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## Overview of the Global Sanitation Problem

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## CONTENTS

<b>1. Introduction .....</b>	<b>3</b>
<b>2. Overview of the sanitation problem.....</b>	<b>4</b>
<b>3. Why sanitation lags so far behind water .....</b>	<b>8</b>
Why households are willing to pay far closer to the full value of water than of sanitation.....	10
Why supply-driven provision is particularly ill-suited to improving sanitation in deprived settlements.....	11
Why governments and donors give more support to water than sanitation.....	12
Why sanitation does not always lag behind water.....	13
<b>4. Breaking the cycle; (drawing on lessons from success stories).....</b>	<b>13</b>
Comparing different experiences in urban areas .....	13
Comparing different experiences in rural areas .....	19
Involving Children.....	26
<b>5. Judging success .....</b>	<b>26</b>
<b>6. Ways ahead: More local development, more engagement with the unserved .....</b>	<b>29</b>
Avoiding inappropriate models of sanitary improvement .....	29
Engaging with the unserved and finding affordable solutions that can persist and spread .....	30
Tapping collective demands for better sanitation .....	30
Supporting community groups in organising for better sanitation .....	31
Promoting good hygiene .....	31
Encouraging local government to be more responsive to demands for sanitary improvement .....	32
Obtaining national support for locally-driven sanitary improvement.....	33
Going to scale and reaching the MDG targets .....	33
What role for international agencies? .....	34

## 1. Introduction

Today, more than one in three people worldwide lack sanitation<sup>i</sup> and rather more lack good quality sanitation.<sup>ii</sup> The numbers lacking sanitation have grown considerably over the last four decades – despite ‘universal provision for water and sanitation’ being a key goal in development discussions since the early 1970s.<sup>iii</sup> Almost all of those lacking sanitation live in low- and middle-income nations; most have low-incomes; most live in Asia (80 percent) and Africa (13 percent).<sup>iv</sup> Without a rapid increase in the scale and effectiveness of sanitation programmes, the MDG sanitation target for 2015 will be missed by at least half a billion people – and it is in the regions with the worst provision that progress is most lacking.<sup>v</sup> As a result, hundreds of millions of people will suffer the indignity of having no safe and convenient place to defecate. Tens of millions of people, most of them children, will become ill, and many will die.

This is a problem that will not be addressed without working with the women, men, and children who lack provision, and supporting a range of choices for provision for toilets and personal and household hygiene from which they find ones that work for them. To stress the obvious - improved sanitation requires (often large numbers of) women, men and children to voluntarily change their defecation habits. Improving sanitation cannot work if what is provided is too inconvenient or too costly for them to use. The perfect design for a pit latrine has limited value if women cannot use it safely 24 hours a day or children are frightened to use it (because it is dark or because they are frightened of falling into the pit). Well maintained communal or public toilets have limited value if they are not open all the time or if they charge too much for low-income groups to afford to use them. Flush toilets don’t work if water supplies to flush them are intermittent. Ecological sanitation will not return nutrients to the soil unless it is easy, convenient and cheap to get ‘the nutrients’ to crop-growers that want them.

Any improvement in provision for sanitation also has to compete successfully with ‘unimproved sanitation’ which is very cheap. Defecating in the open or into a plastic bag or waste paper (“wrap and throw”) may seem very inappropriate forms of sanitation – but they are free of monetary cost and often involve little extra time. For most people, ‘wrap and throw’ can also be done within the privacy of the home, 24 hours a day. Sanitation provision must also meet everyone’s needs, if open defecation or wrap and throw and their contamination of the environment (and of food, water, clothes and hands) are to be avoided. So this means having enough provision for sanitation to avoid queues for toilets at peak periods which discourage people from using them.

This chapter highlights the scale of the deficit in provision for sanitation, noting in particular the inequalities and the human development costs. The lead questions are: why the huge sanitation deficit, and why the large gap between provision for water and for sanitation? The chapter then reviews the experiences of sanitation programmes that reduced or ended the sanitation deficit and discusses what these imply for action in other locations. Perhaps the defining characteristic of these diverse examples is that they worked closely with those who lacked provision – mainly low-income groups – and sought to support better provision in ways that were rooted in local contexts and based on these households’ priorities, motivations and constraints. Many of the successes were actually designed, built and managed by ‘the poor’ themselves. As such, these are very much in line with the human development approach, with its emphasis on expanding people’s capabilities and choices.

Sanitation problems tend to afflict those living on low incomes, but are not just a reflection of income poverty, but of a range of deprivations. Appropriate technologies are often unavailable on the market. In many countries, utilities, whether public or privately operated, fail to provide any sanitary facilities to a large share of the population. Inadequate institutions as well as insufficient incomes discourage the local co-operation and collective effort needed to address sanitary

deficiencies. The demands of women, who tend to care most about sanitary improvements, are often ignored, particularly in times of economic hardship.

The benefits of sanitary improvement are also multifold. Successful sanitary improvements protect people, and especially children, from ill health. They can thereby prevent poor households from falling even more deeply into poverty. Sanitary improvements should also be socially acceptable and convenient, which can be particularly important to women. They can help (re-) build people's pride in their homes and in their communities. Moreover, organized sanitary improvements can become a stepping-stone to other local improvements, and to better relations between deprived communities and their governments. They can give people choices where previously they had none. In effect, sanitary improvement is critical to many aspects of human development, and not just to economic growth.

## **2. Overview of the sanitation problem**

Official statistics for sanitation coverage worldwide do not tell us who has adequate sanitation, only who has access to 'improved provision' which includes pit latrines.<sup>vi</sup> In 2002, an estimated 2.6 billion people lacked access to a pit latrine or toilet in their home but a lot more lacked access to the kinds of sanitation provision that minimizes the risk of excreta-related diseases. For instance, United Nations estimates for the year 2000 suggested that at least 850 million urban dwellers in low- and middle-income nations lacked adequate provision for sanitation<sup>vii</sup> whereas only 394 million lacked 'improved provision.'<sup>viii</sup>

