

**Targeting the Urban Poor and Improving Services  
in Small Towns**

# Poor-Inclusive Urban Sanitation: An Overview

**Peter Hawkins, Isabel Blackett, and Chris Heymans**

August 2013

## **Acknowledgments**

Delivering poor-inclusive urban sanitation requires improved service delivery, rather than a focus on infrastructure. This is the core finding of a global review by WSP on challenges, trends, and approaches at the global, national and city levels to achieve viable poor-inclusive urban sanitation at scale. This paper highlights key observations and lessons from the original study report: “Delivering Sanitation to the Urban Poor: A Scoping Study” (2012; unpublished).

This summary was prepared by senior urban water and sanitation specialists Isabel Blackett, Peter Hawkins, and Chris Heymans. The authors wish to thank: Jeremy Colin, who prepared the bulk of the research for the scoping study on which this document is largely based; peer reviewers and colleagues who provided inputs during the conceptualization and research for the report, especially Eddy Perez, Soma Ghosh Moulik, Martin Gambrill, Meike Van Ginnekin, Pete Kolsky, Bernardo Gomez, Josep Ravikumar, Yolande Coombes, Zael Sanz Uriarte, and Nelson Medina; and finally, WSP’s Global Program Manager Jaehyang So and the Regional Team Leaders: Glenn Pearce-Oroz, Almud Weitz, and Juan Costain for their robust guidance and support.

This paper is conceived as a work in progress to encourage the exchange of ideas about development issues. For more information, please email the authors at [wsp@worldbank.org](mailto:wsp@worldbank.org) or visit [www.wsp.org](http://www.wsp.org).

WSP is a multi-donor partnership created in 1978 and administered by the World Bank to support poor people in obtaining affordable, safe, and sustainable access to water and sanitation services. WSP’s donors include Australia, Austria, Canada, Denmark, Finland, France, the Bill & Melinda Gates Foundation, Ireland, Luxembourg, Netherlands, Norway, Sweden, Switzerland, United Kingdom, United States, and the World Bank.

WSP reports are published to communicate the results of WSP’s work to the development community. Some sources cited may be informal documents that are not readily available.

The findings, interpretations, and conclusions expressed herein are entirely those of the author and should not be attributed to the World Bank or its affiliated organizations, or to members of the Board of Executive Directors of the World Bank or the governments they represent. The World Bank does not guarantee the accuracy of the data included in this work.

The material in this publication is copyrighted. Requests for permission to reproduce portions of it should be sent to [wsp@worldbank.org](mailto:wsp@worldbank.org). WSP encourages the dissemination of its work and will normally grant permission promptly. For more information, please visit [www.wsp.org](http://www.wsp.org).

© 2013 International Bank for Reconstruction and Development/The World Bank  
1818 H Street NW  
Washington, DC 20433  
Telephone: 202-473-1000  
Internet: [www.worldbank.org](http://www.worldbank.org)

# Table of Contents

I. Scale of the Challenge .....	1
II. Dimensions of the Urban Sanitation Challenge: What We Know .....	3
Population Density: A Defining Challenge for Urban Sanitation .....	3
Urban Sanitation in Practice.....	3
Issues in the Enabling Environment .....	5
Technical Challenges in the Delivery of Sanitation Services .....	8
III. The Way Forward.....	12
Focus on Poor-Inclusive Service Delivery .....	12
Service Delivery Framework.....	12
Meeting the Technical Challenges for Serving Poor Communities.....	13
Drivers of Change.....	14
IV. Concluding Remarks.....	16
References.....	17

## Figures

1: Urban Sanitation Coverage in Developing Regions .....	1
2: South Asia Urban Sanitation Coverage by Wealth Quintiles on Population Weighted Averages from Three Countries, 1995–2008 .....	2
3: Correlation of Stunting with Open Defecation in Urban and Rural Areas.....	3
4: The Sanitation Service Chain.....	3
5: A Service Delivery Framework for Urban Sanitation .....	13
6: Drivers of Change and Accountability Mechanisms.....	15



# I. Scale of the Challenge

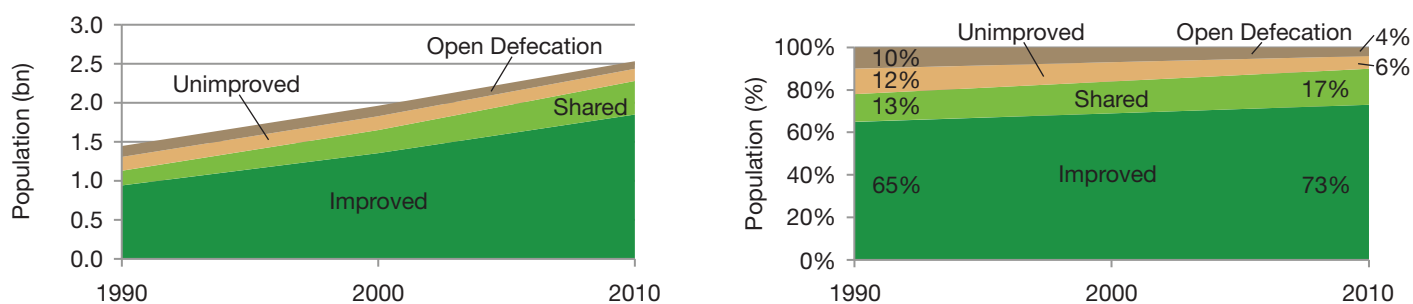
Most of the world's population now lives in urban areas, and in developing regions the proportion living in cities and towns has risen from 35 percent in 1990 to 45 percent in 2010—from 1.4 billion to 2.5 billion people (Jacobsen et al. 2012). A 2008 World Bank analysis estimated that a third of people living on less than US\$2 per day reside in urban areas, and UN-Habitat estimates that just under 40 percent of urban dwellers live in slums, a number that is growing by more than 20 million per year (Baker 2008). As Figure 1 shows, sanitary conditions in these slums are generally poor. Recent African Ministers' Council on Water (AMCOW)<sup>1</sup> Country Status Overviews (CSOs) estimated that 150 to 180 million urban dwellers in Africa, mostly living in rapidly growing informal settlements, lack sanitation. Most do not own their land and/or houses, and lack incentives to invest in sanitation (WSP 2009).

