

Water hazard threatens the development goal



Md. ASADULLAH KHAN

the U.N. Environment Programme published a statistics in the recent past that said more than 10 million women and children each year have to fetch water from distant and frequently polluted sources.

The World Bank calculates that 3.3 billion people in 127 countries of the developing world suffer from water-related diseases, among them diarrhea, dysentery intestinal worms, malaria and dengue fever are the most wide-spread. Deaths from water-borne diseases almost run to 6 million each year.

Alarm bells have been sounded from various international organizations like UNDP, FAO, UNESCO, WHO and World Bank about the shrinking source of fresh water resources. Reports circulated by these organizations indicate that the world's supply of clean fresh water already threatened by growing levels of pollution is going to be so scarce in some areas that if current trends continue, two thirds of humanity will suffer moderate to severe water stress in less than 20 years.

The report warns that the situation not only imperils human health and development on a large scale, but it has also disastrous effect on the aquatic and terrestrial ecosystems on which much of the Earth's life depends. There is clear and convincing evidence that the world faces a worsening series of local and regional water quantity and quality problems, largely as a result of wasteful use of water resource and lack of adequate management resources.

The problem of water pollution is causing harm to poor countries. Because populations in poor countries are growing so fast that improvements on water supply system have failed to keep pace with the growing number of people. Water experts have sounded alarm that within the next 25 years, half of the world's population could have profound trouble in finding enough fresh water for drinking and irrigation works.

Currently, as reports reveal, at least 80 countries representing 40 per cent of the world's population, are subject to serious water shortages. Condition may get worse in the years to come as population grows and as global warming

On a global basis, population wise and area wise and with respect to water resources, Bangladesh is not in a very uncomfortable position. Canada has 7 per cent of the world's water, China 7 per cent, Indonesia 6 per cent, Bangladesh 6 per cent, India 5 per cent, U.S. 6 per cent, Russia 11 per cent and Brazil 17 per cent. But unplanned construction of roads, dams, sluice gates and other obstructions restrict the free flow of river causing silt build-up even in big rivers like the Padma and the Jamuna.

disrupts rainfall patterns.

Precisely speaking, human water consumption rose six fold in the past century, double the rate of population growth. People now use 54 per cent of the available fresh water and additional demand will further jeopardize all other ecosystems. That only indicates that water scarcity may soon limit economic development, particularly in parts of China, India, Bangladesh and Pakistan where supplies are already inadequate to meet the growing needs of agriculture and industry. Added to this is the problem of pollution caused by fertilizers, silts, sewage and other toxic effluents that have killed lakes and poisoned rivers.

The glaring lack of attention to water issues seems puzzling and may be termed as the most critical failure of the 20th century and the major challenge of the 21st century, contends Peter Gleick, director of the California-based Pacific Institute and one of the world's leading expert on freshwater resources. Gleick further says there are many tools for doing so, and the economic costs are not high compared to the costs of failing to meet those needs. The consequences of failing to bridge the gap will be higher food prices and expensive food imports for water scarce countries that are predominantly poor. Hunger and thirst, experts say, are linked to political instability and low rates of economic growth.

Moreover, the more the world becomes urbanized, the deeper the crisis gets. Large cities already bursting at the seams like Dhaka, Cairo, Lagos and Mexico rely on underground water but aquifers take decades to recharge while the population growth in such cities is exponential. As city-corporation or municipal supply fails, every organisation including LGED authorities bore into the Earth for



water. But these unseen storehouses are drying up at a frightening pace.

At the present moment a great thirst settles over the country every summer. But as the growing desperation of Dhaka, Chittagong, Rajshahi and Khulna, along with the districts included in the provincial boundaries indicates, we are nearing a catastrophic drying up. The demands on water for drinking, irrigating fields, for a growing population, industries and power stations are skyrocketing.

Much of the blame rests with the governments that will not curb the siphoning off of groundwater. Managing groundwater is critical. It is the source for 85 per cent of rural drinking water and 70 per cent of urban drinking water. Dependence increases as surface water sources, mainly rivers, are sullied by sewage, sediments and industrial pollution.

In rural Bangladesh, drinking water projects are severely affected when groundwater is sucked away by unregulated bore wells for irrigation. But irrigation is a cash cow on which water and money is squandered by politicians and technocrats. But as demands for water increase, supply of the developing world's water-starved areas will be further affected creating an insurmountable food security crisis. Experts agree that the crisis is partly due to natural cycles of extreme weather and expansion and contraction of arid regions.

