



OPINIONS

Integrated approach for better management of water resources

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Blessed with a wide network of rivers, canals and other water bodies, India has inland water resources covering about 7 Mha. The Himalayan glaciers and seasonal rains are the sources of water which feed the extensive river system of the country. Over the years, due to increasing population, urbanisation, irrigation and industrialization, the demand for water has been increasing in the country thus bringing down the per capita water availability to 1588 m³ in the year 2010 against 5200 m³ in 1951. As per international norms a country is said to be water stressed if per capita water availability is less than 1700 m³;

India is already water stressed despite the river wealth the country owns. Further, it is estimated that per capita surface water availability is likely to be reduced to 1401 m³ and 1191 m³ by the years 2025 and 2050, respectively. As of now, more than 80% of the total water use is in the agriculture sector that too for irrigation.

Since the days of independence emphasis has been laid on surface irrigation systems to boost agricultural productivity; construction of large reservoirs and dams and canals were integral part of the Five Year Plans. The green revolution bloomed in areas where there was assured supply of surface water for irrigation. However, siltation of dams and canals, poor maintenance and repair of irrigation infrastructure, lack of proper cost recovery mechanisms, negligible fund allocation for maintenance of canals, overuse of water by head- end dwellers all have led to irrigation inefficiency, salinization, water logging, poor storage capacity and groundwater exploitation.

The Ministry of Water Resources, India has estimated the total annual replenishable ground water resources of India as 431 billion cubic meter (BCM). The annual ground water draft is 243 BCM out of which 221 BCM is for irrigation use and 22 BCM is for domestic & industrial use. In its report 'State of Indian Agriculture- 2011-12', the Ministry of Agriculture (India) has stated that 'of the ultimate irrigation potential of about 140 million hectares 58.5 million ha is from major and medium irrigation sources, and 81.5 million ha is from minor irrigation sources (about 64.1 million ha from groundwater irrigation and 17.4 million ha from surface water)'. This explicitly indicates the significance of groundwater in increasing the net irrigated area. Hence it is high time to use both surface and ground water resources in a judicious manner to ensure sustainable development.

India experiences flash floods and drought almost every year. Eastern and North Eastern parts of the country are prone to floods during monsoon whereas North Western and peninsular India faces severe drought. The IPCC fifth assessment report has also predicted increased incidence of extreme events like floods, cyclones and drought due to global warming. It is to be noted that the recent floods (in Kashmir (2014) and Uttarakhand (2013)) were the results of heavy localized rainfall and cloud bursts. The country in general has benefited from monsoon which is reflected in the annual food grain production of 257 Million tonnes and 264 Million tonnes in the year 2013 and 2014, respectively. But when it is a drought year, it hits many parts of the country and has wider socio economic dimension. In any case, it is imperative to handle these disasters through proper planning and management.

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Drought management strategies mainly comprise of watershed management, water harvesting, water saving agricultural technologies and less water intensive crops. In the case of flood management emphasis has been laid on structural and non-structural measures. The structural measures encompass flood embankment and drainage channels and non-structural measures include flood forecasting, flood plain zoning, flood proofing and disaster preparedness.

The ambitious Inter River Linking project of India aims to address the problem of floods in Ganges-Meghna -Brahmaputra basins and drought in north-western and peninsular India through inter basin transfer of water. Recently, a task force has been constituted by the Ministry of Water Resources to look into all the issues related to interlinking of rivers. The project promises to bring an additional 35 ha land area under irrigation and 34000 megawatt hydro power generation which will undoubtedly increase agricultural production and reduce the energy crisis. However, there are various issues associated with this mega project.

First is the mammoth costs incurred for inter river linking; a total of 30 river- linking has been proposed – 14 in the Himalayan region and 16 in the peninsular. This involve a series of construction work including dams, reservoirs and canals which lead to the second issue tagged with this project- environmental concerns. Environmentalists and civil society have been opposing the project since the beginning. Obstructing the natural flow and diverting it to other areas will affect the environment adversely. Also, the construction of dams will result in displacement of population which the country has a poor track record of settling.

Thirdly, diversion of excess water to deficit area will affect the ground water recharge. As mentioned earlier, agriculture is becoming more and more dependent on ground water for irrigation. Fourth reason raised against river linking is that given the uncertainty and variability in monsoons and melting of glaciers, it is likely that there will be change in the river water flow. Pre-seasonal melting of glaciers has resulted in lean flow in Himalayan Rivers during winter affecting agricultural activities.

Fifth and the most disputed reason for objection is the issue of water sharing. Water is a state subject in India as per constitution; there are several disputes on water sharing that exists between states. Similarly, downstream country like Bangladesh is dependent on water flow from Indian rivers. Diversion of water will affect river flow in trans-boundary rivers and affect agriculture, fisheries and forestry in the downstream. Water sharing has become a contentious issue owing to scarcity.

In light of the huge costs and the environmental threats involved in the river linking project and keeping in mind the inefficiency of existing irrigation infrastructure mostly due to lack of repair and maintenance, every possible concern has to be addressed before commencing the venture. Fragmented approach in any basin, whether it is to conserve water or to manage flood water will not benefit for sustainable use of water resources. Integrated basin wide management of water resources would be ideal for proper conservation and management of water resources. In case of trans-boundary rivers, basin wide management would require the consensus of upstream/downstream country as well. However, construction of storage structures cannot be overlooked as it will act as flood cushion and will also ensure agriculture and water and energy security.

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