

Planet choking on polluted water

Scarcity of the resource has dominated global discussions, but contamination poses a far greater threat to humanity, making the need for proper management practices critical **By Said Irandoust and Asit K Biswas**

On the occasion of World Environment Day 2011, it is worthwhile to consider something that has disappeared from the radar as a critical environmental issue. While issues like climate change and biodiversity are assuming centre stage, the continuing deterioration of the world's water quality is frequently neglected. This has already resulted in serious negative consequences to human health and that of the world's ecosystems.

In recent years, water has been receiving considerable attention from global media, policy-makers and the public. However, this attention has most unfortunately not been on the precise issue. The overwhelming concern is that the world is soon going to run out of water. In fact, publications on the impending global water crisis due to physical scarcity of water are a growth industry! During the past few years, one can easily identify at least 20-plus major books and over 1,000 articles in English-language publications that proclaim that the world is going to run out of water, and, by 2025, two-thirds of the world's population will suffer as a result of this shortage.

The water sector is full of such misconceptions and "facts" that have been proclaimed time and again by many professionals and international organisations, which the media has repeated ad nauseam without scrutiny. This is an excellent example of the validity of the saying that "a lie told often enough becomes the truth".

Sadly, the water sector now has more than its fair share of untested and erroneous paradigms.

As any school child should know, water is a renewable resource. Unlike oil and coal, which are non-renewable resources, water can be used, treated and reused with the help of good management practices. This cycle can be repeated many times. Some have estimated that every drop of water in the Colorado River water

is used about seven times. With good management practices, the world's fresh-water resources can be used many more times than at present. With good management practices, and scientific and technological developments already in existence or expected during the coming decades, the world is not going to run out of water.

But while people are needlessly alarmed at the prospect of a physical scarcity of water, we are blithely neglecting the issue of the continuing deterioration of water quality in both developed and developing nations. This neglect allows more and more water to become unusable solely because of poor treatment and erroneous management practices.

Because of this neglect and with increasing urbanisation, nearly all bodies of water within or near important urban centres of the developing world are becoming increasingly contaminated. For example, cities like New Delhi discharge their mostly untreated wastewater into the Yamuna River, Ahmedabad into the Sabarmati River, Sao Paulo into the Tiete River and Mexico into the Mezquital Valley. The water quality situation in developing countries is already contributing to serious health, economic, social and environmental problems, which are expected to worsen in the coming years. This simply cannot continue.

Water quality is a serious issue in Southeast Asia, where apart from contaminants from industry and agriculture, there are also issues of ground-water quality.

Thailand has witnessed significant improvements in both water supply and sanitation coverage, but the issue of water treatment remains crucial.

However, Southeast Asia has also seen rapid strides. This is particularly true in Phnom Penh, where due to good management, unaccounted water losses have been reduced from 83% in 1993 to only 7% today.

Water quality conditions vary greatly from place to place. For example, most developed countries have solved the problems of point-source water pollution — contamination which enters the environment through confined and discrete conveyances like pipes or conduits. These pollution loads originate from municipal and industrial sources. There are exceptions, of course.

The situation in developing countries on the issue of treatment of wastewater point sources is truly alarming. Irrespective of the somewhat rosy picture painted by national and international organisations, research carried out by the Third World Centre for Water Management indicates that in Latin America only about 10% of wastewater point sources possess proper treatment facilities. We estimate the situation to be similar in the developing countries in Asia and somewhat worse in African countries.

In terms of controlling non-point sources of pollution, the record of developed countries is poor, and that of developing countries is abysmal. The non-point sources of pollution are generated primarily by agricultural activities, which are diffused and thus have proved to be extremely difficult to control.

Because of the uncontrollable non-point sources of pollution, dead zones have started to appear in estuaries and near inhabited coastlines. Dead zones are large areas in oceans or seas where dissolved oxygen content is less than two parts per million and which cannot support aquatic life. In 2004, the United Nations Environment Programme reported the existence of 146 dead zones, the largest of which covered 70,000 square kilometres. A subsequent 2008 study identified 405 dead zones, of which the Gulf of Mexico — where the Mississippi River discharges high levels of agricultural runoff from its vast, extensively farmed drainage basin — is the best known. The size of this dead zone is equivalent

in area to the US state of New Jersey. Dead zones are reversible. For example, the Black Sea was once the largest dead zone on the planet. However, the zone basically disappeared during the 1990s following the collapse of the Soviet Union, after which the extensive application of agrochemicals became too expensive for farmers.

Dead zones have primarily been a phenomenon in waters off the coasts of developed countries. However, they have begun to appear in waters adjacent to developing regions as well, like some parts of West Africa and Asia, as farmers increasingly use agrochemicals.

If the proper management of water quality continues to be neglected, there is no question that the world is likely to face a water crisis. The aim of Millennium Development Goal No 7 is that by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation will be halved.

With this as a focus, the Asian Institute of Technology has recently established the Centre for Asian Water Research and Education (Aware), where experts from different disciplines and sectors are looking at Asian water problems, both current and future, on a holistic and scientific basis, and attempting to arrive at Asia-specific solutions. Availability of an adequate quantity of good quality water is an essential requirement to improving the quality of life in all Asian countries. This centre aims to provide new and innovative solutions to the various water problems in Asia and also contribute to that effort through education, training and research. Our expectation is that within the next four to six years, Aware will become the premier water centre of Asia.

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