But human activity is playing an even greater role in creating water scarcity and as a result there is not enough good quality water to meet human needs. Of all such activities, dam building has been cited as the most ill-conceived project. Other than cost factors that exceeded

estimates by 50 per cent, ecosystems were destroyed or permanently damaged. Moreover such dam constructions by closing roads and free flow of water down the slope has silted up most of the naturally flowing rivers, creating water deficit in many regions in the country.

Water, which finds its own level, also happens to be a great leveler. It is crucial to our very survival. From being a necessity, water has become luxury. With pipes running dry, residents especially in Dhaka and Chittagong are looking for alternative sources like tankers serviced by WASA in extreme crisis situation.

As for the villages the situation there is more pathetic. With shortages of water due to drying up of ponds and with no visible effort of digging fresh ponds during the last several decades, other what the

Zaminders in the villages did in their hey days, rural folks, especially farmers remain mired in their old practice of digging tube wells deeper and deeper to reach the decreasing ground water.

Water, it seems, is the second biggest crisis facing Bangladesh now after the power crisis, exacerbated by the construction of Farakka barrage over the river Ganga decades ago in the Indian territory. Ever since the construction of the barrage, the water situation has worsened and the situation is set to deteriorate further.

How did this situation come to such a sorry state? The reason for the country's growing thirst, says conventional wisdom, is the rate at which population is increasing. While it may be one of the reasons, Bangladesh's water crisis is also the culmination of myopic planning, muddled policies, misguided perceptions and haphazard and half hearted attempts to solve the crisis. As cities grew and towns sprouted, no thought was given to the emerging mismatch in demand and supply.

In an attempt to ensure food security groundwater was pushed as a solution: it was cheaper and could be obtained with no human drudgery once the tube well has been sunk. With the race for industrialization having no checks on wasteful technology and pollution of water resources, industry continues to be the biggest polluter along with pesticide/ fertilizer-ridden discharge from fields. Even though most cities are near the river banks, the rapid pace of urbanization has led to the drying up of traditional water sources like tanks and lakes.

The first signs of population boom and water stress were visible in the 1980s but most municipalities and city corporations focused on the immediate, tapping ground water resources in and around the cities. Expectedly, the pressure on ground water has shown up. Tube wells are now routinely dug up to a depth of about 100m and above in most cities. In short, water is being mined and tube wells are going 5 to 10 metres deeper every year.

Against the backdrop of severe water crisis hitting almost two thirds of the global population, Bangladesh, once considered a

country of abundant water resources or otherwise known as a country of rivers, haors is now facing an acute water crisis and seasonal flooding. This is due to several factors: rivers and lakes are drying up due to sediment flow and most rivers have changed their original course.

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As a solution to the water problem that is getting out of hand with each passing day, "We must rethink water management," says Gleick. We no longer live in a world in which rivers can be endlessly dammed, aquifers relentlessly pumped, ecosystems degraded and impoverished. We have to focus on how we use water. At the same time proposals that are coming to the fore include reducing waste in irrigation, desalinating (where energy sources and funds permit), making appropriate local choices of crops, employing low cost chlorination and solar disinfectant techniques, increasing water "harvesting" from sources like rain and fog for agricultural use and transportation of potable water in giant polyurethane bags to dry areas.

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Is saving Buriganga affordable?

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WATER is the basic condition for high biodiversity on Earth. It belongs to all living beings. Plants, animals and humans are composed of 5080 percent water. Water is thus primarily the source of life and secondarily, the engine for economic development. Our common future is therefore endangered when water is not available in sufficient quantity and quality. In this perspective tens of thousands of people in more than 50 countries will celebrate World Water Monitoring Day on October 18, 2006.

The event, which is organized jointly by the Water Environment Federation and the International Water Association to bring public attention to the role that the world's citizens must play in ensuring a sustainable supply of clean, usable water in each and every country. Participants will test the quality of rivers, lakes and other water bodies using a simple monitoring kit. The Buriganga is one such river that is contributing in turning our bay into a garbage dump.

Streams are the habitats of water. Truly, intense relationship of streams with mankind over the centuries has all the way been the focal point of growing civilization since ancient times. Social landscapes of both rural and urban livelihood are formed and supported by rivers and canals and, therefore can never be separated from humans and vice versa.

