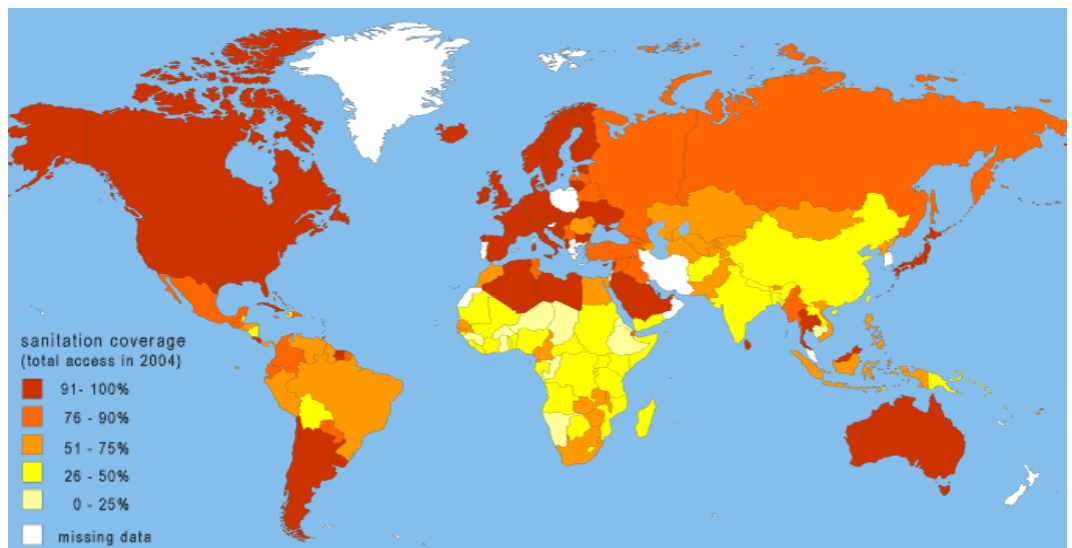


There are at least 2.6 billion people in the world without improved sanitation. Improved sanitation is defined by the World Health Organization as connection to a public sewer, connection to a septic system, a pour-flush latrine, a simple pit latrine or a ventilated improved pit latrine. Most of these 2.6 billion reside in rural Asia and Africa. But technically, even access to “improved” sanitation does not solve the problem because conventional pit latrines usually fail to sanitize and they contribute to groundwater pollution. Also, septic systems and sewage treatment plants often discharge into the environment with little or no sanitization or nutrient removal. So in actuality, far more than 2.6 billion people need to gain access to effective and sustainable sanitation.

Pit latrines of various kinds serve about 2.8 billion people and are often health and environmental hazards. Of the 1.1 billion people served by sewage systems, many of those systems do not have advanced end-of-the-pipe treatment (secondary level or better) (Matsui, 2002). These figures indicate that even people with conventional sanitation solutions do not escape the sanitation crisis.

### Reaching the MDG target

The UN World Summit on Sustainable Development (WSSD), held in Johannesburg in 2002, articulated several targets for the coming decade. Among them, “halve, by the year 2015, the proportion of people who do not have access to basic sanitation”. Since then the Millennium Project has further defined what this huge task involves (UN Millennium Project, 2005). The World Summit for Children in 1990 called for universal sanitation



**Figure 1: Sanitation coverage in 2004 - percentage of population with improved sanitation (WHO-UNICEF 2006)**

by 2000. With significant effort, the 1990s saw a 10% increase in global sanitation coverage, rising from 51% to 61%. However, the discrepancy between rural and urban sanitation improvement is high, with urban sanitation coverage consistently eclipsing rural areas, where 80% of the people without sanitation live.

The acknowledged status of sanitation in the world reached a crisis level 15 years ago. To complicate matters, the original timeline from 1990 for achieving universal sanitation coverage has already been pushed back 25 years. To reach the WSSD target, we must also account for estimated population growth – about 20% – adding to the present 1.2 billion targeted for coverage by 2015. The persistent delay in reaching international sanitation goals should not be overlooked. More than 4 billion people will need to gain access to basic sanitation to meet the 2025 target for universal coverage (WHO & UNICEF, 2000).