Urban sanitation coverage in rapidly urbanizing developing regions has increased only slightly over the last 20 years, and the number of people without access to improved sanitation has grown 35 percent, to 684 million people. Although access to toilets is generally higher in urban than in rural areas, sanitary conditions for poor people in urban areas are

aggravated by high-density living, inadequate septage and solid waste management, and poor drainage. Although the number of urban dwellers practicing open defecation has fallen overall from 145 million to 101 million, it has risen from 14 million to 25 million in Sub-Saharan Africa, and has fallen only slightly in Southeast Asia, from 19 million to 17 million people (UN-Habitat 2010). Both access to and the quality of sanitation will need to increase at a much faster pace and on a larger scale than in the past to meet this continuously growing demand.

In many developing countries, there are major disparities in access to sanitation in urban areas between rich and poor. Global monitoring systems have not yet captured the full scale of the sanitation challenge in urban areas,<sup>2</sup> but disaggregated data show differences in access to sanitation between the richest and poorest quintiles to be more than 80 percentage points in some countries (AMCOW 2011). In Sub-Saharan Africa, the lowest wealth quintile had only 42 percent access to improved sanitation, compared to 91 percent for the richest quintile between 2004 and 2009 (JMP 2012). Figure 2 shows even greater inequity in South Asia.

**FIGURE 1: URBAN SANITATION COVERAGE IN DEVELOPING REGIONS**

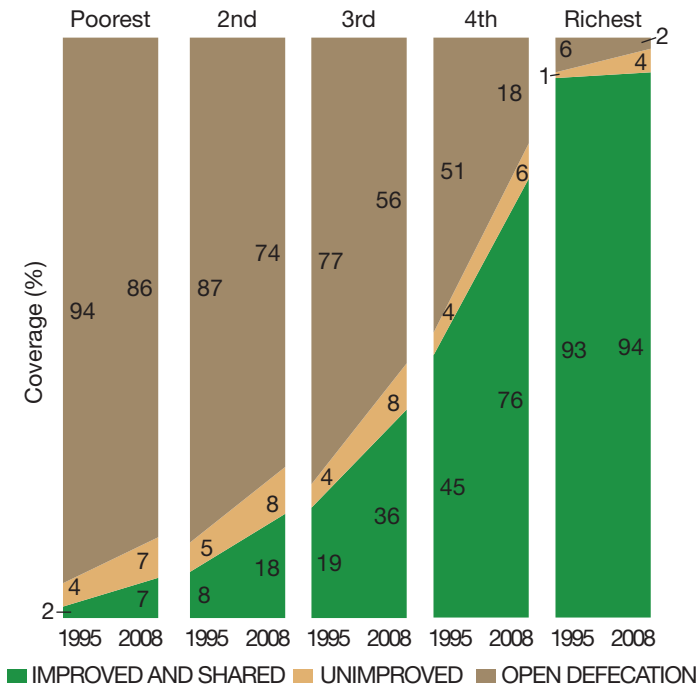


Source: JMP (2012)

<sup>1</sup> AMCOW is a multilateral forum of Ministers of Water in the African Region, formed in 2002 to promote cooperation, social, and economic development and poverty eradication among member states. It has also supported the monitoring of water and sanitation data and policy dialogue, including working with the World Bank's Water and Sanitation Program (WSP) on Country Status Overviews (CSOs) see AMCOW 2010 and AMCOW 2011.

<sup>2</sup> Indicators such as the percentage of urban liquid wastes collected and treated are not recorded by the Joint Monitoring Programme (JMP) or any other global monitoring system.

**FIGURE 2: SOUTH ASIA URBAN SANITATION COVERAGE BY WEALTH QUINTILES ON POPULATION WEIGHTED AVERAGES FROM THREE COUNTRIES, 1995–2008**



Source: JMP (2012)

These disparities highlight a pressing need to address the urban sanitation challenge comprehensively, with emphasis on including slum dwellers and poor communities that have typically been neglected. Without concerted intervention, the prospects of cholera, diarrhea, and worm infections will increase, jeopardizing education, productivity, and the quality of life for all urban dwellers.<sup>3</sup>

<sup>3</sup> Since 2008, WSP studies of the Economic Impacts of Sanitation in East Asia, South Asia, Africa and Latin America, and the Caribbean have shown the economic impacts of inadequate sanitation on productivity and equity generally, and on public health budgets.

# II. Dimensions of the Urban Sanitation Challenge: What We Know

## Population Density: A Defining Challenge for Urban Sanitation

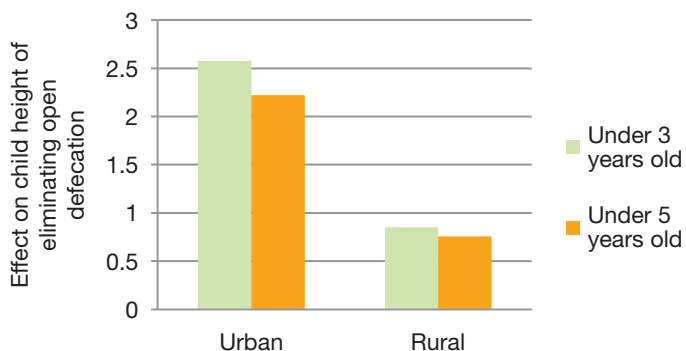
The defining characteristic of the urban environment from the sanitation perspective is population density, which has two major consequences. First, it exposes individuals to pollution created by others. For example, Figure 3, derived from Demographic and Health Survey (DHS) data in 130 countries (Spears 2013), shows that poor sanitation is more strongly correlated with stunting in urban than in rural areas. This effect is virtually independent of income and related variables, so all residents are at risk from poor urban sanitation, not just the poorly served low-income communities. To be effective, therefore, urban sanitation must be *poor-inclusive* and implemented within a *citywide framework*.

The second major consequence of high population density is that in the smaller spaces occupied by poor families there may not be sufficient space to cover and safely abandon a full latrine pit and construct a new one elsewhere, as can be done in lower density areas. This creates a need for a sanitation service chain in urban areas to hygienically remove and transport the fecal material and then make it harmless (see Figure 4).

