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## Sanitation protects the environment

Toilets, washing facilities, garbage removal, wastewater disposal, stormwater drainage: sanitation services such as these are a prerequisite for clean, healthy household and community living environments, particularly in dense settlements. Such sanitation services are also vital to safeguard environmental quality more broadly, especially the quality of water resources.

### **A healthy living environment depends on sanitary toilets**

In teeming informal settlements across the globe, the sanitation crisis is keenly felt. With no way to safely dispose of either faeces or garbage, around a billion slum dwellers must resort to »flying toilets« (also known as »wrap and throw«) and to dumping trash in public spaces. This situation is not limited to urban settlements; in impoverished city suburbs, small market towns, large villages, and peri-urban settlements across the developing world, the public environment is full of waste. The contents of bucket-latrines and pits, even of sewers, are often emptied into the streets. A recent study of Indonesia, for example, found that roughly one in ten people are exposed to open sewers and the open dumping of solid waste, and more than four in ten to open defecation sites. Poor sanitation creates a host of health hazards as well as a bleak and disheartening visual landscape. Roads are full of mud, puddles, and piles of garbage and debris, not to mention disease-carrying insects, microbes and rodents. The odours are often unpleasant.

Imagine a community of 10,000 inhabitants, 30 percent of whom practice open defecation. Since each person produces 150

grams of faeces a day, open defecation would result in 450 kg daily or more than three tons a week – or 100 full dump trucks' worth of human excrement annually – deposited in the community. Living in a squalid environment harms physical and psychological health; is stigmatising; often presents employment challenges; and deepens human poverty. A healthy living environment, one that supports human dignity and is free of disease-transmitting agents and conditions, is impossible without sanitation services.

### **Sanitary toilets aid environmental sustainability**

Human waste enters water sources and land through open defecation, dumping of buckets, inadequate disposal via sewer pipes into water courses and onto unused land, and leakage from pit latrines. In the developing world, roughly 90 percent of sewage is discharged untreated into rivers, polluting waters and killing plants and fish. In Southeast Asia alone, 13 million tons of faeces are released to inland water sources each year, along with 122 million m<sup>3</sup> of urine and 11 billion m<sup>3</sup> of greywater. This presents a major health threat to people who depend upon open streams and wells for their drinking





→ water as well as an economic blow to people whose livelihoods depend upon fisheries. Upstream water users find better quality water, whereas downstream users find »sewage sinks«. Water quality is worse near densely populated areas.

This pollution has a high cost. Water pollution stemming from poor sanitation costs Southeast Asia more than US\$ 2 billion per year, and in Indonesia and Vietnam creates environmental costs of more than US\$ 200 million annually, primarily from the loss of productive land.

### Reusing waste has many benefits

Sanitation involves a range of actions, but for a healthy environment – in communities as well as in the larger natural world – the top priority is separating excreta, with its host of biological pathogens, from contact with human beings as well as plant and animal life. In areas where it is practised, ending open defecation is a critical first step. But to fully realise the health, social, and economic bene-

fits, the management of wastes must be considered. Conventional sewerage can now be supplemented with ecological sanitation technologies that make use of the nutrients in human waste. These range from simple »arbor-loos« (where a tree is planted on the latrine pit) to urine-diverting toilets that produce fertiliser from urine and safely composted faeces. Anaerobic digestion of sewage to produce biogas for energy is another option.

In China today, 90 percent of human excreta is used in agriculture; the task is to make sure that raw sewage is not put on the fields. Chinese farming communities have proved open to the idea of urine-diverting, or 'dry', toilets that facilitate the re-use of excreta as fertiliser. A 1998 trial in Guanxi Province led to the wide adoption of urine-diverting toilets; by 2003, the approach had spread to 17 provinces, and almost 700,000 households were involved.

Main sources: UN, UNEP, WSP/World Bank.

**Toilets and latrines that isolate and sanitise human excreta are necessary for a clean, healthy community living environment; they also safeguard overall ecosystem health by keeping biological pathogens from contaminating waterways and land.**

*This diagram was taken from the DFID Guidance Manual on Water Supply and Sanitation Programmes LSHTM/WEDC 1998 and further developed by IWA (IWA ibid).*

