

4 ENVIRONMENTAL HEALTH

SUMMARY:

- This booklet covers four services that are crucial to the Urban Management agenda:
 - water supply
 - sanitation
 - solid waste management
 - drainage
- A poor physical environment has a very damaging effect on health, particularly affecting children and the poor, who comprise the vast majority of urban residents.
- Environmental health is not just about illness and disease – it has a major impact on the ability of households to do effective work and study.
- Initiatives are needed covering all four services - to improve one or two services without improving the others will reduce the potential benefits.
- Four principles underpin the planning and delivery of environmental health services:
 - public health imperative
 - realistic standards
 - cost recovery
 - incremental delivery
- Capital investment must be supported by effective operation & maintenance (O&M) and cost recovery to ensure sustainability.
- Promotion of public health awareness must go alongside complements the 'hard' investment in improved services.

Introduction

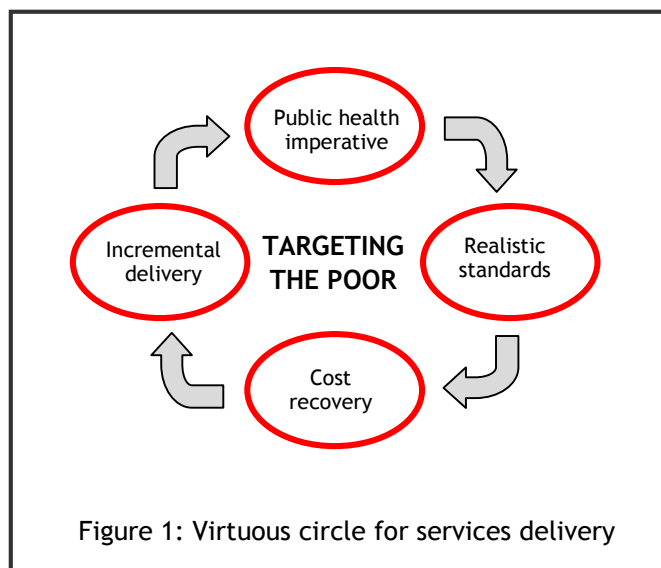
- 4.1 This booklet discusses four services:
- water supply
 - sanitation
 - solid waste management (or refuse disposal)
 - drainage
- 4.2 The design, construction and operation of public utilities will be done by engineers in the relevant service company. But it is important that UM staff have a good understanding of the principles involved in planning and delivery, to ensure that the delivery of public utilities matches broader UM objectives.

Why is environmental health important?

- 4.3 A poor physical environment has a very damaging effect on health, especially of children. While local residents may be aware of the poor conditions and the impact on their health, they are often unable to take initiatives on their own to break the cycle of ill-health.
- 4.4 The urban poor - who comprise the vast majority of urban residents - are the most vulnerable to health risks and the least likely to be able to afford health care. Poverty and ill health are inseparable: ill health is a main cause of poverty and is also an obstacle to escaping from poverty.
- 4.5 Environmental health is therefore not just about illness and disease - it has a major impact on the ability of people to live healthy and rewarding lives. So effective environmental health initiatives can have a direct beneficial impact on urban poverty and livelihoods.

Environmental health problems

- 4.6 Pathogenic (i.e. causing disease) micro-organisms, such as bacteria and viruses, are transmitted by direct contact with excreta and wastewater, or indirectly by contamination of food, water or solid waste. They can also be transmitted via an animal or insect vector (e.g. rats, mosquitoes, flies).
- 4.7 Chemical agents, including toxic and hazardous wastes, can also be carried in water - this is likely to become an increasing problem in future as industrial operations expand in urban areas.
- 4.8 The interaction of these factors impacts on all four services:
- **Water supply:** ➡ 5 - Water Supply
 - Lack of safe water supply forces poor households to use unsafe water, which places children at very high risk;
 - Poor quality water storage (in oil drums, buckets etc) creates potential contamination.
 - **Sanitation:** ➡ 6 - Sanitation
 - Open defecation and poorly-constructed pit latrines contaminate the surface water and shallow aquifers;
 - Direct contact with excreta transmits disease, especially in case of young children
 - Contamination can 'flow back' into the piped water system through cracks and joints when the pressure drops, so contaminating the 'safe' water supply.



- **Solid waste:** ➡ 7 - Solid Waste
 - Careless waste disposal creates breeding sites for disease carrying vectors: rodents (rats) and insects (ticks, fleas, flies, mosquitoes etc);
 - Blocked drains and water courses cause flooding that spreads contamination and standing water that encourages breeding of insects and worms;
 - Accumulated waste dumps are frequently used as open latrines.
- **Drainage:** ➡ 8 - Drainage
 - Flooding of sanitation facilities and solid waste during heavy rain contaminates surface water;
 - This leads to increase in skin and eye disease and gastric infections;
 - Standing water in badly drained areas in plots or around standpipes encourages breeding of insects and worms.

4.9 The interaction emphasises the importance of dealing with all four services: to improve water supply without addressing disposal of waste water (either through sanitation or drainage) is certain to reduce the potential benefits of the improved water supply.

