Dams are proposed to be constructed on the Brahmaputra and Ganga or its tributaries; Bangladesh, which is a lower riparian state, has objected. Besides, Nepal and Bhutan are also expected to be affected by this project.

Why should the rivers be interlinked

On the other hand, it has been projected that the river interlinking plan will enable generation of an additional 34,000 MW power and provide a cheaper transport route through waterways. The irrigation potential is expected to rise from 113 Mha to 150 Mha, along with increase in food grain production from 212 to 450 million tonnes by 2016 (when the Interlinking plan is expected to be implemented). Thus, it has been reasoned that the sharing of water resources via inter basin transfers is critical for the overall development of the country.

Conclusions

Interlinking of rivers should be subjected to a more comprehensive and realistic assessment. There is need for examining the pre-suppositions on which the interlinking project is based. Besides, all

Indian states and neighbouring countries like Bangladesh, Nepal and Bhutan should also be brought into confidence. Further, according to UNICEF and the WWF, if the precipitation within the watersheds or sub-basins is harvested and conserved properly, domestic water needs will not be a problem

in most parts of the country. The project should, therefore, be undertaken with full understanding of the serious ecological damages that may be caused by interlinking rivers and that the benefits should far outweigh these costs