The removal and transport steps are typically achieved in one of two ways. Sewerage washes the fecal matter through a pipe system using water and, frequently, pumping stations. Alternatively, fecal sludge is accumulated on-site in a pit or septic tank, emptied periodically, and taken by road to treatment. Either way, the absence or weakness of any link in the sanitation service chain will cause fecal pollution and negatively impact public health.

Although some of these sanitation services require infrastructure such as latrines, sewers, or treatment plants, all

**FIGURE 3: CORRELATION OF STUNTING WITH OPEN DEFECATION IN URBAN AND RURAL AREAS**



must be developed, financed, managed, and maintained sustainably as part of the *service delivery chain*, rather than as stand-alone items of infrastructure.

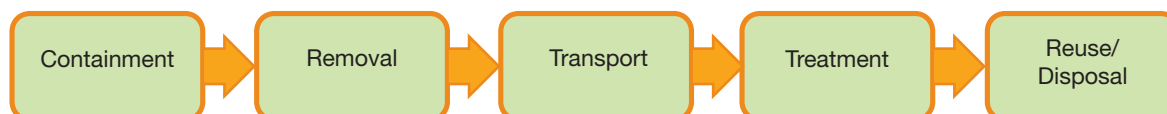
## Urban Sanitation in Practice

In reality, urban sanitation frequently falls far short of these requirements. Deficiencies may occur in the diverse links of the sanitation service chain or through failure to serve certain subgroups of the urban community.

Many towns and cities in developing countries have a mixture of on- and off-site sanitation facilities and services, some provided by householders, some by private developers, and some by the municipality or utility (Evans et al. 2006). Established low-income settlements rarely lack sanitation facilities completely. As the following discussion shows, however, several factors may contribute to the poor sanitary conditions. These include:

- poorly constructed or maintained on-site sanitation facilities
- inadequate water supply
- toilets discharging into poorly functioning open drains blocked with uncollected solid waste

**FIGURE 4: THE SANITATION SERVICE CHAIN**



- malfunctioning and abandoned communal toilet facilities
- inadequate services for managing the fecal sludge from on-site facilities, etc.

In densely settled slums, the scramble for living space means that houses are sometimes built directly over open drains, exacerbating drainage and flooding problems. Improving sanitation in such environments can be even harder than introducing new infrastructure in communities where there is a complete lack of infrastructure and services. It may take decades to achieve safe management and disposal of excreta and wastewater citywide, supported by consumer awareness, sustainable financing, and effective decision-making and service delivery systems.

### Inequitable Coverage

In developing countries, parts of a city—usually commercial and high-income residential areas—are often served by a public sewerage system and septic tanks, while low-income areas are served by different types and qualities of latrine. Septic tanks and some latrines may be emptied by a mixture of public and privately operated vacuum tankers, while other latrines are either too inaccessible or too poorly constructed to allow this, and are emptied by various unhygienic manual methods.

In Dar Es Salaam, Tanzania, for example, the “supply chain for sanitation is reaching the richer, sewer-based wards within the city, but failing to meet the excreta disposal needs of the 2 million population dependent on on-site sanitation.” In addition, policy and regulation is fragmented at the national level, “failing to have any impact other than with city based sewerage systems” (IWA 2008). Similarly, in Santa Cruz, Bolivia, sewerage is available to 36 percent of residents, almost exclusively in the central, fully urbanized area, while peri-urban residents use on-site systems serviced by an unregulated tanker market (WSP 2010).

Thus, ensuring inclusivity usually requires the provision of specifically designed services for poor communities, in addition to conventional sewerage services in more privileged areas. However, the complex mix of formal and informal

spaces in many cities requires that dedicated pro-poor initiatives be undertaken in the context of a citywide sanitation services framework.

### Inadequate Services

Evidence on the functionality of the full sanitation service chain is scant, as global monitoring data does not capture many of the operations and maintenance challenges. Monitoring reports such as the JMP and other analyses do, however, acknowledge problems such as infrastructure falling into disrepair due to ineffective institutions, poor operation and maintenance, and inadequate management, causing problems such as broken and flooded pumping stations, leaking sewer pipes, and nonfunctional wastewater treatment plants (Schmoll et al. 2006, JMP 2012). Country data underscore this. For example, in India, nearly 39 percent of sewage treatment plants and pumping stations did not conform to operation and maintenance standards in 2012 (GOI 2012).

Fecal sludge and liquid effluents from on-site systems are often poorly managed. WSP field teams report that a large proportion of the fecal waste collected is buried in backyards or dumped on waste land or in natural or manmade drainage channels. Similarly, SANDEC<sup>4</sup> found that

While urban on-site sanitation programs have been experiencing a major thrust over the last 10–15 years, the management of fecal sludge accumulating in these installations has largely remained the stepchild of urban sanitation. As a consequence, the “fecal film” covering many urban areas of developing countries persists, with . . . health and environmental hazards. . . . (Koné et al. 2007)

### Flooding

Sewers, septic tanks, and latrine pits are located underground and cannot function to protect public health if the area where they are located is flooded. The fecal material they contain will mix with the floodwaters and cause widespread contamination. Although this problem tends to affect low-income communities more than others because they are often located on marginal low-lying land unsuitable for formal urban development, the location of many

<sup>4</sup> SANDEC (Sanitation in Developing Countries) is a department at the Swiss Federal Institute of Aquatic Science and Technology, EAWAG





Solid waste management is essential if drainage is to function

cities in the developing world in coastal or riverine areas means that even more privileged areas may be affected.

The problem is amplified by inadequate land use planning and control in unplanned slum communities, which often have the most severe sanitation problems, and inadequate drainage systems, often choked with uncollected solid waste (Jha et al. 2012). Adequate drainage and solid waste management is therefore an essential complement to excreta management services.

### Issues in the Enabling Environment Policy Frameworks, Norms, and Standards

The need to establish an enabling environment for progress in urban sanitation is widely recognized, but there is little consensus on what this means in specific contexts, and how to make such an environment effective.