Hundreds of years ago, the Mughals taking into account, among other things, the hydraulic behavior and characteristics of the river Buriganga made Dhaka their capital in 1610. The one-time virgin Buriganga in the process of supporting the dynamic version of civilization has been violated to such a degree that "Save Buriganga Movement" as is now seen pegged. The Buriganga is unique by itself. Similarly, the Ganga in India, the Sumida in Japan, the Thames in Europe, and the Buffalo in USA are unique by themselves.

How is Buriganga under threat? Firstly, the river's hydraulic properties have been fatally disrupted because of drastic

reduction in its flow; secondly, the river water is severely polluted by untreated industrial effluents, human wastes and solid dumps; and thirdly, its hydraulic width is being constricted by encroachers.

The Buriganga remains delinked from the river Jamuna from where it flows during the lean season leaving a low flow generated from a feeble intertidal play. An estimated 7.7 million litres of untreated industrial effluents flow daily into the river in addition to human wastes and solid dumping by 12 million city habitants. Hydraulic width of the river has been reduced by 60 per cent and the process has been continuing due to mounting pressure of the drifting population. As a consequence, the aquatic plants, water-fowls, dolphins and fishes are nearly extinct.

The river based transportation and labor employment opportunities have been narrowed down impacting national economy. The river Buriganga is not healthy any more and its rare resources are rapidly dwindling. It is now close to zero in terms of its vitality, water quality and hydraulic property. But the death of this river may spell doom for this ancient city. Four hundred years of human abuse that messed up the river also disabled the nature's corrective phenomena within itself now necessitates human supports for its reversal.

Over the last two decades the environmental activists have been able to create limited awareness amongst the stakes by staging demonstration and holding seminars. The print and electronic media have made efforts in mobilizing opinions. Fishers, boaters, traders, washers, and professionals from other walks of life have registered their protests against strangling the river and voiced demands for saving it.

The government, taking cognizance of "Save Buriganga Movement", has undertaken the program only recently in 1997 to protect it from illegal occupation and pollution. Bangladesh Inland Water Transport Authority (BIWTA) in collaboration with Bangladesh Water Development Board (BWDB) has in the meantime dismantled many illegal structures under its eviction

Saving Buriganga may not at first glance appear affordable. This is a huge task beyond merely staging limited demonstration and carrying out infrequent evictions. A sound engineering action plan incorporating social and environmental dimensions with 50 years' vision may be the basis for a 3-year re-rolling implementation program taking into account the political sensitivity on top.



program that virtually turned into a "see-saw" game.

Bangladesh Small and Cottage Industries Corporation (BSCIC) has planned to relocate the tannery industries from the banks of Buriganga to Dhaka Tannery Estate at Savar nipped by Effluent Treatment Plant of adequate capacity, effluents of which are the known cause that account for 60 percent of total pollution with 30 percent caused by human wastes and, the remaining 10 percent shared by other polluters. BWDB has also thought of augmenting its flow from the river Jamuna for which Institute of Water Modelling (IWM) is carrying out the mathematical modelling for feasibility study preceding probable implementation. Although the ground achievements are not visible, the "Save Buriganga Movement" is moving forward.

In contrast, the principal source of pollution of the river Ganga in India is the industrial wastes. An estimated 1.7 billion

liters of effluents every day is flowing into the Ganga out of which 1.4 billion liters remain untreated. Untreated raw sewage generated in 25 cities with 20 million people on its banks is thought to produce 1 billion liters per day. Inadequate cremation contributes to a large number of partially burnt or unburnt corpses and these combined with those of livestock float down the Ganga. India's Central Pollution Control Board (CPCB) in 1983-84 undertook an action plan for restoration of its water quality. The Ganga Action Plan launched in 1985-86 was aimed at pollution abatement to improve the water quality by interception, diversion and treatment of domestic sewage entering into the river. The plan failed to achieve the desired objectives despite huge expenditure.

Tokyo, the capital of Japan, is one of the largest cities in the world with an estimated population of more than 28 million people. The Sumida is one major river of Tokyo Bay. Industrial effluents

and sewage disposal heavily polluted this river. High level of people's awareness, in conjunction with interception, diversion and treatment of sewage and industrial effluents followed by monitoring fought Sumida's pollution. Up to 1960s, the river Sumida remained polluted by industrial wastes destroying the fish in the water. But in 1970s, the Sumida was transformed into beautiful clean waters with fishes and leisure boats on them. Even the gorgeous fireworks festival, which originated in the 17th century Edo, now comes back to Sumida every summer.