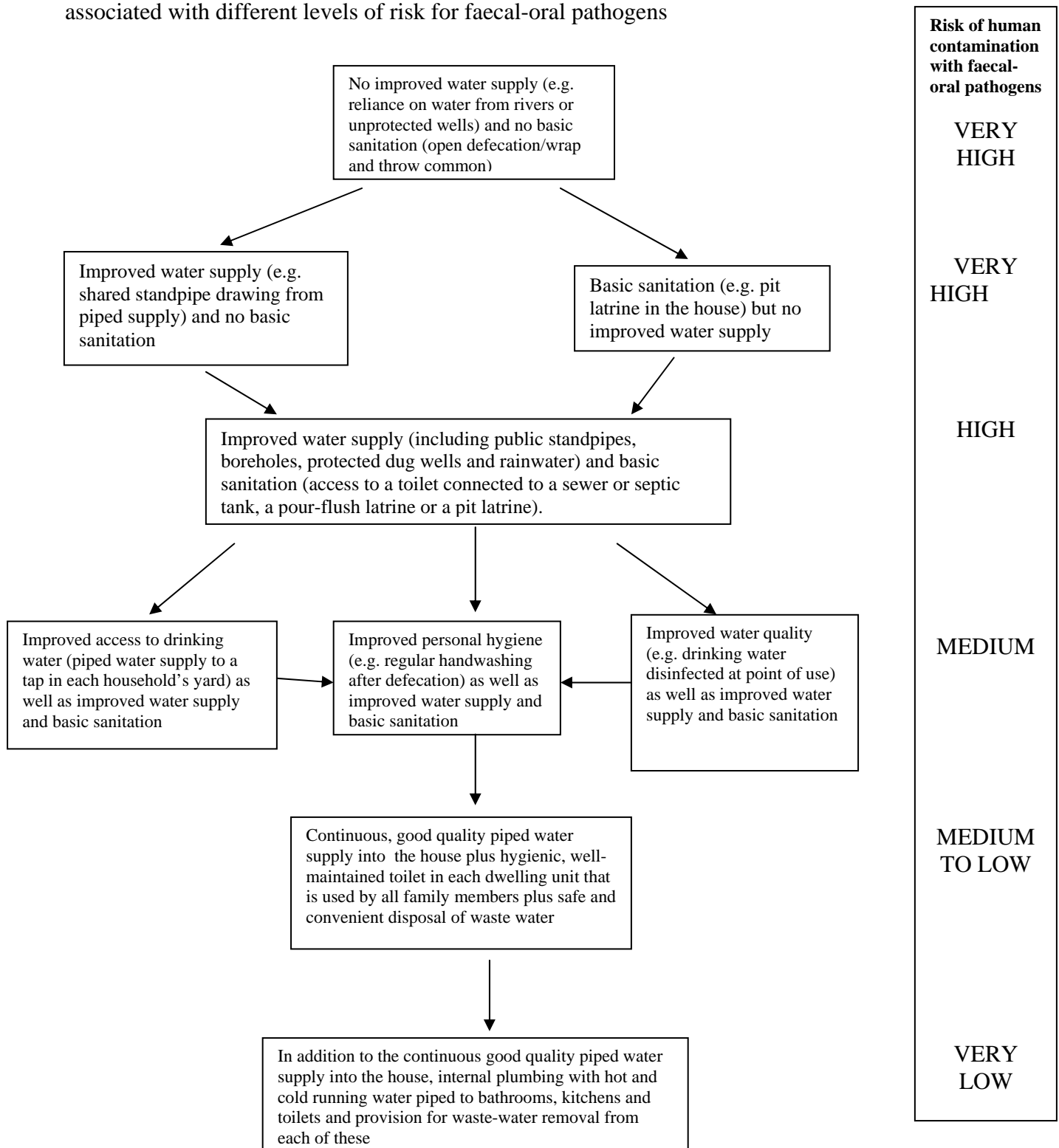
This difference between 'improved' and 'adequate' sanitation shows the difficulties in knowing where or how to define and measure who is adequately served by sanitation. Figure 1 shows how different standards for water, sanitation and hygiene are associated with different levels of health risk. In general, the lowest risk systems for faecal-oral pathogens are also low-risk systems for other excreta-related diseases or disease vectors; they are also generally the most convenient for users and the ones that cope best with high volume use. But the cost of sanitation per household generally rises, as one moves from the very high-risk to the very-low risk forms of provision.

From a health perspective, flush toilets served by continuous piped water supplies (and so also by piped water supplies within or very close to the toilets for washing and hygiene) are the safest and most convenient form of sanitation for homes, schools, workplaces and public places. If these were the only form of sanitation that was considered 'adequate', the number of people lacking sanitation is around 4 billion (i.e. around two thirds of the world's population), not 2.6 billion. But it is unrealistic to think that this form of sanitation can be extended rapidly, even in cities where unit costs for such systems are much cheaper. In much of Africa, Asia and Latin America, the financial and technical capacity to provide these does not exist. These also have disadvantages where water is in short supply. In addition, cheaper, much easier to build on-site sanitation systems can be as healthy and almost as convenient, if well managed and complimented with good personal hygiene.

The health consequences of such a large proportion of the world's population lacking good provision for sanitation is dire. At any one time, half the world's population is suffering from a disease associated with inadequacies in water, sanitation and hygiene – and virtually all are in low- and middle-income nations.<sup>ix</sup> The disease burden per person from diarrhoea is 100 times larger in Africa, than in Europe or North America.<sup>x</sup>

The attributes sought for good sanitation are obvious. No faecal contamination for the person defecating – whether they are in their home, school, workplace or public place (and this also means good provision for anal cleaning and hand washing); and the disposal of their faeces in ways that stop them contaminating others (directly or indirectly – for instance through flies or contaminated water). Provision for this also has to be affordable and used by everyone (e.g. women and children can use it and do use it at night, its accessible to the elderly or disabled...); cost and safety are among the most critical issues for the lowest-income households. Finally, where water is in short supply, provision cannot use too much water. In every case the relevant costs include installation and maintenance. For example, pit latrines may need to be emptied regularly enough for this to be a significant consideration. With regard to safety, sanitation within the home is the most secure. Sanitation located outside of the house may be difficult and dangerous to use at night.

Figure 1: How different standards of provision for water, sanitation and hygiene are associated with different levels of risk for faecal-oral pathogens



SOURCE: Drawn from Prüss, Annette, David Kay, Lorna Fewtrell and Jamie Bartram (2002), "Estimating the burden of disease from water, sanitation and hygiene at a global level", *Environmental Health Perspectives*, Vol. 110, No 5, May, pages 537-542.

But it is difficult to collect statistics on who had sanitation that has all these attributes. Data on provision for sanitation comes mostly from household surveys held every few years (for a representative sample of the national population and with a limited number of questions on sanitation) and less frequent censuses that cover all households but also have a limited number of questions about sanitation. Neither of these data sources tell us much about how well the provision for sanitation performs. Most simply report on the type of technology used for sanitation – and it is this limitation that made the WHO/UNICEF programme that monitors provision worldwide insist that it could not provide statistics on who has ‘adequate’ sanitation but only on who has access to an ‘improved’ sanitation facility. It is easy to collect data on the type of toilet or latrine to which people have access – but not on how easy it is for them to access the toilet, how well it is maintained and the quality of provision for anal cleaning and personal hygiene (for instance, is there a water source close by that is available at all times and accessible to all toilet users). If the toilet is not in or next to people’s homes, can all family members use it safely at night – and do they do so? The questions asked do not necessarily reveal if the sewerage system is working, if water is available for pour flush latrines or flush toilets, and whether households can afford to get pit latrines emptied.<sup>xi</sup>

While ‘good sanitation’ has the same basic attributes – different contexts influence whether particular form of ‘sanitation’ works. So pit latrines built next to homes may work very well in many rural contexts but cannot work in many urban contexts where there is no ‘room’ for them. Communal sanitation may work very well in some contexts and very badly in others – relating to, for instance, the quality of management, the provision for washing, how charging and queuing are managed, and whether women and children feel safe using it (especially at night). The ‘best’ sanitation model is so influenced by: population concentration (from isolated farmsteads to megacities) and population density; site characteristics (for instance how easy to dig a pit and to ensure that it does not collapse, how high is the water table); the resources available to individuals and households; and the extent of the capacity of local government to provide something useful (which is often nothing). Good sanitation may also depend on factors other than toilet or latrine type – for instance on the quality of waste water drainage (which in turn may depend on the quality of maintenance for drains and the quality of provision for household waste removal).<sup>xii</sup>

Table 1 illustrates different types of provision for sanitation with a range given for their costs per household and some notes about where they are or are not appropriate.