At a global level, conceptual frameworks and approaches for the planning and design of poor-inclusive urban sanitation improvements include the Strategic Sanitation Approach, developed in Ghana in the 1990s, IWA's Sanitation 21, and SANDEC's Community-Led Urban Environmental Sanitation. Generally, these frameworks encourage a holistic, poor-inclusive view of urban sanitation that goes beyond infrastructure, placing greater emphasis on the needs of

users, and on the functionality of sanitation service delivery systems at local and city levels.

However, translating such frameworks and tools into major service improvements, especially for the poor, is a significant challenge. In many developing countries, enabling environments are weak, characterized by a lack of effective policy and regulation at the city level, inadequate capacity for sanitation planning and stakeholder consultation, and insufficient harmonization with established municipal capacities, systems, and budgeting processes. Effectively implementing these frameworks depends on the political drivers for policymaking, resource allocation, and operational decision-making; and technical focus of the frameworks may lead to these factors being overlooked. In particular, poor communities often lack political influence to affect municipal decisions, so sanitary conditions in these communities may not be political priorities for decision-makers.

National policies have tended to place more emphasis on water than on urban sanitation, and as the next section (Finance) shows, this has been reflected in the relative allocation of resources to the water and sanitation subsectors. However, this is beginning to change. Recent examples of programs to establish a specific enabling environment for urban sanitation include the Indonesia Sanitation Sector Development Program (ISSDP) and the National Urban Sanitation Policy (NUSP) of India (Colin 2011, GOI 2012), although little on this scale has occurred elsewhere. One notable outcome of both initiatives is the recognition of a shortfall, and the allocation of increased financial resources to urban sanitation, including for the poor.<sup>5</sup>

Finally, national standards, local by-laws, and the environmental safeguards of international donors are often quite exacting. It may not always be possible to comply with them fully, especially when making phased improvements as finances allow, or working in densely populated informal settlements with irregular layouts. In some cities, for example, pit latrines are illegal, although there may be no other realistic alternative. A degree of flexibility, realism and phasing in the application of standards is therefore important, and government agencies unwilling to

<sup>5</sup> Indonesia increased the central and local government allocation to sanitation development to more than US\$400 million in 2012, representing a total annual increase of almost 900 percent since 2006.



Solid waste choking a canal in Semarang, Central Java, Indonesia.

Source: Kathy Eales

compromise can prevent the realization of significant incremental improvements.

### Finance

Presently, when large investments are made in the water and sanitation sector, water supply usually receives most of the funds. In 2008, for example, of the World Bank's US\$10.7 billion investment in water and sanitation, 60 percent went to water supply, 29 percent to sewerage and only 11 percent to other forms of sanitation (Rautanen and

Kolsky 2008). So far, few countries have put in place sector financing strategies for urban sanitation and some governments are reluctant to allocate funds because improvements (often assuming sewerage as the norm) are perceived as capital intensive, rarely generate significant revenue, and do not always deliver the intended benefits.

The AMCOW CSOs for Africa show—on the basis of countries' own estimates—the impact of this lag in funding for urban sanitation on capital investment requirements to meet the Millennium Development Goals (MDGs). Significantly, of the estimated US\$4.2 billion annual capital expenditure needed for urban sanitation, only US\$0.8 billion was expected to materialize. In contrast, an estimated US\$2.6 billion of an annual investment requirement of US\$4.3 billion for urban water supply was expected to be raised. In 2010, the CSOs estimated that more than US\$15 billion is required annually to achieve the water and sanitation sector targets of the 32 countries analyzed. At the aggregate level, a finance gap of at least US\$6 billion per year must be closed to meet the targets, and the CSOs cautioned that poor targeting between countries and subsectors, and weak service delivery mechanisms, could increase the financing gap to at least US\$7.2 billion per year. These aggregate investment figures conceal significant differences at the country and subsector level, but they provide some insight into the relative lag of urban sanitation development (AMCOW 2011).

The CSOs also point to weak service delivery mechanisms and poor targeting, emphasizing that the challenge is not only to increase the level of funding available to the sector, but also to ensure that funds are used more effectively. The CSO summary report quoted above (AMCOW 2011) shows that internally sourced public sector capital funding for urban sanitation in 32 countries in Sub-Saharan Africa meets less than 15 percent of overall requirements, making donor funding a key issue. However, efforts to put sector transformation on a sustainable path, at a time when African governments are also calling for greater jurisdiction, must consider how national urban sanitation programs and government frameworks could better support cost-effective, poor-inclusive sanitation planning and investment.





Inadequate drainage in a peri-urban neighborhood of Mombasa, Kenya.

Source: Chris Heymans

Yet, there have been some notable improvements in capital financing at the city level. The use of sanitation surcharges to fund on-site sanitation investments under the World Bank-supported Ouagadougou Strategic Sanitation Plan (PSAO) is a rare case of a utility raising enough revenue to cover not only its operational costs but also some investment in on-site sanitation (Verspyck and Guene 2012). In India, a project in Alandur showed that even relatively small cities can access capital financing for citywide sanitation investments, provided that they have well-developed operational and financial plans, and traction among the people affected (Mathur 2002).

The poorest users may require subsidies to gain access to adequate sanitation, but ensuring that subsidies actually reach poor people is a challenge. The World Bank-funded Dakar Peri-urban On-site Sanitation Program (PAQPUD) in Senegal used geographical targeting, working only in peri-urban districts known to have a predominantly low-income population, but the less poor households were still the main beneficiaries (Verspyck and Guene 2012). Concentrating subsidies on the minimum level of service may help address this bias—as, for instance, in the improved latrines program in Mozambique during the 1980s and 1990s. There is a trade-off to be made between the increased transaction

costs of better targeting and the cost of subsidizing those who do not need such assistance. As discussed in the next section, it is important to strike the right balance between interventions that directly benefit the poor and those that create viable services for the city as a whole, within a realistic timeframe for bringing services to all urban dwellers.

### Institutional Arrangements

There are no ideal institutional arrangements for providing poor-inclusive urban sanitation services; what works best will be location specific. However, assigning responsibility for urban sanitation—clearly and unambiguously—to a single lead agency has been a significant factor in the success of some programs, including the World Bank-funded PAQPUD in Senegal and PSAO in Burkina Faso (Verspyck and Guene 2012). In Indonesia’s growing urban sanitation program, the formal clarification of stakeholder roles, backed by peer pressure, mutual accountability, and increased sanitation budgets motivated institutional development and commitment (Colin 2011).