In the distant past the pollution of the river Thames in London was almost as bad as the polluted Ganga and the Buriganga. The animal wastes particularly the horse manure was one of the major causes of degradation of water quality. Human wastes and solid dumping were there as usual. The river has been restored to its hydraulic properties. Efforts are now more focused on water

quality. The quality is being monitored by 16 parameters out of which 13 are satisfactorily met. Phosphorous and Bacteriological quality are the only parameters that exceed surface water criteria in the river Thames.

The City of London provides for the treatment of sewage and conveyance of storm sewage. The efficiency of the Pollution Control Plant intercepting the sewage disposal is 99 percent. The Thames has significantly improved since monitoring was initiated in 1963. Increased public information on the impacts of daily activities is considered to be of prime importance. Awareness has reached such a level that government's thrust is now on reduction of phosphorous that chiefly comes from dish washing.

The Buffalo River in New York in the early eighteenth century was crowded with ships, warehouses, docks, and grain elevators and flourmills became one of the largest milling centers in the world. Over time the river was polluted by large amounts of oil, phenols, color, oxygen-demanding materials, iron, acid, sewage, and exotic organic compounds. The river's surface became an unbroken mosaic of color and patterns resulting from the mixture of organic dyes, steel mill and oil refinery wastes, raw sewage, and garbage. The basin became devoid of oxygen and almost sterile. The Buffalo River had reached such depths of environmental degradation that it caught fire in January 1968. In 1883, the Great Interceptor Sewer was built to cut off the flow of pollutants and re-direct it into the nearby Niagara, which had a much greater dilution capacity. Politicians were committed to fighting back the pollution. Industries on its part, made significant investments in reducing effluents and increasing the river's flow artificially. Thus, a stream once dismissed as "septic tank" came back.

River restorations as it appears are long-term expensive projects.

Restoration is not simply bringing back the geometric configuration of the streams knocked out of hydraulic equilibrium but restoring its structural and functional behavior close to the pre-disturbance state. What has been possible for the developed may appear difficult for the developing but not impossible.

Stop-n-go evictions from the banks of Buriganga by the government need a rethink. Augmentation of Buriganga will certainly help diluting pollution of its water. But lessons from the Gorai River Restoration Project implemented by BWDB consisting of abortive diversion of flow from the Ganges might be useful. Improving water quality shall mean diverting, intercepting, and treating effluents and sewage with continuous monitoring and awareness-raising. Diversion efforts of tannery industries' effluents are lessons to be learned. On top of all this remains the political commitment, now far beyond vision. Finally, what is lacking is the competence for planning the package.

The plan for fighting back pollution of the river Buriganga will require us to:

- H mobilize opinion and form local community with support from NGOs as facilitators
- H demarcate the bank lines of the river
- H acquire private lands where necessary
- H develop "riparian buffers" i.e. ribbons of forestry on either banks with native species
- H establish institutional linkage between national level agency and local level community
- H enact 30 M or less setback distance for future developments
- H divert effluents, sewage and solid wastes dumping by relocation
- H intercept and treat wastes where applicable by pollution control plants
- H retain as many parcels as possible for "pocket parks"
- H improve recreational and aesthetic values of the river
- H keep Buriganga initially accessible to local poor
- H provide public toilets to arrest open sanitation
- H impose levies on polluters for disposal of untreated effluents, sewage and solid wastes dumping

- H augment flow in a manner that will sustain
- H bring back river ambient cultural heritage
- H plan and design river ports at specified locations
- H enforce 24-hr community patrol for watch on evil doings
- H clean continuously the river bed by light dredging
- H stabilize river banks by low-cost earth filled concrete vertical wall
- H consider economic contexts and mindsets of the people
- H involve civil society
- H convert "Save Buriganga Movement" into "Save Buriganga Plan"
- H undertake 3-year re-rolling plan with a 50-year vision and,
- H approach international community or agency for technical and financial assistance.

Saving Buriganga may not at first glance appear affordable. This is a huge task beyond merely staging limited demonstration and carrying out infrequent evictions. A sound engineering action plan incorporating social and environmental dimensions with 50 years' vision may be the basis for a 3-year re-rolling implementation program taking into account the political sensitivity on top. Acquiring political consensus on the objectives approach and methodology will therefore have key impacts. The present status of awareness, knowledge, realization, strength, skill, competence, resources, will, commitment, and trusts are inadequate to save Buriganga from its obvious death. Yet saving rivers have been affordable and possible in many parts of the world. It is for Buriganga only that a composite action plan built on participatory process will be in place.

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