**Table 1: Different sanitation options and their unit costs**

Type of provision for sanitation	US\$ cost per household of facilities	Notes
A water closet connected to a sewer or septic tank within each home plus piped water to the home for personal hygiene	400-1500	Unit costs rise a lot, if provision is made for sewage treatment using conventional treatment plants and with high levels of treatment
Condominial sewers/the Orangi Pilot Project model of ‘component sharing’	40-300	With high densities and strong community-organization and input, unit costs per household can compete with pit latrines
An ‘improved’ (eg VIP) latrine or pour-flush toilet within each home	40-260	No need for sewers. These control smells better than conventional pit latrines and limit or prevent insect access to excreta; rural sanitation programmes in Bangladesh

		managed much lower unit costs than \$40
Ecological sanitation	90-350+	No need for sewers. Provision for urine diversion with many advantages for nutrient recycling but usually adds significantly to unit costs.
A basic latrine	10-50	No need for sewers. If well managed can be as healthy as more expensive options; unit costs may be lower than \$10 in some rural contexts.
Access to a public or communal toilet/latrine (assuming 50 persons to each toilet seat)	12-40	Effectiveness depends on how close it is to users, how safe to use at night, how well maintained and how affordable by poorest groups
Possibility of open defecation or defecation into waste material ('wrap and throw')	None	Obvious problems both for those who defecate and for others

This application of a single set of criteria for who has 'improved sanitation' makes international comparisons problematic – and often very misleading. For instance, according to official UN statistics in 2000, the urban population of Kenya and Tanzania appear better served with sanitation than the urban population of Brazil and Mexico. But 75 percent of Brazil's households have toilets in their homes connected to sewers (and many Brazilian cities have virtually 100 percent coverage of this);<sup>xiii</sup> in Kenya and Tanzania, the proportion of urban households with toilets connected to sewers in their homes is far lower and a high proportion of urban households classified as having 'improved provision' have poor quality pit latrines, often shared with many other groups, that present many problems for faecal contamination of users and the wider environment. The idea that virtually all of Kenya's and Tanzania's urban population has 'improved sanitation' is also difficult to reconcile with the detailed studies of individual cities and smaller urban centres which show that provision for sanitation is very inadequate for half or more of the population – including their largest cities, Dar-es-Salaam and Nairobi.<sup>xiv</sup>

The other issue of relevance on sanitation statistics is the difference between data needed for national policy making and the data needed for local action. In most low-income nations, a much stronger information base on sanitation has been developed because of regular household surveys based on a representative sample of the national population. These can identify accurately the proportion of people lacking 'improved' sanitation – and the sample size may be large enough to give some disaggregation of this – for instance figures by province or comparing rural and urban areas. But they cannot show where those who lack provision live and so provide no useful base from which local governments or other local service providers can identify the homes, neighbourhoods and villages where provision is deficient. Censuses should provide this level of detail, for each locality, but rarely do census authorities provide the data to local authorities or other service providers in a form that is useful to them.<sup>xv</sup>

### 3. Why sanitation lags so far behind water

Public health specialists as well as official statistics suggest that sanitation provision lags behind water to such a degree as to raise serious concerns. It may be that in many places, the gap between provision for water and provision for sanitation is over-stated because official statistics over-state the quality and extent of provision for water.<sup>xvi</sup> But in general, provision for sanitation does lag behind provision for water – just as it did for several decades in what are today the high-income nations (as discussed in Chapter 1).



Public health specialists believe that the burden of disease from inadequate sanitation is far higher than that from inadequate water supplies. Yet, among international agencies, national governments, utilities and even households, water still tends to be a far higher priority. Even the Millennium Development Goals forgot to include sanitation so the sanitation target was an add-on, agreed to at the Johannesburg summit two years after the other targets, including water, were set out in the Millennium Declaration.

While sanitation is clearly linked to water provision, extending sanitation in deprived settlements poses different challenges from water. The water and sanitation utility, jointly responsible for providing both, is well suited to situations where urban households are being connected to piped water and sewers. It is less well suited to the settlements where most people without adequate provision actually live. In such settlements, water networks are rare and, where they exist, often only function intermittently. Sewerage networks are even more rare, and if they do exist they are usually only available to a small minority of residents. Under such conditions, improvements for water and sanitation have different technical, economic and organizational requirements. Some of the relevant differences are<sup>xvii</sup>:

- Different time horizons - A new water supply can be installed and completed in a matter of weeks; both sanitation and hygiene are more complex forms of behaviour change which can require decades to achieve.
- Time to create demand - Demand for a water supply usually already exists in almost all cases, and often it is difficult for an organisation to meet the high levels of demand. Demand for sanitation is hidden, weak, and needs to be created and vocalised before systems can be designed and constructed.
- Different skill sets required - The water sector has been dominated by engineers who feel comfortable with technical problems and tend to lean towards technical solutions. Sanitation requires softer, people-based skills and takes engineers into areas where they feel uncomfortable and unfamiliar. As a result, project staff in integrated projects naturally prefer water supply provision and tend to neglect sanitation.
- It is easier to make communal provision work well for water than for sanitation.

By comparing the sanitation and water challenges, and examining why sanitation systematically lags behind, it is possible to gain a better understanding of how the sanitary challenge can be met. Moreover, it helps to address the practical question of whether or when water and sanitation improvements should be integrated. One international response to the sanitation lag has been to advocate a more integrated approach, with sanitary improvements in effect piggy-backing on water projects. While this has undoubtedly helped support sanitary improvements in some areas where it would otherwise have been neglected, the tendency to treat sanitation as the 'other' of water is also one of the obstacles to extending provision.

Before looking in more detail at some of the more important reasons for sanitation lagging behind water, it is worth mentioning one of the less important reasons. Without a reasonable quantity of water, it is not possible to operate flush toilets or sewers. Alternatively, an increase in the supply of water can create a demand for improved sanitation and drainage, to handle wastewater and, in some cases, overflowing privy and latrine tanks. As such, particularly where households aspire to water-flushed sanitation systems, there is an almost inevitable sequencing of first water and then sanitation systems, especially when providing both at once is unaffordable. This sequencing cannot, however, explain more than a small part of the difference between water and sanitation provision.

A more important reason why water often takes precedence over sanitation, internationally, nationally, and even locally, is that getting clean water is widely seen as a higher priority than gaining access to adequate sanitation facilities. This is even reflected in claims about health benefits. The overall health burden of water, sanitation and hygiene deficiencies is often ascribed to problems with drinking water. There are, for example, numerous variations on the claim made in Agenda 21, the action plan of the United Nations Conference on Environment and Development: “An estimated 80 percent of all diseases and over one third of deaths in developing countries are caused by the consumption of contaminated water”.<sup>xviii</sup> These inflated figures clearly include the diseases caused by inadequate sanitation, and probably a lot more besides.<sup>xix</sup> Terms like “water-borne diseases” and “water-related diseases” help to feed this confusion. Many people, understandably, think that water-borne diseases are always, or mostly, contracted by drinking water. Yet most water-borne diseases can be, and many usually are, transmitted person to person or through exposure to faecal material that is not in water. Indeed, it would be more accurate to refer to water-borne diseases as sanitation-related diseases, since when faecal material does contaminate drinking water this reflects a sanitation problem, while not all sanitation-related transmission routes involve water.

The tendency to ascribe all water, sanitation and hygiene related diseases to water is, however, a symptom of a broader tendency not to treat sanitary improvements as seriously as they deserve. Even households prioritise water, at least in their private willingness to pay for improved services.

#### *Why households are willing to pay far closer to the full value of water than of sanitation*

There is a rational, if selfish, reason for households to value the health benefits of water over those of sanitation: to a first approximation, if you get sufficient clean water you are protecting yourself and the rest of your household, while if you get good sanitation you are protecting your neighbours. This sort of difference also arises at other scales. For example, if you bring clean water to your settlement, local residents benefit, while if you treat your settlement’s wastewater, downstream settlements benefit.