Some programs have established viable institutional arrangements not through the creation of a single lead agency, but by improving coordination between the various stakeholders or establishing new multistakeholder partnerships. A good example is the slum networking program Parivartan in Ahmedabad, India. Similarly, a municipality/nongovernmental organization (NGO)/community-based organization (CBO) partnership in the Mumbai Slum Sanitation Program (in which both WSP and World Bank operations participated) helped to overcome delays and other administrative, technical, and financial hurdles, and to engage users effectively in planning and managing community toilet blocks. Nevertheless, the coordinating role is important where implementation responsibility is shared, and there is a need for leadership (WSP 2009).

Selecting acceptable and affordable options for improving sanitation in slums and other low-income neighborhoods where standard service delivery options may not be applicable usually requires directly engaging with households and small-scale local businesses. NGOs, working closely with CBOs in the target communities, can have a lot to offer in

this regard. The Indian NGO SPARC, for example, played a pivotal role as mediator between the municipal corporation and slum communities in the Mumbai Slum Sanitation Program, as did WaterAid’s partner NGOs in Trichy, India. Often, however, NGOs are more effective in facilitating at-scale urban sanitation improvements when local government and/or public service providers are also involved in coordinating interventions at scale (WSP 2009).

Small-scale, informal private sector participation in urban on-site sanitation is well-established, particularly in latrine construction and pit emptying. Participation of the formal private sector on a larger scale in sewerage is less common except where combined with water supply. Where they do exist, large private sector contracts for operating city water and sanitation services rarely include specific provisions for expanding access to improved sanitation services for the poor.

### Technical Challenges in the Delivery of Sanitation Services

The foregoing discussion shows that enabling legal, political, or institutional conditions are important factors in making service delivery work, but some technical challenges remain. Although the first pit latrines and sewers were constructed thousands of years ago, there has been surprisingly little development of sanitation technology over time.<sup>6</sup> Sewerage, managed by local government or a utility, has generally been restricted to richer communities, while self-built on-site systems, often with poor fecal sludge management, have been the norm elsewhere.

### Sewerage for Poor Communities

The service delivery approach does not render large-scale investments in sewerage networks irrelevant. Such investments remain an important part of an overall approach to urban sanitation, but should be viewed as a tool for service delivery, rather than as a solution in their own right. The risk is considering sewerage as the only “proper” form of urban sanitation, which can lead municipal or government officials to choose this option even when it is neither technically nor financially viable. Perverse incentives around contracting may also reduce the motivation to develop more cost-effective solutions,

<sup>6</sup> In 2011, the Bill & Melinda Gates Foundation launched *Reinventing the Toilet*, based on the observation that little had progressed in sanitation development since the late 1800s.

and risk adversity may militate against trying new options. However, on-site sanitation also has clear limitations. As population densities grow and domestic water consumption increases, managing ever larger volumes of wastewater becomes more difficult, and lack of space limits the use of pit latrines, particularly those that must be relocated when the pit fills. Finding more affordable and poor-inclusive options for making the best use of existing and future investments in sewerage is a priority, especially for high-density areas.

The evolution of *condominial sewerage* in Brazil and some other parts of Latin America has been documented extensively, but has not been taken up more widely in other parts of the world. This appears to be due to a lack of enabling conditions such as technical capacity, financing mechanisms, and the limited regulatory environment in much of Africa and Asia. Another type of low-cost technology, *settled sewerage*, has been installed in Dakar and is currently being developed in Lusaka, and may offer a viable alternative for users wishing to upgrade to water-seal systems, which often end up discharging into street drains or sewers.

These types of systems, and the decentralized wastewater collection and treatment systems (DEWATS) championed by the German NGO Borda, were conceived as community managed. Experience and recent studies have shown, however, that sewerage becomes more sustainable and cost-effective when the local public sector or utility accepts co-management responsibility for monitoring facilities, ensuring repairs and maintenance, as well as ongoing technical support and sanitation promotion (Eales et al. 2012).

### Community or Shared Toilets

Much has been learned and documented in recent years about effective approaches to communal toilet facilities in low-income residential areas, some of which show promising results. Challenges nevertheless remain, particularly with operation, maintenance, and financial viability. Other open questions include whether community toilets can, on their own, fully address the sanitation needs of slums and other low-income areas, and how convenience and safety can be secured, especially for women and girls.

Much less has been written about shared toilets, although lessons have been documented, for example, in a Practical



Despite the presence of a basic, though hygienic, communal toilets located a few meters away, users often value privacy and convenience over downstream consequences. This latrine in Palembang, Indonesia, looks quite nice; however, it discharges directly into the river.

Source: Kathy Eales

Action project in Mukuru, Nairobi, that has been working with the community and schools to ensure access to at least one hygienic, usable toilet per four households, with on-site handwashing facilities (Peal and Evans 2011). If space allows but household toilets are not practicable or affordable, shared toilets reserved for the use of small, self-selected groups may be preferable to communal facilities, and the sense of ownership created may encourage users to keep the facilities clean.





Well-maintained communal toilets and septic tank system developed by Care International in Makassar, South Sulawesi, Indonesia.

Source: Kathy Eales

### Integrated Slum Upgrading Programs

Slum upgrading can potentially improve sanitation (and other) services for the urban poor on a large scale. Some programs set out to address the needs of slums comprehensively by removing the political and legal barriers that leave slums outside the normal framework of public service provision and city governance, and increasingly (but by no means universally) national governments and municipalities are explicitly or tacitly recognizing a certain level of land use rights in unplanned settlements. A WSP global toolkit on services to the urban poor found that while legal reform is needed to enable the poor to gain secure tenure, adequate housing, and services, innovative strategies to get around land tenure requirements can sometimes be found at the local level (WSP 2009).

However, there is surprisingly little evidence of sanitation improvements at scale under slum upgrading programs.

### Fecal Sludge Management (FSM)

After many years of neglect, governments, development agencies, and research organizations are giving this subject increased attention. The increasing use of on-site systems to improve sanitation access for poor people makes FSM increasingly hard to ignore. There has, however, been no breakthrough yet in establishing and scaling up FSM services for urban populations in general, or for low-income areas in particular, where the problem is most acute.<sup>7</sup> These efforts are necessary as most low-income households are likely to continue using on-site sanitation for the foreseeable future.

