



Joint G8+ science academies' statement on Water & Health

Access to clean water and sanitation was declared a human right by the United Nations on July 28th, 2010.

Background

The Millennium Development Goal (MDG) 7C states: "Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation". The Academies of Science of the G8+ countries stress that accessibility, quality and protection of water resources are fundamental to human health in rural and urban areas worldwide. The objectives of MDG7 are imperative in helping to achieve the MDGs on poverty, universal education, food and energy security, gender equality, child and maternal health, most critically, MDG4, reducing child mortality. Diarrhoea-related illnesses kill more children under five years old than AIDS, malaria and measles combined and are the second leading cause of child death. Over 85% of diarrhoea worldwide is due to unsafe water, inadequate sanitation or insufficient hygiene.

A focus on improving sanitation is urgently needed as there has been significantly less progress in this area than in access to safe water. Furthermore, through population growth, increasing pollution and climate change, water as a resource will become scarcer: it is estimated that around 3 billion people will be living in water-scarce countries by 2050. Today, almost 900 million people lack access to a clean water supply, with 2.6 billion people lacking proper sanitation: the direct and indirect effects of a lack of clean water and sanitation are profound.

Within the last decade, more than 1 billion people in the world have now gained access to safe drinking water; much less progress has been made on sanitation and this has a major impact on human health. It is estimated that the MDG sanitation target will not be met in Sub-Saharan Africa for more than half a century; this is clearly unacceptable. An estimated 16% of the population in Europe, and just under 40% of the world population also lack suitable sanitation.

Nearly 20% of the world population - mainly in rural areas - still practise open defecation, resulting in 300 million tons of untreated human excreta polluting fresh water resources each year. This contributes significantly to the transmission of more than 20 different infectious diseases. In addition, domestic animal populations and their excreta are increasing, as diets change to a higher meat intake. Furthermore, improper urban and industrial waste disposal threatens surface and underground water resource quality.

In the absence of improved sanitation, the efficacy of expensive vaccines and chemotherapy to control

water-borne infectious diseases is seriously compromised. Policy-makers must understand that access to drinking water and sanitation facilities go hand in hand. Solving the lack of water services for tap water supply, treatment, hygiene and sanitation would mitigate many other health, economic and social problems. Providing sustainable access to safe water and sanitation is one of the most crucial development interventions in helping poor people to lift themselves out of poverty. It is also one of the most cost-effective public health measures.

Water and health impacts

Major health issues are associated with unsafe water. They include:

- Water-borne infectious diseases - some of animal origin - including cholera, and other diarrhoeal diseases, hepatitis, amoebiasis.
- Water-related vector-borne diseases such as malaria, filariasis, schistosomiasis and dengue, affecting more than 500 million people worldwide.
- Diarrhoeal diseases represent one of the major sources of morbidity/mortality in developing countries, accounting for the death of between 1.5 and 2 million children under the age of 5, annually (UNICEF_WHO, 2010). Alarming, 50% of hospital beds in the developing world are occupied by patients with water-borne diseases.
- Increasing concentrations of organic pollutants through anthropogenic activity (whether industry, agriculture or groundwater management related) and of naturally occurring arsenic, fluoride and nitrates in water all constitute human health hazards. They require either the development of alternative water resources or appropriate cost-effective treatment technologies. Regulations on chemicals need to be improved through better understanding of eco-toxicity and the toxicology of chronic exposure to micro-pollutant mixtures. Traditionally prevalent in industrial countries, chemical pollution is now emerging as a public health concern in developing countries. These countries are now also confronted with massive urbanization. Areas of greatest population density present different challenges to rural populations. The re-emergence of cholera is largely due to the spontaneous and burgeoning growth of mega-cities, townships, shanty towns and favelas with no sewage systems or infrastructure. Major improvements have to be made in sewage treatment.

- Water and sanitation issues can be intrinsically linked to land settlement and whilst access to water and sanitation is now recognised as a basic human right, this is often overlooked for displaced people; a problem that will become all the more important with increasing mass migration.

Socio-economic impacts of sanitation and safer water

The improvement of sanitation and use of safe water would strongly impact:

- **Economical development and lost productivity**
Diarrhoeal diseases account for an estimated 4% of the total DALY (Disability Adjusted Life Year) global burden of diseases, nearly 90% attributable to unsafe water supply, lack of sanitation and hygiene.
- **Education**
Approximately half a billion school days are lost each year due to water-borne diseases. The lack of adequate facilities in schools is one of the factors that prevent girls from attending school, particularly when menstruating. Gender-sensitive sanitation, together with education and hygiene, especially handwashing, has significantly reduced the incidence of water-borne and diarrhoeal diseases, e.g., in Bangladesh and Morocco.
- **Public health**
Promoting sanitation must be a priority for the development of public health if we are to attain the MDGs. Achieving the MDGs will depend on the promotion of international coordination, community-based cost-effective technologies - such as membrane filtration units - that have dramatically improved access to microbiologically clean water from individual to community scales.
- **Integrated Water Management**
An integrated approach to managing at watershed level should address the biogeophysical, climatic, social and economic issues related to water management particularly within river basins.

Recommendations

The Academies of the G8+ countries strongly recommend the following action plan to their Governments:

- Develop basic infrastructure for sanitation and maintenance, to achieve acceptable quality water as key priorities and reduce rural/urban disparities. Sanitary facilities in schools, adapted to local, environmental, technological and cultural constraints, are a priority.
- Promote education, including training of professionals and technicians to improve management of water quality, and public information to change the behaviour of populations regarding water supply.
- Fund research and development for the identification of pathogens of human and animal origin and the development of simple, low-cost and efficient markers. Further epidemiological studies are needed to develop vaccines against water-borne pathogens.
- Promote capacity-building to improve water management and hygiene standards; support watershed level community-based actions favouring the key role of women both in rural and peri-urban areas to echo "unheard voices of women".
- Establish networks of competence at national, regional and global levels to improve the efficiency of water use in domestic context, as well as in agriculture and industry, through research and innovative practices that are ecologically oriented.

The benefits of fulfilling these recommendations are so rewarding, both socially and economically, that the Academies urge the leaders to address this concern and identify methods to meet the financial challenge.

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