Moreover, the most critical private benefits that sanitation brings can be met quite cheaply, without investing in sanitation facilities. People do place a high value on getting faecal material out of their living environment, just as they do on getting in at least a minimal amount of water for drinking, cooking and cleaning. However, while pipes are usually the cheapest means of transporting water to households (provided the households are not going to be moved or the piped vandalized), they are rarely the cheapest means of disposing of faeces. Open defecation is usually far cheaper. Defecating into a plastic bag, and disposing of the bag as solid waste, is also cheaper.

These differences should not be exaggerated. Private water improvements can also bring collective benefits, particularly in crowded low-income settlements, where children play together and look after each other. If the children in one household get ill from drinking their ‘private’ water supply (assuming they really do keep it private), they are quite likely to infect their playmates. Alternatively, household sanitation facilities can often provide private benefits, in the form of convenience, safety, social standing, and dignity. Women in particular often care a great deal about sanitation, and in some cases the priority given to water may reflect a male bias.

Nevertheless, there is a very real sense in which water provides more benefits to the user, while sanitation provides more collective benefits. This not only has implications at the household level. It means that private utilities are less interested in providing sanitation, particularly if they have to rely on user fees. Much the same applies to public utilities, at least if they rely on user fees to cover costs.

Another selfish but understandable reason often given for people not being willing to pay more for sanitation is that they believe it should be provided free or at a low cost by the government, often because they are aware that others have received subsidised sanitation. Indeed, for both water and sanitation, it is common for government subsidies and standards to combine in such a way that utilities are driven to provide a small share of the population with services designed to a comparatively high standard at less than cost. This can be a special problem for sanitation, if the utility chooses to rely on conventionally designed sewers or other high cost options.

### *Why supply-driven provision is particularly ill-suited to improving sanitation in deprived settlements*

For many decades, supply-led sanitation construction projects have been the standard approach used to address the lack of adequate sanitation among rural and urban households. These have typically been delivered through public provision by government, using vertically isolated initiatives. A supply-driven approach is best suited to systems that give users clear benefits, and can be tightly controlled by engineers. Piped water and sewerage systems meet both of these criteria, while latrines meet neither. Moreover, indoor water piping and water closets greatly facilitate the changes in hygiene behaviour required to protect health, while latrines do not, particularly if water for handwashing is not available on site.

Particularly in low-income countries, where donors have funded a significant share of large sanitation projects, the supply-led model has been characterised by the failure to:

- generate demand for improved sanitation and behaviour change among project households,
- produce sanitation products and services that are sustainable beyond external support, or
- generate replication at scale

There have been many examples where supply driven projects have coerced, enticed or persuaded householders to build latrines and provided a subsidy, usually in the form of free hardware to facilitate and ensure construction targets are reached. The misuse of subsidies and price controls created difficulties for both sanitation and water projects, but the problems created by the supply driven approach go beyond the use of subsidy. Donor supported sanitation projects implemented through government agencies or international NGOs are almost always time limited. There are examples where projects have run longer than 10 years, but usually projects are limited to 2 to 5 years to fit the donor budgeting process. In most cases this is simply not long enough, especially if trying to target the poorest groups and in settings where latrine usage is a completely new and culturally-foreign concept, and demand is weak. Core funding for sanitation really needs to be an integral part of public budgets, where realistic amounts of money are allocated annually, such as with financing hospitals, schools, or a sewer system, towards the continuous management, repair and development of an area's excreta collection and treatment system. Currently excreta disposal is funded mainly on a short project basis as the solution is regarded simplistically as building latrines.

Project implementers when faced with lack of demand and limited time look for short cuts to try and make the latrine building process as easy as possible for the householder. This usually means providing a subsidy to remove financial constraints and encourage adoption, but it can also mean providing access to a mason, free delivery of latrine components and telling families the type of latrine they are going to be provided with.

When the project ends, these support mechanisms dissolve and the community members are left

without a supply chain for latrine components, few if any technology options and the same cost constraints as when the project started. For households who were lucky enough to have benefited from the project, this does not represent a problem as their latrine will probably serve them for around ten years. If the design allows reuse of components and they are willing to rebuild when the initial one is full, the family can be said to possess a 'sustainable latrine'. However sustainable excreta disposal has only been achieved at an individual household level and not within the broader community. Any expected public health benefits will only be partly achieved and, as the village grows, these benefits are likely to decline as the proportion of the community without access to safe sanitation increases. The households who have not benefited are likely to be poorer, less well educated, more risk adverse members of the community who are generally slower to take advantage of unfamiliar technologies and often disenfranchised in one way or another from access to such new opportunities.

In high density urban areas the problem of latrine sustainability is made more complicated by the lack of space needed to build a replacement latrine when the initial project-provided pit is full. In Dar es Salaam, householders have the following choices when this occurs:

- Abandon using a latrine and return to open defecation
- Use the neighbour's latrine which sooner or later results in arguments and family disputes
- Build a small temporary latrine made from old tyres or a drum (if space allows)
- Empty the pit - which can be achieved by
  - Hiring a vacuum tanker – access unlikely through narrow streets
  - Employ a person to manually empty the pit - expensive, unsafe and unattractive as waste is usually dumped in a drain or buried on site.
  - Wait until it rains and wash the pit contents into the streets to the nearest drain or the neighbours plot.<sup>xx</sup>

All these options are unattractive and therefore in high density urban areas, a project that simply provides latrines cannot be even said to be achieving sustainable toilets.

### *Why governments and donors give more support to water than sanitation*

To some degree the lack of government and donor support for sanitary improvements follows the lack of household demand and the failure of supply driven solutions. Also, within governments, sanitation rarely has a strong and supportive Ministry or Department. Supplying water is a more financially attractive operation. Often, water projects are also simpler for governments to manage and donors to fund. The sanitation improvements that are attractive to donors wishing to set up large projects, are wastewater treatment plants and urban sewerage systems. What are mostly needed, however, are small, decentralized and locally adapted sanitation systems. Such systems tend to be:

- Unattractive to utilities, which are institutionally better suited to centrally managed water and sewerage networks.
- Unattractive to government planners, who often find it easier to collaborate with engineers and to focus on centralized systems that can be controlled by these engineers.
- Unattractive to donors looking for major projects to support, and who often find it preferable to deal with governments and utilities.

During the 1990s many donors, led by the World Bank, came to favour of private utilities, and private operators generally. However, far from favouring small and decentralized sanitation systems, which often involve numerous small private suppliers and operators, private sector participation reinforced the previous focus on large infrastructure systems, and water systems in

particular. The most active private participants were the large multinational water companies, who tend to favour large water concessions in urban centres.

#### *Why sanitation does not always lag behind water*

Given the difficulties described above, it might seem that sanitation should always lag behind water provision. There have been, however, a number of locations where sanitation provision has caught up, and in some cases surpassed, water provision. This applies to virtually all places in high-income countries, where there is a very high proportion of households, workplaces and public institutions with high quality sanitation, most of it waterborne and linked to sewers. Of more relevance to currently deprived areas, there are also many very poor villages where open defecation has been eliminated, and many poor urban settlements where sanitary improvements have been implemented and maintained. These are discussed in more detail in the following sections.