Four general principles

4.10 There are four general principles that underpin the planning and delivery of these services:

- **Public health imperative:** The main reason for providing or improving public utilities is to improve public health. Communities with poor public utilities experience a higher incidence of disease than those that are well provided; and these tend to be low-income communities - so the planning of public utilities needs to prioritise the needs of these groups.
- **Realistic standards:** It is important plan for realistic standards. Aiming too high is likely to result in expensive programmes that benefit a few, and not the community at large.
- **Cost recovery:** Public utilities have to be paid for: households that benefit from public utilities must make a financial contribution towards those services. So what households can afford to pay effectively determines the level of public utilities that is feasible. This reinforces realistic standards: if the utilities

company agency provides an unrealistically high standard of service, consumers will not be able to afford it and the company will suffer.

- **Incremental delivery:** It is sensible to plan for the gradual improvement of services over time, matched closely to the availability of funding and local household affordability. Adopting this approach will naturally encourage the use of realistic standards.

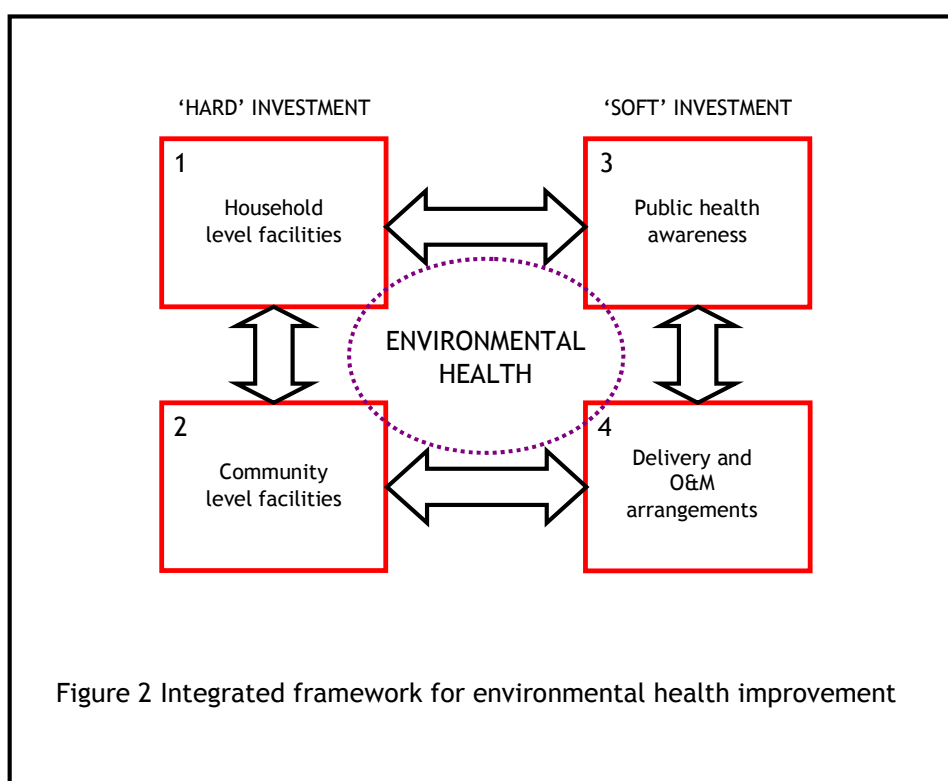
4.11 Figure 1 illustrates how the four principles can form a *virtuous circle*, in which the four principles reinforce each other and combine to target the poor.

Promoting public health awareness

4.12 Investment in physical environmental health components needs to be supported by public health education, to promote:

- awareness of environmental health issues
- good hygiene practice

4.13 The aim is to encourage local residents to improve the management of their waste and to educate them in what they can do to reduce disease transmission.



A comprehensive approach

4.14 Tackling environmental health in an effective manner requires an integrated approach that combines 'hard' and 'soft' investment - see Figure 2.

4.15 **Hard investment** (boxes 1 and 2) - construction of new or improved physical facilities:

- Box 1: facilities serving individual household plots (house water supply connection, pit latrine etc).

- Box 2: facilities that enable Box 1 facilities to operate - larger scale investment in new/improved district or town-wide supply networks, treatment plants etc.
- 4.16 **Soft investment** (boxes 3 and 4) - investment to ensure that full value is obtained from the hard investment and to ensure sustainability:
- Box 3: raising awareness about the importance of hygiene and environmental health issues.
 - Box 4: effective delivery and O&M of new/improved services by the responsible agencies/companies.
- 4.17 The important message is that we have to work on all four boxes to be effective: if one box is ignored, the success of the other boxes is severely reduced.

Transition phase:

- Addressing environmental health should be the primary focus for short-term UM initiatives – because of their direct impact on the quality of livelihoods.
- Particular focus must be given to the needs of children and the poor, who make up the vast majority of urban residents.
- The four principles (see 6.13) provide a useful framework for identifying appropriate initiatives and the correct targeting of investment.

Long-term:

- Continuing improvement of environmental health services will be possible as resources become available.
- There is likely to be an increased role for the private sector involvement in delivery and O&M of services.