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World Water Day

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Clean Water for a Healthy World

On World Water Day, we reaffirm that clean water is life, and our lives depend on how we protect the quality of our water.

Water Quality: Healthy People, Healthy Ecosystems

Water is the basis of life on earth. The quality of life directly depends on water quality. Good water quality sustains healthy ecosystems and hence leads to improved human well-being. However, poor water quality affects the environment and human well-being. For example waterborne diseases cause the death of more than 1.5 million children each year.



The quality of water resources is increasingly threatened by pollution. Human activity over the past 50 years is responsible for unprecedented pollution of water resources in history. It is estimated that over 2.5 billion people globally live without adequate sanitation. Every day, 2 million tons of sewage and other effluents drain into the world's waters. The problem is worse in developing countries where over 90% of raw sewage and 70% of untreated industrial wastes are dumped into surface waters.

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Many of the water pollutants have long-term negative impacts on water quality, constituting a risk to human health. As a result fresh water is severely reduced. Also, the ability of ecosystems to provide services is drastically reduced, at times with irreversible effects. Consequently the environment is degraded through decreased productivity of biomass, loss of biodiversity and vulnerability to other stresses.



It is far cheaper to protect water resources than to clean up after pollution. Protection and maintenance of aquatic environments ensures the sustainability of their ecosystem services i.e. benefits such as potable water, fisheries, recreation and tourism. For instance fully-functioning natural wetlands filter off nutrients and toxic substances from water.

Increased funding is required to protect ecosystems and prevent water pollution. Funding should support, and be complemented with, concerted well targeted awareness raising initiatives on water quality issues.

Water quality is key to human and ecosystem health, and there are numerous add-on benefits to improving water quality: improved ecosystems and ecosystem services, improved health, and improved livelihoods



Enhancing effects of biodiversity on water quality

The quality of the water originating in the watersheds of the Catskill Mountains that feeds into the water supply of New York city was declining in the 1980s due to agriculture and other development in the watersheds. Instead of building a massive water treatment facility to provide water for the over 9 Mio users at a cost of US\$ 4-6 billion, an integrated water resources management approach was adopted at a cost of US\$ 1 billion. The water quality problems in the upstream areas were addressed through protecting the watersheds by introducing incentive schemes for the benefit of land owners in exchange for reducing pollution.



Similar challenges were faced at the Parana River in Brazil which supplies drinking water to the city of Sao Paulo. The river's water quality declined as a result of intensive deforestation at its headwaters causing the rainwater to wash the soil away and building up sediment that affected the quality of the river's water. A programme was developed with the help of the Nature Conservancy to motivate farmers and ranchers to plant trees in riparian areas in the river's headwaters as well as to provide technical assistance on reforestation, soil conservation and erosion prevention.



Water Quality in a Changing World

Impacts of climate change – such as frequent/ prolonged floods and droughts- pose further challenges to water quality; in addition to the growing sources of pollution. Increased human population as well as the changing production and consumption patterns have seen an upsurge of industrial processes, mining, agriculture, and urbanization with the resultant release of heavy metals, radioactive elements, organic toxins, and discarded pharmaceuticals into the environment.

For instance prolonged droughts especially in fragile ecosystems such as arid and semi-arid regions reduce the ability of ecosystems to dilute polluted water to maintain the balance of natural functions. In coastal areas, ecosystems such as mangroves, sea-grass beds, and coral reefs are disappearing at an alarming rate due to water pollution. The affected ecosystems cannot cope with additional stress such as caused by climate change. Their ability to serve as breeding and nursery grounds, storm protectors, and blue carbon sinks is thus further reduced. In some regions, more than 50 percent of native freshwater fish species are at risk of extinction which is expected to be compounded by the impacts of climate change.

Climate change and new contaminants additionally threaten water quality and human and ecosystem health.



As population increases, the rate of rural-urban migration grows. It is estimated that 6.4 billion people will be living in urban areas by 2050, up from 3.4 billion in 2010. This rapid growth, if not adequately dealt with through proactive planning and financing, poses a further challenge to water quality. Inadequate infrastructure as well as poor maintenance of existing ones leads to problems in the management of municipal waste as well as the treatment and discharge of sewage.