A common feature of most of these initiatives is that they have managed to tap and respond to collective demands for sanitation that were not previously evident. In some cases, formal participatory processes have helped to tap this demand. In poor villages in Bangladesh, participatory processes have been widely used to elicit a collective concern about open defecation, and to provide a basis for what has been termed Community-Led Total Sanitation. The very act of publicly discussing faecal disposal while conducting a transect walk through the village can not only rouse emotions, but suggest opportunities for action. Alternatively, in comparatively well-provided Porto Alegre (Brazil), the introduction of participatory budgeting helped to make sanitary improvement a priority. In this case, the local participatory meeting provided fora where people's collective concerns for sanitary improvement could be articulated more clearly and forcefully than through either electoral processes or private purchases.<sup>xxi</sup> Formal participatory processes are not always the best means of engaging with local groups, and helping to develop and respond to their demands for better sanitation. The experience with participatory processes does suggest, however, when people have the opportunity to articulate their collective demands for sanitation, and to translate these demands into action, the gap between water and sanitation is less likely to persist.

#### **4. Breaking the cycle; (drawing on lessons from success stories)**

Given the comments made earlier about how much the best means of improving sanitation depends on local contexts, this section will review some experiences with improving sanitation that were locally driven and rooted in local contexts.

##### *Comparing different experiences in urban areas*

This section will review the experience of six urban sanitation initiatives: the Orangi Pilot Project-supported initiatives in many locations in Pakistan; the community-designed and managed toilet blocks undertaken by slum and pavement dweller organizations and federations in India, with the Indian NGO SPARC; the *Baan Mankong* (secure tenure) programme which supports 'slum' upgrading all over Thailand; the community and public toilet-blocks in Dhaka and Chittagong supported by local NGOs and WaterAid; the condominal sewer programme in Brazil; and the serviced site schemes in Windhoek, Namibia. What these did is summarized in Box 1.

Before discussing these experiences, it is worth noting how many urban contexts provide opportunities for better quality sanitation than rural areas – as unit costs are lower and capacities to pay are higher. Both the number of people living in a settlement and its density influences the

choice of sanitation system. Higher densities bring down the costs per household for all piped infrastructure, including piped water, sewers and closed drains. Larger population concentrations bring down unit costs for water and waste-water treatment. Many urban contexts also do not favour some of the simplest forms of provision – for instance high levels of overcrowding make on-site sanitation systems difficult, especially where latrine-emptying services are difficult (or impossible) and where there are multi-storey buildings. But what is the most locally appropriate sanitation intervention depends so much on local circumstances, including technical competence, government attitude and the strength and representativeness of grassroots organizations. Many urban contexts allow good quality provision for simplified sewers to each household, if local organizational capacities exist to support this. Many high-density urban districts with high concentrations of very low-income groups (and many groups renting rooms) may require communal provision – although this needs local organizational capacities to ensure these are well served with water and electricity, well maintained and safe to use – for instance for women at night. Some urban contexts make on-site sanitation possible – where densities are not too high, where the pits do not contaminate ground water and where pit emptying services can work. But care is needed in any assumption about which technology is most appropriate – there is a considerable range of technologies and of models of provision from which to choose and many external agencies’ promotion of on-site sanitation is not appropriate for many urban contexts.<sup>xxii</sup>

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### **Box 1: Examples of innovative sanitation programmes in urban areas**

OPP: The Orangi Pilot Project is a Pakistan NGO, formed in 1980, to support new models of providing infrastructure and services in Orangi, a large cluster of low-income, informal settlements in Karachi.<sup>xxiii</sup> Since then, it has supported one of the world’s largest programmes to improve provision for sanitation in low-income areas – in Orangi, in many other districts in Karachi and in many other cities and small urban centres – as well as supporting improvements in other forms of infrastructure and services. OPP’s aim is to change the way that local governments plan and manage investment in infrastructure, so this reaches low-income households with infrastructure that is good quality, affordable (both to users and to those who install and manage it) and sustainable. At its core is the concept of ‘component-sharing’ where the inhabitants of each street or lane takes responsibility for planning, installing, financing and managing the ‘internal’ pipes – for sanitation, the lane sewer to which each household’s toilet connects – which then connects (ideally) to a government provided ‘external’ sewer or to a natural drain. As the inhabitants of each lane work together to install and then manage the ‘internals’, advised by OPP-RTI (or another local organization trained by OPP-RTI), they cut unit costs dramatically – typically to a fifth of what they would have been charged by the official water and sanitation agency. This brings unit costs down to the point where low-income households can afford to pay and so allows full cost recovery. Each lane organization also offers the local sanitation service provider a partner who can undertake the most time-consuming aspect of improved sanitation – the work at each household and lane – which the local government (or any official water and sanitation agency) can support by providing the main sewers (the ‘externals’) into which each lane can connect. The intention of all these locally supported initiatives to install and manage sewers in lanes is to form partnerships with local governments.

COMMUNITY-DESIGNED AND MANAGED TOILET BLOCKS IN INDIA: During the late 1980s and early 1990s, an alliance of two community organizations and a local NGO in India designed, built and managed some public toilet blocks, either because there was no provision in their neighbourhood, or because provision was very poor.<sup>xxiv</sup> This alliance was the National Slum Dwellers Federation (NSDF), *Mahila Milan* (a network of savings groups formed by women ‘slum’ and pavement dwellers) and the Mumbai-based NGO SPARC. The building of these toilet blocks was usually preceded by a community-managed ‘slum’ survey to document the

inadequacies in provision; as significantly it was preceded by the establishment of local savings schemes, new community organizations that drew together women in the settlements and strengthened management capacities. These toilet blocks addressed the deficiencies in the siting, design and management of existing public toilets – and they produced better quality public toilet blocks that cost no more. The design included innovations that gave women more privacy, made queues work better (for instance separate queues for men and women since with one queue, men push in), ensured a constant supply of water for washing and made better provision for children (many had separate children's toilets which meant that children did not have to queue and they had 'children' sized toilets which were easier for them to use). Community-management ensured that they could be maintained through user charges but with daily costs to users being much lower than conventional 'public toilets'. Caretakers and cleaners were identified from the local community. At first, local authorities ignored or discouraged these efforts. However, first the municipal commissioner in Pune (a city with over 2 million inhabitants) and then other city authorities recognized the poor quality of public toilets and the inadequate numbers built and supported this NSDF-MM-SPARC alliance in building community toilets; over 500 toilet blocks have been built to date – mostly in Pune and Mumbai but increasingly in other urban centres

**BAAN MANKONG (Thailand):** This is one of the most ambitious upgrading initiatives currently underway.<sup>xxv</sup> Managed by the Thai Government's Community Organizations Development Institute, this channels government funds in the form of infrastructure subsidies and housing loans direct to community organizations formed by low-income inhabitants in informal settlements who plan and carry out improvements to their housing and to water and sanitation or develop new housing. It has set a target of improving housing, living and tenure security for 300,000 households in 2,000 poor communities in 200 Thai urban centres between 2003 and 2007; by December 2004, initiatives were underway in 175 communities, involving more than 14,600 households. This initiative has particular significance in three aspects: the scale; the extent of community-involvement; and the extent to which it seeks to institutionalize community-driven solutions within local governments so this addresses needs in all informal settlements in each urban centre in which it is implemented. It is also significant in that it draws almost entirely from domestic resources – a combination of national government, local government and community-contributions.

