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# Water Quality and Sustainable Development in India and Across the World

Water will be an important critical resource issue for the social and economic development of the world in this century. However, increasing global demands for water and poor management practices over decades have already caused significant damages to the environment.

A report by Peter Brabeck-Letmathe and Asit K Biswas

Take India. India's pollution watchdog noted this month that water from half of the country's 445 rivers is unfit for human consumption because nearly all major Indian cities discharge domestic wastewater mostly without treatment.

Last October the Supreme Court of India expressed its dissatisfaction with the current levels of water pollution in the Yamuna River: "It is unfortunate that huge public funds were spent without showing any improvement in the water quality of Yamuna". It further added that: "It has been brought to our notice that despite spending more than Rs. 1062 crores in addition to amount being spent by local authorities in Delhi, Haryana and U.P., the pollution of Yamuna has increased by the day".

It is not only Yamuna that is suffering this indignity, the Ganga which is the holiest of the Indian rivers and to which the Indians are attached to spiritually and emotionally has encountered similar level of problems over the past four decades.

The Ganga Action Plan was initiated in 1986 to clean up the rivers. Nearly quarter century later, and again after expenditures of thousands of crores rupees, the river continues to be polluted! Similar situation prevails in nearly all water bodies in or near centres of population in terms of steady deterioration in water quality.

Or take the Aral Sea, which during the first half of the 20th century, it was the world's fourth largest inland water body, with a surface area of about 68,000 sq km, equivalent to more than half of England.

In the early 1960s, the Soviet Union Government decided to divert the waters of the two major rivers, Amu Darya and Syr Darya, which fed the Aral Sea to irrigate the arid areas of Kazakhstan, Uzbekistan and Turkmenistan (which then were part of the Soviet Union). The Karakum Canal, whose construction was completed in



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1967, diverted the waters of the Amu Darya to irrigate the perennially dry areas of nearly 3 million hectares primarily to grow cotton. Although irrigation was successful, it rang the death knell for the Aral Sea. The Amu Darya, which has been completely cut off from the Aral Sea, now ends in a dam some 110 km away.

The Aral Sea started to shrink as soon as the water diversion started. Its surface area has reduced to one-fourth its original size and its water volume has diminished by 90%. The Aral Sea used to produce more than 40,000 tons of fish a year, but by the early 1980s the fishing industry had collapsed, dealing a deadly blow to the communities that depended on it. By the late 1980s, because of the serious reduction in river flows, the sea split into two distinct water bodies, North and South Aral. The South Aral Sea split further into eastern

and western sections. Moreover, with no fresh water coming in, salinity started to increase and all the 24 species of native fish species of the sea disappeared.

As the Aral Sea shrank, it left behind a highly saline bed that was contaminated with pesticide and fertilizer runoffs spanning decades, leading to a serious public health hazard. As a result, infant mortality became one of the highest in the Soviet Union and the incidence of cancer and respiratory diseases increased significantly.

The rising demand for water, continuing poor management practices and erratic rainfall patterns are causing water crises all across Asia. For example, the first official national river census of China estimated that the country had 22,909 rivers, each with a catchment area of at least 100 sq km, at

the end of 2011. This is less than half of the more than 50,000 rivers estimated by the Government in the 1990s. The official explanation for this shortfall is mainly the "inaccurate estimate of the past, as well as climate change, (and) water and soil loss". This could explain why some of the rivers have disappeared, but the primary causes are likely to be declining groundwater and river flow levels, widespread deforestation and increasing withdrawal of water from water bodies.

Similar problems can be observed in advanced economies. "Because it is so heavily tapped for agriculture, industry, and municipal uses along its course, the Colorado River rarely reaches its delta and the Gulf of California. About one-tenth of the river's former flow now makes it to Mexico, but most of that is used for farming and cities south of the border." (National Geographic). It is one of an increasing number of mighty rivers running dry from overuse. The story is no longer about sufficient environmental flows, it is about whether there remain any flows at all.

The Aral Sea and Colorado story and China's disappearing rivers are different symptoms of two important diseases: poor water management and focus on short-term economic benefits as opposed to the longer-term view of closely linking water with the environment.

Fortunately, we have also seen some cases of good understanding of the interrelationship between water and the environment. Much of Australia, for example, faced unprecedented droughts between April 1997 and March 2010. To tackle the serious water shortage over a prolonged period, the Australian Government set up the Commonwealth Environmental Water Holder, through the Water Act of 2007, to hold and manage water assets purchased from the water market or acquired as water savings from government-financed infrastructure upgrades financed. Its



**Water Management systems**

objective is to restore and protect environmental assets in the Murray-Darling Basin, which is spread over 1,059,000 sq km, which is slightly larger than the combined area of France and Germany.

By the end of March 2013, the new entity held water assets with a long-term average annual yield of more 1,100 giga-liters, equivalent to about 8% of the water previously available for consumption in the basin. During the past five years, the CEWH has delivered 2,250 giga-liters of water to the rivers, wetlands and flood plains in the Murray-Darling Basin. And this diversion of water has not harmed agricultural production in the basin because of efficient water management.

The benefits of this diversion have been substantial. It has helped sustain wetlands, and support native birds and plants through improved water quality, volume and duration of flows. It has improved fish breeding and the export salt and nutrients out of the basin. It has also connected rivers, wetlands and floodplains to improve habitats for breeding and migration of animals and birds. Besides, it has improved the quality of water for irrigation and human use, and increased opportunities for tourism.

The Australian case shows we already have sufficient knowledge of the intricate interrelationship between water and the environment. We also

know that the problems are solvable and we often have the means to solve them. What we require is political will, good planning and the commitment to do so.

For at least the past 35 years we have known that the environment and development are the two sides of the same coin. Development can never be sustainable unless environmental issues are given priority. Equally, the environment cannot be protected without development. Until and unless this symbiotic relationship is explicitly considered, we are unlikely to have sustainable development in any area, including water.

This consideration is especially important for a country like India which has witnessed high economic growth rates in recent years and needs to pay more emphasis on good water governance and environmental protection.

Proper water quality management and cleaning up of rivers and managing land use bring very significant social, economic, environmental and health benefits. In fact, on a long-term basis, there is no doubt that it costs more to live dirty than to live clean. India needs to relook at the current development policies, to tackle the bigger social, economic and environmental challenges and prevent the social disruptions in the coming decades.

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