<sup>7</sup> As part of the *Reinventing the Toilet* initiative, the Bill & Melinda Gates Foundation is looking at options to safely treat fecal waste on-site. A separate initiative is looking at radical options for local treatment and reuse, which would avoid long haulage distances.



Fecal sludge management in dense, unplanned neighborhoods is well suited to local micro-enterprises, such as this one, which uses a specially designed handpump and a motorized tricycle fitted with a small tank to provide desludging services in Dar Es Salaam, Tanzania.

Source: Kathy Eales

Emerging lessons include:

- **Large tankers may not meet access and traffic conditions.** Because many houses in unplanned areas have limited road access, fecal sludge may be removed manually or by small maneuverable mechanical equipment, and then transferred to a tanker vehicle suitable for road transport to the treatment plant. Given frequently poor traffic conditions, larger cities should have several such plants decentralized around the city to reduce haulage times, which are costly to operators. Depending on local conditions, transfer facilities (tanks) may be necessary, although they may be quite simple. However, ensuring the regular emptying of transfer tanks may be a challenge. Alternatively, some operators may prefer to use a nonpressurized tanker to accept waste directly from primary emptying.
- **A range of emptying equipment is needed,** from buckets, to hand pumps, to trash pumps and vacuum systems, as well as rakes and hooks to deal with solid waste entering the pits. These are gradually being developed in a number of places.
- **Fecal sludge management can be improved by addressing the upstream link**—the latrine itself. For example, in South Africa, pour-flush latrines have been introduced to minimize the ingress of solid waste, which is the main factor creating a need for manual rather than vacuum emptying. This also underlines the need to consider solid waste management alongside excreta management.
- **Removal of waste is an alternative to storage in pits.** Several initiatives are underway to develop containerized systems, where there is no pit needing to be emptied. Instead, households use a container that can be tightly covered and removed for disposal of the contents and cleansing at an off-site facility. Such systems can also fit easily into high-occupancy accommodation, and because they involve virtually no on-site or permanent investment, may be attractive to slum landlords, or even tenants acting alone.

---

# III. The Way Forward

---

## Focus on Poor-Inclusive Service Delivery

The central recommendation arising from this review is that any effective response to the urban sanitation challenge should view it primarily in terms of improving service delivery. The evidence presented here shows that investments in urban sanitation infrastructure can be more effective if they are planned and managed as part of a service delivery chain, supported by enabling policies. This view of *sanitation as a service, rather than as infrastructure* means that:

- Cities need effective urban sanitation systems, consisting of *sustainable processes and service providers that will ensure the safe capture, storage, transport, and treatment of excreta in a managed and coordinated way*—not just investments in hardware.
- The focus should be on *outcomes rather than inputs*, so that effective and safe management of excreta, rather than the construction of toilets or sewers *per se* is the objective of the service delivery chain.

The analysis makes a case for services being poor-inclusive, but also citywide, because in the crowded urban environment, inadequately managed excreta from any household can potentially contaminate any other, as well as the environment and water resources.

## Service Delivery Framework

The foregoing analysis shows that sanitation services fail primarily because of an inadequate service delivery chain rather than a lack of infrastructure. The services in this chain are quite diverse, both in scale and in how they can effectively be provided.

### Service Categories

Based on the analysis, services can be classified into three groups:

- *Customer services* typically include supply of materials, construction of sanitation facilities (toilets), management of public toilets, and desludging. They are often commercially viable, because they have a large private good component, although the poorest households may need targeted subsidies to

access them. They are suitable for provision by small businesses, but may also be provided by a utility company.

- *Public services* include fecal sludge treatment, operation and maintenance of sewerage and drainage systems, and solid waste management. They are delivered downstream of users, producing mainly public goods, and as such it may not be possible to finance them entirely by direct user fees. They are usually delivered by local authorities or utility companies, but may also be subcontracted to the private sector. Operational costs may be recoverable through user fees, levies, or local taxes, but rarely can the full capital costs be directly recovered from users.
- *Infrastructure development* may require recourse to higher-level (national, state, regional or provincial) authorities or external financing, because capital costs are often not recoverable.

### Enabling Environment

To be effective, these services require an enabling environment that provides policy guidance, rules, and incentives to motivate stakeholders to prioritize sanitation, ensure accountability, and promote the development of adequate capacity to deliver the necessary services sustainably and affordably, at the three levels identified in the analysis:

- *National enabling environment:* National (or federal state) governments should ensure that local authorities and other responsible agencies deliver services that meet an acceptable standard; have the legal, financial, and technical means to do so; and have monitoring mechanisms in place to track progress and results.
- *Local governance:* Local authorities must take the central role in ensuring adequate sanitation within their jurisdiction by planning, coordinating, and monitoring the activities of local stakeholders that are needed to deliver effective sanitation. If citizens or the private sector are to undertake these activities, the local authority will need to assume a promotion and enforcement role as well. Utilities may be responsible for delivering the service, but mostly



under overall planning and coordination by the local authority. This is the key locus for accountability—upstream to national policymakers and downstream to citizens.

- *Community consultation:* To ensure that sanitation services reach all households, consultations are required to balance community needs and willingness to pay for services, and to agree on how communities will play their role in achieving effective sanitation.