**SIMPLIFIED /CONDOMINIAL SEWERS:** These have dramatically lowered the cost of providing households with connection to a sewer in Brazil, which then removes human wastes and household waste water. It achieves this through two means: lower unit costs (smaller pipes, less piping, less trench excavation as these are not buried as deep as conventional sewers); and a division of responsibilities between the agency providing the sewers and the households who manage the installation and management of the 'neighbourhood' sewers and connections to each house (as in the examples given above of OPP in Pakistan). For instance, in Parauapebas in Brazil, where simplified sewage systems are widely used and have been in operation for more than 20 years, the cost per household connection was the equivalent of US\$56 in 1997.<sup>xxvi</sup> Conventional programmes for contractor-constructed sewers cost at least five times this – and often far more than this. Simplified sewerage is now regarded as an acceptable sanitation technology throughout Brazil where it has been successfully used for over 25 years<sup>xxvii</sup> and institutionalized – for instance, as a national design manual was prepared,<sup>xxviii</sup> as the national sewerage design code was modified to allow the smaller sewer pipe diameter used in simplified sewers,<sup>xxix</sup> and as the experiences with simplified sewerage have become widely known and discussed among water and sanitation professionals within Brazil.<sup>xxx</sup>

**CHANGING STANDARDS IN WINDHOEK (NAMIBIA):** The city authorities in Windhoek recognized that to reach low-income households, they had to cut unit costs in their government-

funded serviced-site programme, because they had to recover costs from the land they developed for housing.<sup>xxx1</sup> A new policy, developed with the Shack Dwellers Federation of Namibia, shows a willingness to overturn conventional approaches to standards and regulations, for instance in plot sizes and in infrastructure standards, to make their serviced sites more affordable to low-income households. Two new options were developed: a plot of 180 square metres serviced with communal water points and gravel roads which could be rented with the rental charge covering the financing costs for the land investment, water services and refuse collection; and group purchase or lease of land with communal services and with minimum plot sizes allowed below the official national minimum plot standard of 300 square metres. Families living in areas with communal services have to establish their own neighbourhood committee to manage their toilet block. As significantly, families are allowed to upgrade services as they can afford to make the investments, extending sewerage and water lines from mains provision into their homes. Groups that belong to the Shack Dwellers Federation have access to their own loan fund from which they can borrow for such service improvements and just under 1,000 have taken such loans at an average household cost of US \$150. However, this underestimates the number of improvements because, as with the experiences in Orangi, once households have a system they can respond to, many can afford to make the improvements using their own resources without a need to use loan finance.

**COMMUNITY MANAGED PROVISION IN DHAKA AND CHITTAGONG:** The UK charity WaterAid has supported many examples of ‘community-managed’ water and sanitation provision, including the work of OPP. Like OPP and the community-managed toilet blocks in India, community managed provision in Bangladesh not only meet needs but also demonstrate to local water and sanitation agencies more effective ways to improve and extend provision. This work in the slums of Dhaka and Chittagong began in 1996; by 2002 they were working in 150 slums with local support managed by seven local NGOs.<sup>xxxii</sup> Programmes include sanitation blocks combining water points, bathing stalls and hygienic latrines; community/cluster latrines with septic tanks; and household water seal pit latrines. More solvent households in the ‘slums’ tend to use private household latrines with poorer households making more use of community/cluster latrines. As in India, the incomes of the poorest groups are so low that providing them with good sanitation and achieving cost-recovery is difficult. Cluster latrines with five stalls, each used by around 150 households, can cover their maintenance costs and a quarter of their construction costs over two years with monthly charges to households of the equivalent of \$0.60 but the poorest households have difficulties even affording this – as they earn the equivalent of only US\$6-10 a month. Such households can access the services paying a per unit charge for water and sanitation and, in the most needy cases, assistance may be offered at a reduced cost.

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There are not many points of comparison between these in what was done, except that they made it possible for low-income men, women and children to get better sanitation. What all of them do share is that they are pragmatic local responses to local opportunities, working within local constraints and managed at the neighbourhood level. It is worth noting the importance in all these initiatives of six aspects:

A: The central involvement of those with unmet needs for sanitation in developing and implementing the solutions was evident in all these examples, although it took different forms. In India and Namibia, it was organizations and federations of ‘slum’, ‘shack’ and ‘pavement’ dwellers supported by local NGOs that had the central role in design and implementation. In Pakistan, community-participation was centred on the households in each ‘street’ or ‘lane’ who had to manage the finance and construction of the lane sewers and the connection of their toilets



to these – with technical support from local NGOs – and OPP is also part of a wider network of civil society groups which are supporting greater community-involvement at district and city level. In this case the innovation catalysed stronger organizations, rather than the reverse. In Thailand, community-organizations formed by the households in a ‘slum’ or informal settlement and their networks had the central role, drawing on support from a national agency and negotiating support from their local government.

B: Building on existing provision and working with local skills and within local institutional and financial constraints. None of these examples were using ‘new technology’ and the innovations were much more on making conventional approaches using conventional technologies cheaper and better managed. The examples in Brazil and Pakistan were innovative in regard to the technology as they changed designs and standards for water-borne sewers to make them cheaper but more important for their success was the redefining of the relative roles of households, resident-organizations and local government. This later point is also true in the case of the other examples.

C: Recognizing that no solution is possible at any scale unless good relations and partnerships are developed between those with unmet needs, local governments and where relevant, other water and sanitation service providers. None of these six examples sought to provide or improve sanitation independent of local governments or other official service providers. All recognized that it is not possible to improve sanitation in urban areas on any scale unless more effective relationships were developed between those lacking provision and official providers. All also made it easier for official service providers to become involved – for instance, by doing the community-level work themselves and addressing other aspects that these service providers found difficult to do – for instance allowing group billing. In India, Pakistan and Thailand, the innovations also included local civil society groups developing the detailed maps of ‘slums’ and informal settlements and the household data that official service providers needed to be able to work there.

D: The importance of having a local capacity to reduce unit costs for installation, maintenance and management, to make it more affordable for low-income groups and more financially viable for any (public or private) water and sanitation service provider. These examples show how far external funding can go, if used well; in some instances, local innovation even allowed large-scale success without the need for external funding. Perhaps the most important aspect of cost-reduction is what OPP call ‘component sharing’ with low-income households and their community organizations responsible for designing and installing the ‘internal’ pipes and connections and water and sanitation providers responsible for the external systems to which these connect. This is central to OPP’s work and also central to examples of where condominium sewers have been brought down in price. In the examples from Thailand, external (government) support goes much further, because of what households and their community organizations contribute. But perhaps as importantly, in each instance, all measures are sought to cut costs and it is the combination of keeping costs down wherever possible and household/community contributions that allows good quality household provision for sanitation to be afforded.

E: Linked to the point above, work with what can be afforded locally. Make it easier for official water and sanitation providers to work with low-income households (eg making it easier for them to connect, serve and bill households). Recover costs where possible (as this allows larger scale programmes and reduces or removes dependence on uncertain international funding). Make communal provision work better, if household provision is too expensive or difficult - as in the experiences in India, Bangladesh and Namibia. However, these experiences also point to the need for strong community organizations to ensure good maintenance and management – and to

prevent the facilities' capture by more powerful groups. Communal sanitation generally needs to be accompanied by making communal standpipes work better too – and with good provision for washing and personal hygiene (and plenty of water) within the communal toilets. Most international agencies have never seen communal toilets as a way to improve provision for sanitation. Yet it is common for large sections of the low-income population of urban centres to rely on them.<sup>xxxiii</sup> In most cities, there are also high-density low-income areas where it is difficult and expensive to install good quality household toilets and the supporting infrastructure these need – for instance because of few roads and paths, no maps of the area and uncertain (and often disputed) plot and house boundaries. Many such settlements are also on land that is illegally occupied or subdivided, with government or private agencies unable or unwilling to invest in infrastructure there; to do so would give some legitimacy to the inhabitants' claim to that land. Many such settlements also have high proportions of the population renting rooms – and with landlords not interested in improving provision for sanitation. It is also common for there to be so little space per household that it is difficult to fit in a toilet. However, detailed community consultations, surveys and maps are needed to see if communal provision is needed and if it is needed, to help determine how best it should be provided. There is also no reason why good communal sanitation should not be combined with good household sanitation.