How much water we have is tied to how clean or polluted our water is. Preventing water contamination is typically cheaper than cleaning up water after contamination.



Pollutants from different sectors and their impacts on human well-being and ecosystems

(adapted from the GEMS/Water Driver, Pressures- Impact-Responses (DSPIR)) table)

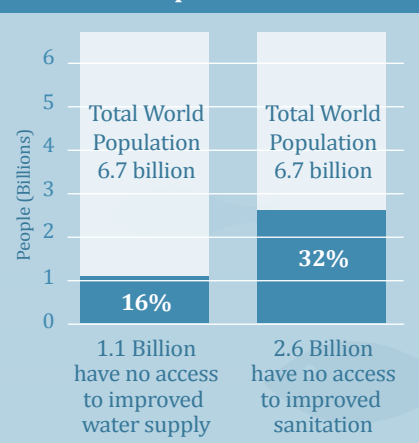
Drivers of water quality degradation	Type of pollution	Nature of water quality deterioration	Impact on humans and ecosystems	Response
Human settlement	<ul style="list-style-type: none"> • Sewage effluent • Storm water • Solid waste 	Increase in total and faecal coliform, pathogens, persistent and toxic chemicals	<ul style="list-style-type: none"> • Gastrointestinal diseases outbreaks, potential death especially to the vulnerable • Eutrophication of lakes and rivers • Harmful algal blooms and hypoxia • Atmospheric deposition 	<ul style="list-style-type: none"> • Drinking and waste water guidelines and standards • Treatment plants • Protection, restoration and development of (artificial) wetlands • Water quality monitoring
Agriculture	<ul style="list-style-type: none"> • Run-off with fertilizer, pesticides and organic matter 	Increased nutrients, salinity, pesticides, suspended solids, pathogens, BOD	<ul style="list-style-type: none"> • Eutrophication of lakes and rivers • Health issues related to pesticide and faecal contamination of receiving waters • Harmful algal blooms and hypoxia 	<ul style="list-style-type: none"> • Green belts and riparian buffer strips • Prevention of direct disposal of contaminants • Appropriate practices to minimize impacts through pollution prevention and best agricultural practices • Water quality monitoring
Industry	<ul style="list-style-type: none"> • Industrial effluent 	Increased contaminants depending on the type of industry (heavy metals, chemicals), increased BOD and COD	<ul style="list-style-type: none"> • Built up of pollutants chemicals in the food chain. • Biodiversity change • Atmospheric deposition 	<ul style="list-style-type: none"> • Guidelines and standards for industrial effluent discharge • Treatment facilities • Polluter-pays principal • Water quality monitoring
Tourism & Recreation	<ul style="list-style-type: none"> • Sewage effluent • Litter 	Increased nutrients, chemicals, pathogens	<ul style="list-style-type: none"> • Closed beaches, leisure boating restrictions, and effects on other water uses 	<ul style="list-style-type: none"> • Guidelines and standards. • Water use advisories • Public private partnership • Water quality monitoring

Water Quality Pays

Water quality and socioeconomic issues such as poverty, livelihoods, health, and equality are closely linked. Providing and maintaining safe drinking water and sanitation are central to alleviating poverty and improving the quality of life for billions of people. Committed to the Millennium Development Goals (MDG), the international community is still far from achieving the MDG target of reducing by half the number of people without access to safe water and sanitation by 2015. Despite the progress made towards achieving this goal, large parts of the human population still remain unreached. 1.1 billion people around the world still lack access to improved water supply and more than 2.6 billion lack access to improved sanitation, with greatest challenges to progress remaining in sub-Saharan Africa.



Unreached Population



Although it is estimated that more than 90% of the global population will use improved drinking water sources by 2015, huge efforts are required to meet the sanitation target of the Millennium Development Goals. For instance, over 16 years (between 1990 and 2006) the proportion of people without improved sanitation decreased by only 8%. Taking into account population growth an estimated 2.4 billion people will be without basic sanitation by 2015.

