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## Pollution management in urban watersheds of developing countries

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### Key points from the discussion

#### Why are there hardly any functional wastewater treatment plants?

The phenomenon of dysfunctional treatment plants concerns all sizes, centralized and decentralized. In the example of Ghana, where the WEDC conference was hosted, only about 5 of 44 treatment plants are classified as working. Reasons discussed in the sessions pointed at interlinked institutional, economic, and technical shortcomings, but also at missing appropriate incentives for the continuous maintenance of treatment plants, or inappropriate awareness and public concern about health consequences of environmental pollution. Reduced standards and locally appropriate technologies are necessary. In donor agreements, Governments should not overestimate their capacities to guarantee maintenance, as for example, common cash flow problems might delay critical repairs resulting in growing problems which at the end will be classified as “technical” although the root causes were of an institutional nature.

#### Adjusting values and standards

In developing countries we should avoid projecting the goal that all people will have to be connected to sewerage. In many cases, models show that the amounts of water required are simply not available, while treatment plants hardly operate (see above). Alternative systems might include condominal sewers, other small-scale solutions, dry sanitation etc. However, often Governments do not want to present alternative options to people as they might seem substandard, or they adopt too high standards of donor agencies.

There was a strong voice in the sessions to take advantage of local perceptions and creativity. While urban planning has often failed, especially in high density but low-income areas, very creative things happen in many slums. Although these might not meet MDG definitions, local dwellers consider them a significant improvement (like a ‘hole with a screen’) compared to their flying (rubber bag) toilets. There are also increasingly (successful) small-scale technology case studies and interest in decentralized sanitation including ecological sanitation with resource recovery. But also this requires adaptation: We learnt about projects promoting EcoSan toilets for US\$ 70-100, while households’ willingness-to-pay ranges between US\$ 5-20. In general, however, important is the initial planning with targets based on local perceptions, constraints and opportunities, like the agricultural use of the excreta.

#### How should we deal with large scale water pollution?

In many developing countries and emerging economies pollution control does not (yet) work. In this situation, it is

recommended to focus less on non-enforceable regulations but on rewards or incentives, combined with education to increase environmental conscience. Moreover, most pollution control regulations are not realistic aiming more at optimal than realistic standards, which makes these unattractive (un-reachable) goals. Institutional problems and power vacuum for decision making are also common. In such a low-income country context, investments have to be very targeted and be based on risk assessments. A priority investment would be to treat industrial outflow separately or at least to avoid its mix with domestic wastewater in streams and rivers.

In coastal areas, common sanitation reality appears to be based on the slogan “Dilution is the Solution to Pollution”. Although most pathogens might not survive long in salt water, data show health risks for beach visitors, impact on tourist sector, local ecosystems etc. making this at best a temporal ‘solution’.

#### What should (peri) urban farmers who depend on surface water for irrigation do?

Urban agriculture has various benefits but can also put consumers at risk where polluted water is used. Cities need to link up with farmers, develop strategies to regulate and optimize the benefits while assessing the risks. Creative options for risk reduction between farm and fork are supported by the 2006 WHO guidelines for safe wastewater use in agriculture. Well drilling and reallocation to alternative farming sites with safer water sources are further options. Ongoing research on locally adapted health risk reduction measures is currently funded by WHO-IDRC-FAO with projects in Senegal, Ghana and Jordan.

### Keywords

Sanitation, urban pollution, appropriate technology

### Key conclusions

- (i) Urban sanitation planning should follow a step-wise approach taking advantage of local opportunities, appropriate technology and indigenous creativity;
- (ii) Governments should rethink external standards, from effluent quality to the MDG definition of appropriate sanitation, to support improvement of value in the local context;
- (iii) Sanitation should consider the productive use of waste products especially in agriculture;
- (iv) A key bottleneck is the maintenance of sanitation systems which requires appropriate technologies, human and financial capacities, cost recovery and incentives. Too often we focus only on punitive enforcements but not on incentives and education.