

Critical (or millennium) water crisis will spawn disease, malnutrition and poverty

Asia's rivers, which are among the most polluted in the world, contain ten times as many bacteria from human waste as waterways in rich countries. They contain far more lead and chromium, much of it from industrial effluents...writes Md. Asadullah Khan

WATER is the most precious fluid in our lives. It is the substance from which all life on earth has sprung and continues to depend. If we run short of oil or other fossil fuel that we consider essential to our life and comfort we can use alternative energy sources but if we run short of pure drinking water, we are doomed.

With industrial growth skyrocketing, regional dispute over water resources is increasing, and people and ecosystems alike are facing urgent and immense challenges, business as usual is not a viable option. There is widespread concern about the government's or community's ability to provide the most basic of provisions to the societies. There were startling reminders from the UN sponsored World Water Forum that despite more than \$3 trillion in development effort over the past five decades, nearly a billion people in 50 countries lack access to safe water, more than 5 million people die each year from water-related diseases and some 2.4 billion 40 percent of the world's population -- lack adequate sanitation. More disquieting, the United Nations predict that two out of three people will be living with water shortages by 2025. Despite being affluent and developed, the situation in the European front is not at all comforting. Twenty percent of all European surface water is seriously threatened with pollution. The lack of attention to water issues seems puzzling and may be termed as the most critical failure of 20th century and a major challenge to the 21st, contends Peter Gleick, director of California-based Pacific Institute for studies in Development, Environment and Security. He further adds, "There are many tools for doing so, and the economic costs are not high compared to the costs of failing to meet those needs".

Scientists, water professionals and environmentalists have been raising warning signals for decades that a water crisis is looming but surprisingly, their clarion call fell on deaf ears. Unquestionably, the crisis is partly due to natural cycles of extreme weather and the expansion and contraction of arid regions. But admittedly, human beings are more responsible in creating water scarcity and "water stress". Like so many of the earth's bounty, water is unevenly distributed. On a planet that is 71 per cent water, less than 3 per cent of it is fresh. And less, than 1 per cent that water-- 0.01 per cent of all the earth's water is considered available for human needs. While people in some parts of the world pile up sandbags to control the seasonal floods or struggle to dry out after severe storms or rainfall, others either shrivel and die of water shortage or move on as environmental refugees.

The UN Food and Agriculture Organisation estimates that 792 million people in 98 developing nations are still not getting sufficient food to lead normal healthy lives. Even in the industrialised world and post-Soviet countries in transition, 34 million people remain malnourished. In many

sub-Saharan countries, according to a report by the World Water Council, the average per capita water-use rates are 10 to 20 litres a day, which it calls "undesirably low". By contrast per capita residential use in Europe runs as high as about 200 litres. This is not surprising in view of the fact that European Commission made water protection and sustainable management one of the priorities of its environmental and research goals. In contrast, Bangladesh situation especially the situation in big cities like Dhaka, Narayanganj, Chittagong, Khulna and Rajshahi in respect of water hazard and contamination is appalling. Factories in these big cities and also the city dwellers happily discharge harmful chemicals and toxic wastes into the river Burignaga and Shitalakhya in Dhaka and Narayanganj, Karnaphuli in Chittagong and Rupsha in Khulna while the growing need for food induces farmers to use agrochemicals, insecticides and pesticides that not only pollute the river water but break havoc on the eco-system. Mentionably, ground water is the main source of supply through Deep Tube Well (DTW) either in the cities or for irrigation in rural Bangladesh. But the yearly recharge of the aquifer is less than the abstraction. Growing dependence on ground water for these needs is lowering the water table, making arsenic contamination the most pervasive health hazard the country has been experiencing.

Rivers in developed countries because of increased awareness and education of the citizenry have become much cleaner over the last two decades. On the other hand rivers in the poorest developing countries, by contrast have shown marked falls in levels of dissolved oxygen-- a key indicator of increased pollution by sewage. An estimated 90 per cent of sewage in developing countries is discharged into rivers, lakes and seas without any treatment. To make things worse, supplies of fresh water that might dilute the sewage are dwindling in many areas because of drought, deforestation and topsoil loss that conserve water in the ground.

Speaking generally, Asia's rivers, which are among the most polluted in the world, contain ten times as many bacteria from human waste as waterways in rich countries. They contain far more lead and chromium, much of it from industrial effluents. In China, farm chemicals washing into the sea are being blamed for massive blooms of algae. But the biggest cause of water pollution in developing countries is sewage and its most damaging effect is on human health. In the capital city Dhaka and Narayanganj the Buriganga and Shitalakhya which were once the main arteries of communication and vital source of drinking water supply have now been reduced to narrow canal of polluted water. This has come to such a sorry pass because of the encroachment of these rivers by a group of influential people. In a bid to reclaim land from the river they indiscriminately dump waste and garbage as land-fill. Slums

and shanties line the river on both sides. In consequence, the water which till 1980 could be used for human consumption is now unfit for any type of human usage because the water has become contaminated with huge amount of waste from sewage system as well as chromium and mercury-rich leftovers from tanneries, textile and dyeing units.

