Awash in water crises

As World Water Day draws closer (March 22), this year's World Water Development Report makes it clear that nature-based solutions — which are also aligned with the principles and aims of the 2030 Agenda for Sustainable Development — can offer answers to our most pressing water-related challenges. Business-as-usual approaches to water security are no longer viable.

Nature-based solutions hold great promise in areas which also include sustainable food production, improved human settlements, access to drinking water supplies and sanitation, water-related disaster risk reduction, and helping to respond to the impact of climate change on water resources.

The water-related challenges we face today are immense. The world's population is expected to increase from 7.6 billion (2017) to between 9.4 and 10.2 billion people (2050), with two-thirds of them living in cities. UN estimates are that more than half of this anticipated growth will be in Africa (1.3 billion) and Asia (0.75 billion). Therefore, those most in need of water will be in developing or emerging economies.

Climate change is also impacting the global water cycle with wetter regions generally becoming wetter and drier regions drier. An estimated 3.6 billion people now live in areas that could face water scarcity for at least a month in a year, with that number increasing to 4.8 and 5.7 billion by 2050. The International Water Management Institute estimates that total demand could increase from 680 billion cubic metres (BCM) to 833 BCM by 2025, and to 900 BCM by 2050.

By 2050, countries already facing water scarcity challenges may also be forced to cope with the decreased availability of surface water resources. India faces major threats to its water security, with most water bodies near urban centres heavily polluted. Inter-State disputes over river resources are also becoming more intense and widespread.

Along with water scarcity, there is the issue of water quality. Since the 1990s, water pollution has worsened in most rivers in Africa, Asia and Latin America, according to the UN Environment Programme (UNEP). An estimated 80% of industrial and municipal wastewater is released without any prior treatment, with detrimental impacts on human health and ecosystems. Given the transboundary nature of most river basins, regional cooperation will be critical to addressing projected water quality challenges.

A Central Pollution Control Board report indicates that almost half of India's inter-State rivers are polluted. Sewage from 650 cities and towns along 302 polluted river stretches in the country increased from 38,000 million litres per day (MLD) in 2009 to 62,000 MLD in 2015. It found that the untreated sewage and industrial waste was a major cause of pollution in 16 of 40 inter-State rivers in the country.

Nature-based solutions can address overall water scarcity through "supply-side management," and are recognised as the main solution to achieving sustainable water for agriculture.

Environmentally-friendly agricultural systems like those which use practices such as conservation tillage, crop diversification, legume intensification and biological pest control work as well as intensive, high-input systems. The environmental co-benefits of nature-based solutions to increasing sustainable agricultural production are substantial as there are decreased pressures on land conversion and reduced pollution, erosion and water requirements.

Constructed wetlands for wastewater treatment can also be a cost-effective, nature-based solution that provides effluent of adequate quality for several non-potable uses (irrigation) and additional benefits that include energy production. Such systems already exist in nearly every region of the world. Natural and constructed wetlands also biodegrade or immobilise a range of emerging pollutants. Recent experiments suggest that for some emerging pollutants, nature-based solutions work better than “grey” solutions, and in certain cases may be the only viable option.

Watershed management is another nature-based solution that is seen not only as a complement to built or “grey” infrastructure but also one that could also spur local economic development, job creation, biodiversity protection and climate resilience.

Nature-based solutions are closely aligned with traditional and local knowledge including those held by indigenous and tribal peoples in the context of water variability and change.

Chennai in Tamil Nadu is a textbook example of how nature is being ignored in urban development-posed challenges. Unplanned urban development and unwieldy growth with no hydrological plan are causing many problems. Earlier, when there was heavy rain in catchment areas in the Chennai region, lakes, ponds, tanks, rivers and inter-linked drainage systems helped replenish groundwater, hold back some water and release the excess to the ocean. With development, a number of tanks and lakes in and around Chennai have been encroached upon by various stakeholders. Major rivers and canals such as the Cooum, Adyar and Buckingham Canal which are meant to carry excess rainwater to the Bay of Bengal now serve as the city’s drainage outlets. The Pallikaranai marsh which acted as a sponge to soak up excess rainwater is now an over-run.

Nature-based solutions are crucial to achieving our Sustainable Development Goals. Adopting them will not only improve water management but also achieve water security.

Jayakumar Ramasamy is Senior Programme Specialist and Regional Hydrologist, UNESCO Regional Office for Eastern Africa, Nairobi, Kenya

The India-Japan economic relationship remains underwhelming in relation to strategic ties

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