F: One key aspect of 'going to scale' is local (small-scale) innovation that sets precedents from which others can learn locally and can be a powerful driver of change with ripples of influence extending to other places. For some of these cases, their influence spread to change national policy. This is also a reminder of how much pro-poor social change in all nations has been influenced by local innovation and precedent. But to spread to new locations, it also needed competent local organizations in these locations with the capacity to adapt the model.

**Table 3: Comparing the different experiences**

<b>Programme</b>	<b>Source of innovation</b>	<b>Reducing unit costs</b>	<b>Funding</b>	<b>Going to scale strategy</b>	<b>Role of international agencies</b>
The secure tenure programme in Thailand	National government agency supporting CBOs and their networks in upgrading	Community-engagement in design, building and management	Mixture of infrastructure grants and housing loans	Support channelled through community organizations and networks of community organizations; support for city government-community organization partnerships	None
SPARC-NSDF-MM community toilets	Local NGO and local 'urban poor organizations designing, building and managing toilets	Communal provision, community-managed construction and operation, local construction enterprises	Local government for capital cost, user fees for management and maintenance	Develop partnership with local government; encourage national funding to support this	Minor; some funding from an international NGO (for innovation) and indirectly from World Bank. <sup>xxxiv</sup>
OPP supported community-managed sewers and	Pakistan NGO and local NGOs and CBOs it helps and trains	Community organizations plan, finance and implement	Capital and running costs fully paid by users. Technical	Develop partnerships with local government and state agencies; document and map existing sanitation infrastructure	Minimal (some funding from international NGO for

drains in Pakistan	supporting community managed provision		assistance provided free of charge to communities	and design interventions to support and work with these	support NGOs, local Foundation with a critical initial role)
Simplified sewerage in Brazil	Local government agency	Cheaper technology, community involvement	Capital and running costs from users	Make it standard solution for local governments	Partial funding initially from World Bank
Windhoek	Local government-community agreement on changing standards	Smaller plot sizes, lower infrastructure standards and communal provision	No additional funding needed. Communities have to pay development costs and upgrading costs	Because costs fell rather than increased, going to scale was easier	Loan fund for upgrading part-financed by international NGOs
Community water and sanitation in Dhaka and Chittagong	Local NGOs supported by WaterAid	Unit costs much lower through community provision	Running costs covered by user fees; plans to develop some capital cost recovery from user fees	Encourage local governments and state water and sanitation agencies to see these as means of reaching poor at scale	Funding from WaterAid

### *Comparing different experiences in rural areas*

In most rural contexts in low-income nations and most middle-income nations, what is done to improve sanitation is primarily what is done by individuals, households and community organizations. In most contexts, increasing rural sanitation coverage depends on individuals and households deciding to change their defecation habits and being able to do. Small-scale enterprises may have importance for providing services or latrine hardware (for instance latrine slabs or pour-flush toilet bowls). Governments often have important roles in improving provision but mostly as facilitators and supporters of household and community action.

When compared to urban areas, some constraints are greater (for instance what most people can afford to pay for building or using latrines, higher unit-costs for many forms of sanitation provision) and some that are less (for instance more space and more possibilities for on-site sanitation, more possibilities of returning the nutrients in human excreta to the soil, fewer constraints coming from inappropriate building and planning regulations). Very low-cost solutions are needed in most instances, if rural sanitation programmes have any hope of reaching their MDG targets. These also have to compete successfully with open defecation and to do so for women, men and children, if the risks from excreta-related diseases are to be greatly reduced. So solutions often centre as much on behaviour change as on new toilets. They often have to succeed in places where sanitation hardware is expensive, skills in toilet design and maintenance in short supply and local governments weak.

Differences between urban and rural areas should not be overdrawn. Some parts of most urban areas have rural characteristics, while some 10-40 percent of the rural population in most low- and middle-income nations live in 'large villages' with urban characteristics (such as a concentration

of non-agricultural employment) and a sufficient concentration and density of population to make what might be considered ‘urban’ sanitation solutions worth considering.<sup>xxxv</sup> OPP has worked successfully in some large villages in Pakistan; condominal sewers have worked well in some ‘large villages’ in Brazil. In addition, many nations have official definitions for ‘urban areas’ which classify most market towns as rural. This diversity within ‘rural settlements’ in each nation cautions against any assumption that rural areas need some standard sanitation solution or that only on-site sanitation is appropriate.

This section will also consider six examples of rural sanitation programmes; four are summarized in Box 2. All improved provision for sanitation at a considerable scale. But these examples were also chosen to highlight how much local contexts vary – so these were very different in how they were structured and what they provided – from among the world’s cheapest pit latrines in Bangladesh to more sophisticated on-site systems in Peru to Brazil where many rural communities had condominal sewers (which are generally considered only an urban solution). Three of the programmes are comparable in that all were implemented in Southern Africa and sought to support households built latrines – but there are also important differences in how they sought to do this. These serve as a reminder of how much local contexts vary, including what households can afford and what governments can or cannot do. As with the urban examples, all represent pragmatic local responses to local opportunities and constraints.

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#### Box 2: Examples of rural sanitation programmes

**COMMUNITY-LED TOTAL SANITATION:** The community led total sanitation programme was first developed in Bangladesh and is now being implemented in many other rural contexts – and tried in some urban contexts too. In many ways, this turns logic on its head. It offers no cash incentives and no subsidies, while operating in some of the poorest villages in one of the world’s poorest nations. It also offers no technical solutions. It focuses on behavioural change before latrine construction. And it has produced latrines that cost a small fraction of what is usually quoted as the cost-range for latrines, including latrines that cost the equivalent of \$1-2.<sup>xxxvi</sup>

Community-led total sanitation is a process initiated and implemented in each settlement to inspire and empower the inhabitants to stop open defecation and to build and use latrines, using their own resources. Through the use of participatory learning and action methods, supported by a facilitator, the inhabitants of a settlement meet together to analyze their own sanitation profile including the extent of open defecation and where people defecate within and around the village. These discussions are also accompanied by transect walks across the village and visits to the most widely used sites for open defecation. The group discussions also calculate the volume of human excreta that is deposited in the village environment each month or year - and the way faecal-oral contamination is spread in ways that affect everyone. This can ignite a sense of disgust among everyone as the whole community discusses this issue (and recognizes how open defecation actually means they end up touching and even eating each other’s faeces). When facilitated well, this can mobilize everyone into initiating household and collective action to improve provision – and with agreements reached between households where needed (for instance for landowners to provide land for the latrines of landless families). The final goal is an open-defecation-free settlement. This approach was well demonstrated and documented by Kamal Kar, working with the Village Education Resource Centre (VERC) in a small community in Rajshahi district in Bangladesh. Since then, the approach has spread in Bangladesh (more than 400 villages have stopped open defecation) and has been introduced into several other nations.<sup>xxxvii</sup> National sanitation programmes in both India and Bangladesh have shifted towards community-led approaches with a high degree of NGO involvement, hygiene promotion, capacity building of

suppliers, and focus on behavioural change goals. However, whereas VERC and other proponents of the total sanitation approach argue for zero subsidy, government programmes in both Bangladesh and India target construction subsidies to households defined as ‘hardcore poor’. In Bangladesh, approximately 75% of total government funds will go to targeted hardware subsidies, and in India 60% of government funds.<sup>xxxviii</sup>