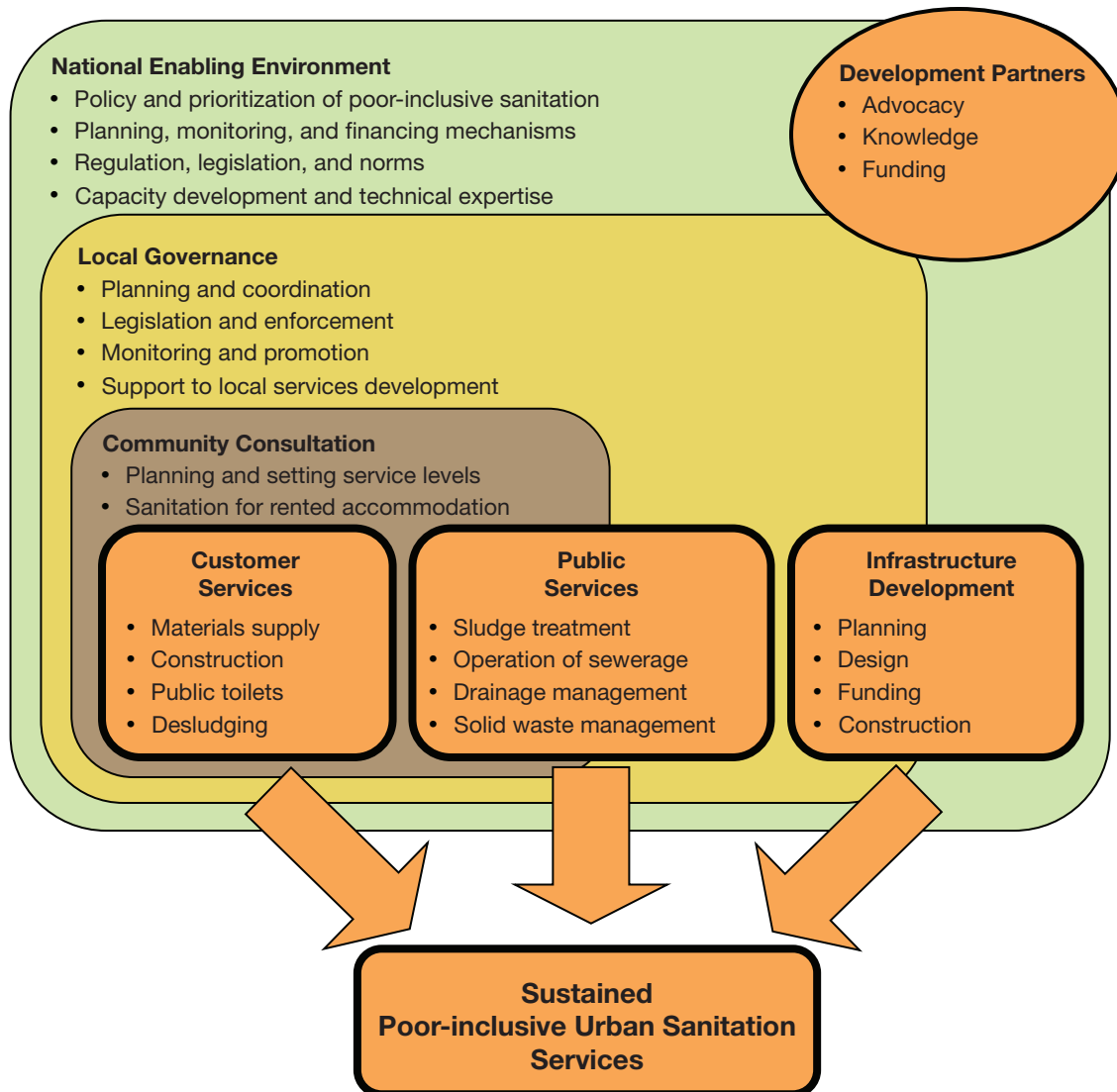
### Meeting the Technical Challenges for Serving Poor Communities

In addition to the need for including and coordinating the many diverse stakeholders in urban sanitation, the analysis identified several technical issues that must be resolved to enable the delivery of appropriate services to poor communities. These include developing

- *at-scale fecal sludge management services* for peri-urban, dense, and informal settlements, and criteria for deciding whether to service existing facilities or build new ones that are easier to service;

Figure 5 summarizes this service delivery framework.

**FIGURE 5: A SERVICE DELIVERY FRAMEWORK FOR URBAN SANITATION**



- *viable sanitation options for low-income tenants*, whether individual, shared, or communal; on-site or networked;
- *sanitation systems that work in challenging environments*, such as houses built over rivers, lakes, or coastal waters, on flood plains, on steep or rocky hill-sides, and in other marginal areas typically occupied by the urban poor; and
- *maximizing the use of sewerage systems for poor communities*, where connections are often not considered or connection rates are low, limiting the potential impact of such major investments. There are also viable and cheaper alternatives to full conventional sewerage (such as settled or condominium sewerage) as well as decentralized systems, which could be more widely adopted where they are cost-effective.

### Drivers of Change

As discussed in Chapter 2, even a sound framework will not of itself achieve poor-inclusive urban sanitation, but will depend on effective drivers of change, such as:

- *systematic understanding and use of political economy analysis*, including clear accountability relationships, when planning and implementing urban sanitation projects and programs;
- *evidence-based advocacy*, such as documenting and disseminating to policymakers the economic results of defective sanitation, international benchmarking

- such as IBNET, CSOs/Service Delivery Assessments (SDAs), and the Economics of Sanitation analysis;
- *development of improved financing mechanisms*, and targeting of subsidies to those unable to afford basic sanitation;
- *involvement of viable utilities*, exploiting their financial and technical citywide strength and broad consumer base;
- *improvement of policy, coupled with fiscal and regulatory mechanisms*, to provide incentives for the responsible authorities to act;
- *pressure from development partners* to include a range of sustainable options that are appropriate for all urban residents;
- *pressure from civil society*, and mechanisms to monitor and publicly name and shame those who fall behind;
- *involvement of users in decision-making* on services and service levels, and marketing of the idea and specific practices related to improved sanitation and hygiene;
- *building coalitions of interests and networks* at all levels, from urban communities to the international arena; and
- *partnerships* that include users, landlords, civil society, the private sector, local authorities and utility companies, regulatory agencies, state and national governments, donor agencies, and academic institutions.

Figure 6 illustrates how such drivers of change function.

**FIGURE 6: DRIVERS OF CHANGE AND ACCOUNTABILITY MECHANISMS**



---

## IV. Concluding Remarks

---

Although this overview of urban sanitation has shown that the current situation is far from ideal, and that widespread improvements will not occur at the present rate of progress, it also identifies initiatives that have potential for wider replication. There is no “silver bullet” that will deliver improved sanitation to the developing world’s burgeoning cities, and some key technical issues remain to be resolved, but much can be achieved by applying what is already known and proven in practice.