To achieve the Millennium Development Goal target, the world needs to provide access to improved sanitation to 173 million people per year at annual cost of USD 11.3 billion. This cost is a small price to pay for the millions of lives saved, the improved quality of life and health, and the accruing benefits.

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Investment in safe water supply and access to improved sanitation has multiple economic returns. For every 1 US Dollar invested, there is a projected USD 3 - 34 benefit gained. The benefits range from time savings and productivity gains, to budget savings on national health-care. Per capita gains for the developing world population could reach at least USD 15 per capita per year.

The World Health Organization (WHO) estimates that achieving the Millennium Development Goal for access to safe water and sanitation would have an economic benefit of USD 84.4 billion per year.

To make this happen, it is critical that countries develop sustainable water management policies and practices that address water-quality challenges. Measures should include systematic monitoring of water bodies as this is an indicator of the effectiveness of protecting human health and achieving safe sanitation.

Clean water is an essential ingredient to economic growth and development – and investing in water and sanitation has high economic and social returns.



Relevance of water quality for achieving Millennium Development Goals (MDG) by 2015

MDG 7: Ensure environmental sustainability

- Target 1: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources
- Target 2: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss
- Target 3: Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation
- Target 4: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers

MDG 4: Reduce child mortality

- Target 1: Reduce by two thirds, between 1990 and 2015, the under-five mortality rate

MDG 6: Combat HIV/AIDS, Malaria and other diseases

- Target 3: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

Water quality impacts every one of us, and our lifestyles impact the quality of our water.



Protecting Water Quality: A shared responsibility for the common benefit

We all live downstream and therefore protecting water sources from pollution is everyone's responsibility. It can not be left to public authorities alone. All sectors, public and private, must take appropriate and adequate action to prevent pollution. It demands the open engagement of all stakeholders, from individuals and local communities to international organizations, non-governmental organizations, and civil society. Action should be differentiated according to the type of water use and the actors i.e. whether as an individual person or as a corporate body.



There is an urgent need to step up research, monitoring and assessment of water quality at global, regional, and local levels; taking an integrated approach using the basin as a management unit. Scientific findings from research should inform sound policy formation and implementation. Furthermore sufficiently funded and manned regulatory functions are required to ensure compliance with and enforcement of rules and regulations.

Clean water is life. We already have the know-how and skills to address it. Let us now have the will. Human life and prosperity rest on our actions today to be the stewards, not polluters, of this most precious resource – our clean water.

Joint efforts for protecting water quality for the common benefit

The water resources of the Senegal River in West Africa originate from and flow through four countries: Guinea, Mali, Mauretania, and Senegal. Since these countries share the same concern that is to manage water quantity and quality in a sustainable manner, the 'Organisation de Mise en Valeur due Fleuve Senegal (OMVS)' was created in 1972. OMVS provides information on the state of the resource and its associated ecosystem, as well as functions as a key institution where parties agree on future projects, on the provision of usage guarantees and on sectoral priorities.

(Source: Secretariat of the Convention on Biological Diversity. 2009. Drinking Water, Biodiversity and Poverty Reduction: A Good Practice Guide.(in press))



The European Union's Directive on Urban Wastewater Treatment aims at protecting the environment from the adverse effects of urban waste water discharges and discharges from certain industrial sectors and concerns the collection, treatment and discharge of domestic waste water, mixture of waste water, and waste water from certain industrial sectors. In specific, the directive prescribes the level of treatment required before discharge. So, for agglomerations of more than 2,000 people, collection and treatment of waste water must be provided, while secondary treatment of all discharges for agglomerations of more than 2,000 people and more advanced treatment for agglomerations of more than 10,000 people must be provided. Pre-authorisation of all discharges of urban wastewater, of discharges from the food-processing industry and of industrial discharges into urban wastewater collection systems is required. Performance of treatment plants and receiving waters need to be monitored, and sewage sludge disposal and re-use, and treated waste water re-use whenever it is appropriate to be controlled.

For more information on what You can do please visit www.worldwaterday2010.info