



World Water Day 2010

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Clean Water  
for a  
Healthy World



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## WORLD WATER QUALITY FACTS AND STATISTICS

### Global Water Pollution

- Every day, 2 million tons of sewage and industrial and agricultural waste are discharged into the world's water (UN WWAP 2003), the equivalent of the weight of the entire human population of 6.8 billion people.
- The UN estimates that the amount of wastewater produced annually is about 1,500 km<sup>3</sup>, six times more water than exists in all the rivers of the world. (UN WWAP 2003)

### Human Waste

- Lack of adequate sanitation contaminates water courses worldwide and is one of the most significant forms of water pollution. Worldwide, 2.5 billion people live without improved sanitation. (UNICEF WHO 2008)
- Over 70% of these people who lack sanitation, or 1.8 billion people, live in Asia.
- Sub-Saharan Africa is slowest of the world's regions in achieving improved sanitation: only 31 percent of residents had access to improved sanitation in 2006.
- 18% of the world's population, or 1.2 billion people (1 out of 3 in rural areas), defecate in the open. Open defecation significantly compromises quality in nearby water bodies and poses an extreme human health risk. (UNICEF WHO 2008)
- In Southern Asia, 63% of rural people – 778 million people – practice open defecation.

### Human Health Impacts

- Worldwide, infectious diseases such as waterborne diseases are the number one killer of children under five years old and more people die from unsafe water annually than from all forms of violence, including war. (WHO 2002)
- Unsafe or inadequate water, sanitation, and hygiene cause approximately 3.1 percent of all deaths worldwide, and 3.7 percent of DALYs (disability adjusted life years) worldwide. (WHO 2002)
- Unsafe water causes 4 billion cases of diarrhea each year, and results in 2.2 million deaths, mostly of children under five. This means that 15% of child deaths each year are attributable to diarrhea – a child dying every 15 seconds. In India alone, the single largest cause of ill health and death among children is diarrhea, which kills nearly half a million children each year. (WHO and UNICEF 2000)

### Ecosystem Impacts

- There has been widespread decline in biological health in inland (non-coastal) waters. Globally, 24 percent of mammals and 12 percent of birds connected to inland waters are considered threatened. (UN WWAP 2003)
- In some regions, more than 50% of native freshwater fish species are at risk of extinction, and nearly one-third of the world's amphibians are at risk of extinction. (Vié et al. 2009)
- Freshwater species face an estimated extinction rate five times greater than that of terrestrial species. (Ricciardi and Rasmussen 1999)
- Freshwater ecosystems sustain a disproportionately large number of identified species, including a quarter of known vertebrates. Such systems provide more than US\$75 billion in goods and ecosystem services for people, but are increasingly threatened by a host of water quality problems. (Vié et al. 2009)
- The greatest single service freshwater ecosystems provide—marshes in particular—is water purification and the assimilation of wastes, valued at US\$ 400 billion (2008\$) worldwide (Costanza et al. 1997).
- With the Millennium Development Goals, the international community committed to halving the proportion of people without access to safe water and sanitation by 2015. Meeting this goal means some 322 million working days per year gained, at a value of nearly US\$ 750 million (SIWI 2005), and an annual health sector cost saving of US\$ 7 billion. Overall, the total economic benefits of meeting the MDG target have been estimated at US\$ 84 billion (SIWI 2005).
- Poor countries with access to clean water and sanitation services experienced faster economic growth than those without: one study found the annual economic growth rate of 3.7 percent among poor countries with better access to improved water and sanitation services, while similarly poor countries without access had annual growth of just 0.1 percent (Sachs 2001).

### Drinking Water Quality

- Point-of-use drinking water treatment through chlorine and safe storage of water could result in 122.2 million avoided DALYs (Disability Adjusted Life Years, a measure of morbidity), at a total cost of US\$ 11.4 billion. (UN WWAP 2003)
- Nearly 70 million people living in Bangladesh are exposed to groundwater contaminated with arsenic beyond WHO recommended limits of 10 ug/L. (UN WWAP 2009)  
The naturally occurring arsenic pollution in groundwater now affects nearly 140 million people in 70 countries on all continents. (UN WWAP 2009)
- Even drinking water quality in developed countries is not assured. In France, drinking water testing uncovered that 3 million people were drinking water whose quality did not meet WHO standards, and 97% of groundwater samples did not meet standards for nitrate in the same study. (UN WWAP 2009)

### Costs and Benefits of Water Quality

- Sanitation and drinking water investments have high rates of return: for every \$1 invested, there is a projected \$3-\$34 economic development return. (UN WWAP 2009)
- Economic losses due to the lack of water and sanitation in Africa as a result of the mortality and morbidity impacts is estimated at \$28.4 billion or about 5% of GDP. (UN WWAP 2009)

### Pollution from Industry and Mining

- 70% of industrial wastes in developing countries are disposed of untreated into waters where they contaminate existing water supplies. (UN-Water 2009)

- An estimated 500,000 abandoned mines in the U.S. will cost \$20 billion in management and remediation of pollution; many of these sites will require management in perpetuity. (Septoff 2006 and <http://www.abandonedmines.gov/ep.html>)
- In the U.S. state of Colorado alone, some 23,000 abandoned mines have polluted 2,300 km of streams. (Banks, et al. 1997)
- Chlorinated solvents were found in 30 percent of groundwater supplies in 15 Japanese cities, sometimes traveling as much as 10 km from the source of pollution. (UNEP 1996)
- Roughly one unit of mercury is emitted into the environment for every unit of gold produced by small-scale miners, a total of as much as 1000 tons of mercury emitted each year. (UNEP/GRID-Arendal)

### Pollution from Agriculture

- In a recent comparison of domestic, industrial, and agricultural sources of pollution from the coastal zone of Mediterranean countries, agriculture was the leading source of phosphorus compounds and sediment. (UNEP 1996) Nutrient enrichment, most often associated with nitrogen and phosphorus from agricultural runoff, can deplete oxygen levels and eliminate species with higher oxygen requirements, affecting the structure and diversity of ecosystems.
- Nitrate\* is the most common chemical contaminant in the world's groundwater aquifers. (Spalding and Exner, 1993) And mean nitrate levels have risen by an estimated 36% in global waterways since 1990 with the most dramatic increases seen in the Eastern Mediterranean and Africa, where nitrate contamination has more than doubled. (GEMS 2004)
- According to various surveys in India and Africa, 20-50% of wells contain nitrate<sup>1</sup> levels greater than 50 mg/l and in some cases as high as several hundred milligrams per liter. (cited in FAO 1996)

### Groundwater Impacts

- In Chennai, India, over-extraction of groundwater has resulted in saline groundwater nearly 10 km inland of the sea and similar problems can be found in populated coastal areas around the world. (UNEP 1996)

### Infrastructure Affects Water Quality

- Sixty percent of the world's 227 biggest rivers have interrupted stream flows due to dams and other infrastructure. Interruptions in stream flow dramatically decrease sediment and nutrient transport to downstream stretches, reducing water quality and impairing ecosystem health. (UN WWAP 2003)

<sup>1</sup>The USEPA (2002) has established a maximum contaminant level of 10 mg/l nitrate because of concerns that ingestion of nitrate in drinking water by infants can cause low oxygen levels in their blood. Long-term exposure to nitrate at concentrations as low as 2 - 4 mg/l in community water supplies has been linked to bladder and ovarian cancer (Weyer et al. 2001) and non-Hodgkins lymphoma. (Ward et al. 1996)

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