According to the World Health Organisation, each year some 900 million people suffer from diarrhea or dysentery or diseases spread by contaminated water such as typhoid and cholera and other intestinal diseases.

Noticeably, there have been improvements in recent years but most of it in the developed countries and partly in the developing countries. Since 1980 some two billion people in the developing countries have gained access to better water supplies and another 400 m have got better sanitation. But these gains have in large part been offset by population growth. One billion people still do not have an "adequate supply of water, and 2 billion do not have access to adequate sanitation facilities. In order to improve the situation for people in the developing countries and to keep pace with the population growth, developing countries will need to invest huge amount of money, exceeding the current targeted investment of \$ 25-30 billion a year. Most encouragingly, even the poorest people either in Bangladesh or any developing country appear to be willing to pay for clean, piped water and for the provision of basic sewerage. In many countries like Bangladesh where water was considered as an infinite free gift of nature, it has become a critical natural resource because even when the supplies are sufficient or plentiful, they are increasingly at risk from pollution and rising demand. Communities or families or even slum dwellers with no piped water connection now pay almost 12 times as much as piped supplies. Shockingly, a big chunk of their hard earned income is lost in such avoidable expenses.

With few exceptions, the consumers world over are charged less for their water than it costs to provide. A survey by World Bank showed that the average price charged for water covered only one third of the cost of providing it. But artificially low water prices cause problems in developing countries. Where water is piped, consumers pay little attention to conserve it, even though in many big cities, the cost of supplying it is increasing steadily as nearby sources dry up or become contaminated. Reports have it that Sanghai has had to spend \$ 300 million moving its intake of water further away from the city because nearby river waters had become too polluted. Ironically, forced to rely on government handouts to recoup the cost of their investment, water utilities often pay more attention to what the politicians want than what the consumers need. Often this leads them to invest in hugely expensive treatment plants for sewage when cheaper options would do. Pump-

ing raw sewage far out into the deep sea, for example, experts say, is often enough to avoid the worst effects.

In such a critical juncture, where the governments fail to meet the basic needs of people alternatives must be chosen. Privatisation can help as it has been the case in Brazil, Argentina and the Philippines and Turkey. In the Philippines, the city of Manila, awarded contracts to run the city's water and sewerage services to two private consortia. The local government in Izmit in north western Turkey asked Thames Water, London's water utility to head \$865m local project to build a dam and water-treatment plant.

The involvement of private companies might augur well for the country, as it is likely to bring dramatic improvements in efficiency and services. It can provide the capital needed to connect millions of new customers. For example in 1992, a consortium led by a French firm, Lyonnaise des Eaux, won a 30 year contract to run water and sewerage services in Buenos Aires and by 1995 it had cut the labour force from 7500 to under 4000 and renovated thousands of kilometres of pipes. But all these projects of private investment could only bear fruit if an investment-friendly climate prevails and the government agrees to raise water charges. But with the change of local government and as the next incumbent often fight shy away of problems, the situation never improves. Many firms are prone to thinking that it is less risky to go for managing existing systems rather than go for new investments. "Water and sewerage is a low return, high risk business", says John Briscoe, a water expert at the World Bank. So the playing field in water business by foreign investors is still very limited. Of the 150 billion of private infrastructure investment made in developing countries between 1990 and 1995, a third went into electricity sector and less than a tenth into the water and waste sector. Such statistics seem to point out that 'government and political leaders in our region must act meaningfully and expeditiously on water management issues. The adage "everyone lives downstream is no doubt a catchy slogan but disappointingly few in this region do much about the state of the stream itself in poor countries. Current world investment in water related development projects is \$8 billion per year or a shortfall of \$17 billion-- an amount roughly equal to annual pet food purchases in Europe and the United States, says Klaus Toepfer, head of UN's environment programme. Ominous though it may sound as hydrologists say that the world's water supply is finite-- less than a million cubic kilometres, that according to the United Nations is not sufficient for today's global population which is growing at the unsustainable rate of 100 million people annually. Let not Toepfer's ominous warning that we're headed for a period of water wars come true in a world of globalisation. That would definitely be a terrifying prospect.

Protecting marine environment Problem of ballast water and vessel anti-fouling

Md. ZAHID HOSSAIN

BALLAST is any material used to weight and/or balance an object. For thousands of years, ships have carried solid ballast. Nowadays, ships use water as ballast. Shipping moves over 80 per cent of the world's commodities and transfers around 10 billion tonnes of ballast water across the globe each year. Ballast water itself is not a problem; problem arises when contains marine life. There are thousands of species that may be carried in ship's ballast. These include bacteria, small invertebrates and eggs, cysts and larvae of various species. Thus larger and faster shipping is reducing the natural barriers of dispersal of species across the oceans, and as a result, whole ecosystem is being changed. These changes require highly expensive treatment for apparent rectification (because most of the time it creates perpetual effects). For example, in the USA, the European *Zebra Mussels* has infested over 40 per cent of internal waterways and has required over 5 billion US dollar on control measures since 1989.