Delivery of effective sanitation to all urban dwellers requires the whole chain of services, supported by a combination of domestic, decentralized, or fully networked infrastructure. This, in turn, requires an appropriate enabling environment that can engage the many stakeholders involved, from communities to national governments, to drive change and secure sustainable financing for services provided through both the market and the public sector, reinforced by clearly defined accountability mechanisms.

Massive investments in infrastructure to address urban sanitation in developing countries have often resulted in patchy and unreliable coverage, mostly for richer users, and frequently leaving poorer communities to fend for themselves. If urban sanitation is to deliver its full potential public health, economic, social, and environmental benefits to urban dwellers, it must reach all communities, as poor excreta management in one area results in contamination that can affect all citizens in densely populated urban spaces. Even where interventions prioritize and target poor neighborhoods, they should be delivered within a citywide inclusive approach.

By applying these lessons learned and addressing the technical issues yet to be resolved, significant progress can be made over the medium term, in consonance with the post-2015 agenda of sanitation services for all.

# References

More than 200 documents were consulted in preparation of the global review. Those mentioned below are only those related to specific examples and data referred to in the text of this overview.

- African Ministers Council on Water (AMCOW). 2010. AMCOW Country Status Overviews. Washington, DC: The World Bank/Water and Sanitation Program. <http://www.wsp.org/content/pathways-progress-status-water-and-sanitation-africa>
- African Ministers Council on Water (AMCOW). 2011. AMCOW Country Status Overviews—Regional Synthesis Report. *Pathways to Progress: Transitioning to Country-Led Service Delivery Pathways to Meet Africa's Water Supply and Sanitation Targets*. Washington, DC: The World Bank/Water and Sanitation Program. <http://www.wsp.org/sites/wsp.org/files/publications/CSO-Synthesis-Report.pdf>.
- J. Baker. 2008. *Urban Poverty: A Global View*. Washington, DC: The World Bank.
- J. Colin. 2011. *Lessons in Urban Sanitation Development, Indonesia Sanitation Sector Development Program 2006–2010*, WSP Field Note. Washington, DC: Water and Sanitation Program. <http://www.wsp.org/sites/wsp.org/files/publications/WSP-lessons-urban-sanitation-indonesia.pdf>.
- K. Eales et al. 2012. *Review of Community Managed Decentralized Wastewater Treatment Systems (DEWATS) in Indonesia*, WSP Field Note. Washington, DC: Water and Sanitation Program.
- B. E. Evans and D. Saywell, and the Sanitation 21 Task Force. 2006. *Sanitation 21: Simple Approaches to Complex Sanitation—A Draft Framework for Analysis*, London: International Water Association. <http://iwahq.org/contentsuite/upload/iwa/Document/Sanitation21.pdf>.
- Government of India, Ministry of Urban Development. 2008. *National Urban Sanitation Policy*, Delhi.
- Government of India, Ministry of Urban Development. 2012. *Improving Water Supply and Sanitation Services Advisory Note*.
- International Water Association. 2008 (updated 2010). *10 Things You Should Know about Sanitation*, Sanitation 21. London: World Health Organization. [www.unwater.org/wwd08/docs/10Things.pdf](http://www.unwater.org/wwd08/docs/10Things.pdf).
- M. Jacobsen, M. Webster, and K. Vairavamoorthy. 2012. *The Future of Water in African Cities: Why Waste Water?* Washington, DC: The World Bank.
- A. K. Jha, R. Bloch, and J. Lamond. 2012. *Cities and Flooding. A Guide to Integrated Urban Flood Risk Management for the 21st Century*. Washington, DC: The World Bank.
- Joint Monitoring Programme (JMP). 2012. *Progress on Drinking Water and Sanitation: 2012 Update*. Washington, DC: World Health Organization/UNICEF.
- D. Koné, M. Strauss, and D. Saywell. 2007. *Towards an Improved Faecal Sludge Management (FSM), Proceedings of the First International Symposium on Faecal Sludge Management Policy*. Dübendorf, Switzerland: Eawag Publishing.
- M. Mathur. 2002. “Alandur Sewerage Project: A Success Story of Public-Private Partnership Arrangements.” *India Infrastructure Report 2002, Governance Issues for Commercialization*. New Delhi: Oxford University Press.
- A. Peal and B. Evans. 2011. *Breaking Barriers in Water and Sanitation Service Delivery to Informal Settlements, Case Study of the Mukuru Model*. Nairobi, Kenya: Practical Action.
- S. L. Rautanen and P. Kolsky. 2008. *Challenges and Opportunities for Increasing Quantity and Improving Quality of Bank Lending in Sanitation*, presentation at Sustainable Development Network (SDN) Week. Washington, DC: The World Bank.
- O. Schmoll, G. Howard, J. Chilton, and I. Chorus, eds. 2006. *Protecting Groundwater for Health: Managing the Quality of Drinking-Water Sources*, World Health Organization Water Series. London: IWA Publishing.
- D. Spears. 2013. *How Much International Variation in Child Height Can Sanitation Explain?* World Bank Policy Research Working Paper 6351. Washington, DC: The World Bank.

- UN-Habitat. 2010. *State of the World's Cities*. Nairobi, Kenya: United Nations Human Settlements Programme. <http://www.unhabitat.org/documents/SOWC10/R5.pdf>
- R. Verspyck and O. Guene. 2012. *Urban Sanitation Experiences of Senegal and Burkina Faso: Broadening Urban Sanitation Activities*. Washington, DC: The World Bank. <http://water.worldbank.org/node/84161>.
- WSP. 2009. *Global Experiences on Expanding Water and Sanitation Services to the Urban Poor*, accompanying volume to *Guidance Notes on Services to the Urban Poor*. Washington, DC: The World Bank/Water and Sanitation Program. [http://www.wsp.org/sites/wsp.org/files/publications/Main\\_Global\\_Guidance\\_Note.pdf](http://www.wsp.org/sites/wsp.org/files/publications/Main_Global_Guidance_Note.pdf)
- WSP. 2010. *Los Servicios de Limpieza de Cámaras Sépticas, Recolección y Disposición Final de Lodos Fecales en Zonas Periurbanas de la Ciudad de Santa Cruz*. Bolivia: The World Bank/Water and Sanitation Program.