### No sanitation is dangerous

The Framework for Action on Water and Sanitation, produced in conjunction with the WSSD, indicates close to 6,000 children die each day from diseases related to inadequate sanitation and hygiene,

and a lack of access to safe drinking water. “In China, India and Indonesia, twice as many people are dying from diarrhoeal diseases as from HIV/AIDS” (UN, 2002).

Other indicators of health risks associated with poor sanitation are the frequency of related parasites that have human faecal origin – about 1 billion people are infected with roundworm and 700 million with hookworm. Uncontained and untreated human excreta pollute groundwater tables, streams, lakes and coastal zones, helping to perpetuate the cycle of human disease and upsetting fragile aquatic ecosystems by nutrient overloading and eutrophication. The need to “close the loop” on nutrients dictates a paradigm shift towards sustainable sanitation is necessary (see *EcoSanRes Fact Sheet 3*). The health risks associated with the current state of sanitation in the world require immediate action.

### Inadequate sewage treatment creates problems downstream

The United States operates close to 100 million flush toilets, averaging 15-19 litres of freshwater per flush, as a means to transport human excreta. In turn, the effluent and sludge produced at sewage treatment facilities often pollutes

groundwater, lakes and seas. Although developed countries are making concerted efforts to reduce pollution caused by treatment facility inadequacy, flush sanitation is still not a sustainable solution.

Sweden, with a population of nine million, produces about one million tonnes of wet sludge each year, most of which cannot be recycled to forests or agriculture due to heavy metal contamination. Of 540 major European Union cities, only 79 have advanced tertiary sewage treatment, 223 have secondary treatment, 72 have incomplete primary or secondary treatment and 168 have no or unknown treatment (EU, 2001).

In February 2002, the European Commission took legal action against France, Greece, Germany, Ireland, Luxembourg, Belgium, Spain and the United Kingdom for alleged failure to implement the EU Urban Water Directive.

### **Socio-economic impact**

According to the Water Supply and Sanitation Collaborative Council's Vision 21, "recognition of water and sanitation as basic human rights, and of hygiene as a prerequisite...form a major component in poverty reduction". Hygiene, safe water and sanitation are fundamental human rights.

Sanitation can improve social and economic conditions for all, but especially for impoverished communities. It offers empowerment and safety, particularly to women and girls in urban and peri-urban areas that are often without sanitation, by providing a private and dignified environment for urinating and defecating.

With ecosan the use of sanitized human excreta as a fertilizer enhances crop growth and, as a result, increases nutrition for those

who depend on subsistence farming, or helps to generate income for those who sell the products they grow.

### **The challenges**

Because 80% of the people without sanitation, equalling about 2 billion people, live in rural areas – 1.3 billion of those in China and India – the barriers to communication present a significant impediment to informing these people about ecological sanitation. Television advertising, newspapers or printed material do not reach most of these people. Government services make infrequent calls to remote areas and NGOs serve a small segment of this population. Instead, most information is exchanged through face-to-face communication. How can we spread the message about sanitation alternatives and improved hygiene options to such a large number of people living outside the reach of familiar communication channels?

### **Need for alternatives**

Even if the sanitation crisis can be communicated to and understood by more people, the need to find sustainable alternatives to conventional approaches for both developed and developing countries remains. Sanitation can no longer be a linear process where excreta is hidden in deep pits or flushed untreated downstream to other communities and ecosystems. Sustainable and ecological sanitation calls for a holistic approach.

### **Ecological sanitation**

Ecological sanitation provides alternative solutions with or without water, while providing containment, treatment and recycling of excreta. It can involve soil-based composting toilets in shallow reinforced pits, dry urine-diverting toilets

with storage vaults, urine-diverting mini-flush toilets and even high-tech vacuum systems. Cost-effective ecosan can be adapted for developing and developed countries. In arid zones, water resources can be saved for more important needs like personal hygiene and growing food. In humid areas with high water tables, aboveground and shallow ecosan systems can remain functional during seasonal floods. Ecosan provides human health and environmental protection using affordable and appropriate technologies to match the needs of the entire world.

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