Vessels use anti-fouling paints to keep its hull clean and smooth from fouling organisms so that it can travel faster. During 1960s, the chemical industries developed anti-fouling paints using metallic compounds particularly the tributyltin (TBT) and by 70s, most seagoing vessels had TBT painted on their hull. Now TBT has been described as the most toxic substance ever deliberately introduced into the marine environment. In fact, it needs to be toxic to be effective in killing off the organisms that would attach to the ship's hull. The main problem is its persistence in marine environment. For example, in Arcachon Bay, on the west coast of France, TBT contamination from boats was linked to high mortality of oyster larvae and eventually the adult shells became unmarketable.

According to the provisions of the United Nations Convention on the Law of the Sea, 1982, State parties are bound to prevent and control marine pollution in their EEZ and are liable for damage caused by violation of their international obligation to combat such pollution (Articles 192 to 237). The United Nations Conference on Environment and Development, 1992 (UNCED'92) in its Agenda 21, requested the International Maritime Organization (IMO) and other international bodies to take action to address the transfer of harmful organisms by ships. As a result IMO Assembly adopted a Guideline in 1997, which replaced the less comprehensive voluntary guidelines adopted earlier in 1993.

At present the progress on finalising the text of the new international *Convention for the Control and Management of Ship's Ballast Water and Sediment* is taking place under the keen attention of **ballast water working group** of the Marine Environment Protection Committee (MEPC) of IMO. It is agreed that the text is aiming to be produced on a Diplomatic Conference to consider adoption this year.

The **anti-fouling working group** of MEPC continued work on developing a legal instrument to phase out TBT. Resolution A. 895(21) of IMO "Anti-fouling Systems Used on Ships" states that the global instrument should ensure a complete prohibition on

the presence of organotin compounds in anti-fouling systems on ships by 1 January 2008.

There are some regional and national initiatives taken to face the above-mentioned problem. Most important and significant initiative is the Global Ballast Water Management Programme (GloBallast) established with the alliance of GEF, UNDP and IMO. This programme assists developing countries to implement effective measures to control the introduction of alien marine species in six initial demonstration sites in Brazil, China, India, Iran, South Africa and Ukraine. Activities of the programme are, broadly, education and awareness raising, risk assessments and biological surveys, development of laws and regulations, training of personnel in ballast water management measures and the implementation of compliance monitoring and enforcement measures.

Besides these regional approaches, a number of port States including Australia, Canada, Chile, Israel, New Zealand and the USA have introduced regulations with an intention to prevent ships which arrive in their waters with ballast water containing "non-native harmful species of aquatic life forms." Moreover, various individual states within USA (California, Washington) and various individual ports around

the world (Buenos Aires in Argentina, Scapa Flow in Scotland and Vancouver in Canada) have introduced regulations to prevent the problem.

Needful to mention that the potential hazards for ballast water discharge has been recognised also by the World Health Organisation which is concerned about the role of ballast water as a medium for spreading of epidemic disease.

Bangladesh is a Party of UNCLOS '82, Convention on Biodiversity, Intervention Convention and Basel Convention. Presently, it does not have any domestic legal instrument regarding ballast water and vessel fouling. However, there has been a good amount of awareness in different level over the last few years regarding the issue. Bangladesh is obligated to establish preventive measures according to the international legal regime of marine pollution since it is a party of the Conventions stated above.

Moreover, according to the IMO Resolution A. 868(20), Bangladesh has plenty to do as a Port State including enactment of new laws and their implementation. As a flag State, it should be aware about, amongst all, the reporting and recording procedures, ship's operational procedures, ballast system design and ballast water management plan to the ships

flying her flag according to the Resolution.

In these circumstances it is now necessary to:

·Ratify the forthcoming *"Convention for the Control and Management of Ship's Ballast Water and Sediment"* at an earliest convenience.

·Take proper initiative to ban import of unclean ships.

·Take an integrated effort to be in touch with regional Global ballast programme running in India. Sharing information in the regional database establishing own computer network could be one of the important aspects.

·Explore the possibility to obtain some seed funding from selected developed countries which are sympathetic on this issue.

The marine environment and health protection problem posed by the transfer of aquatic organism or pathogens through ballast water exchange and vessel fouling is not simply a long-term problem for which a country need not bother in the short term. This problem can destroy some major significant achievement of a traditionally maritime country like Bangladesh, which has a large dependence on the sea.

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