**SANBASUR:** In Peru, the Basic Sanitation in the Southern Highlands project (SANBASUR) has been underway since 1996 and involves provision for piped water and support for households to build pour-flush toilets linked to septic tanks. Pour-flush toilets are often considered ‘too expensive’ for rural households and they also need water to flush them (although less than conventional flush toilets). But they have advantages – the water seal greatly reduces smells and problems with flies and unlike pit latrines, there is no large open hole that can discourage their use by children. They are also relatively cheap and easy to build and maintain. Male and female heads of household for 8230 families (41,150 people) were trained to build these toilets, supported by sanitation services management committees formed by the inhabitants in each settlement and by municipal staff. These committees also promoted personal hygiene and ran a monitoring system to review progress in each household and health outcomes such as diarrhoea and skin diseases, especially in children under 5. Follow-up studies showed a high level of satisfaction from households (much higher than the satisfaction with pit latrines) and many households had also introduced new facilities for washing.<sup>xxxix</sup>

**SISAR:** In Brazil, rural sanitation has been much improved in many places by a combination of rural community associations who install and manage the water and sanitation infrastructure and non-profit associations that support them. For instance, in Ceara, one of the lower-income states, the “Ceara State Coordinated Rural Sanitation System (SISAR)”<sup>xi</sup> supports 32 community associations that manage water and sanitation systems with administration, maintenance, user payments and user education, as well as representing the associations to governments.<sup>xii</sup>

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Several nations in sub-Saharan Africa have had large rural sanitation programmes that have been criticized for being ‘supply-driven’ and therefore, by implication, costly, inefficient and unsustainable (because they depended on substantial external funding). Supply-driven approaches have also been challenged by the success of approaches that are mostly or entirely funded by local demand and still reach low-income households – as with the OPP and the total sanitation programmes. But supply-driven sanitation has not always produced infrastructure that is unused. In some instances, it has kick-started local processes that catalyse demand for better toilets and encourage new sanitation enterprises. It can include strong hygiene promotion, although this usually needs to be separated from infrastructure, because of the different skills required. It can also offer choice to households so it addresses the limitations in many supply-driven programmes of only serving households whose demand happens to match the goods and services supplied by the programme. Where local government has the competence and willingness to work with low-income groups, it can rapidly construct much needed infrastructure at scale – for instance in places that are remote, with little market penetration, that have come out of war, have very low sanitation coverage rates and have communities with very low purchasing power.

Centralised supply-led government programmes are now out of favour internationally.<sup>xlii</sup> But it is worth considering the strengths as well as the weaknesses of some programmes – for instance, those that have been running in Lesotho (RSIT and USIT), Mozambique (PNSBC) and Zimbabwe (IRWSSP) since the early 1980s.<sup>xliii</sup> The Mozambique programme covers towns

across the country although since 1996, it has been extended into rural areas. The Zimbabwe programme covers rural areas, and the Lesotho programme covers both urban and rural areas. All three programmes started with strong government and donor involvement in design and implementation, but differed in approach, financing arrangements and division of responsibilities (between central and local governments, NGOs, communities and local private sector). The Mozambique and Zimbabwe programmes were strongly supply-driven until around mid-1990s, as they focused on government-led construction of infrastructure whereas the Lesotho programme focused on stimulating household demand and the capacity of local private latrine builders and suppliers. However, the scale of latrine construction in Mozambique and Zimbabwe was impressive. In Zimbabwe, 450,000 latrines were constructed between 1985 and 1999, which help explain Zimbabwe's relatively high levels of sanitation access by 2002. There is also a well-established knowledge throughout Zimbabwe as to how to build VIP latrines (known as Blair latrines after a former secretary of health in Zimbabwe who promoted them in the 1970s) and these have also been built in schools and health clinics, as well as in households.<sup>xliv</sup>

The Mozambique programme supported 230,000 latrines between 1985 and 1998. It established production centres for latrine slabs in all provincial capitals and many district towns, and this rapidly increased latrine sales (because transport after purchase of the ready-made concrete slabs was a sizable cost for households). When this programme started, the civil war and its destructive aftermath of displacement and poverty meant that a demand-driven sanitation programme was not feasible. There were few professional staff outside the capital, Maputo. There were virtually no systems either for hygiene promotion or for supporting communities. The priority was to help as many people as possible to improve their sanitation as quickly as possible, especially in the large peri-urban settlements to which very large numbers of poor people had moved. For that purpose a programme of centralised and subsidised latrine production, managed by a strong core unit in the capital city, was appropriate. There are other places in Africa in which this approach may still apply.

However, the programmes in Mozambique and Zimbabwe depended on high levels of external funding, and failed to initiate processes that could sustain results beyond the government-led programme. The Mozambique programme included little hygiene promotion before 1994. The Zimbabwe programme did better on hygiene promotion, but until the 1990s encouraged little community participation. The Mozambique and Zimbabwe programmes trained thousands of local producers of latrine components, but did not encourage them to market sanitation to households or develop low cost alternatives to the technology adopted by the programmes. This meant the supply-side of the market remained weak and dependent on the government programme.

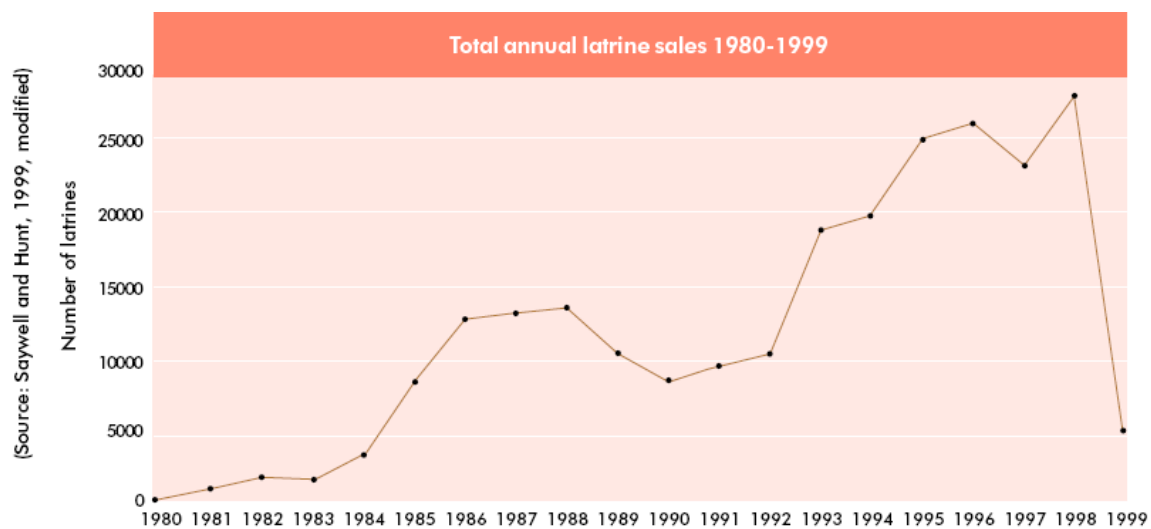
The programme in Lesotho proved more sustainable. It emphasized the involvement of rural communities, the private sector and hygiene promotion. Masons were trained in latrine construction and maintenance, and marketed their skills in their communities, and so had a direct financial incentive to promote improved sanitation. Long-term planning and collaboration among donors were other important elements. The demand-led approach affected the rate and style of implementation, because the pace of latrine construction depended on affordability and the priority given by households to improved sanitation. Donors had to take a longer-term view when evaluating the programme – measuring success in terms of broader performance-based outcomes rather than numbers of latrines constructed in a short space of time.

Another lesson of supply-led programmes that may be relevant in some current contexts is that it can quickly install large numbers of latrines in rural areas. This may be relevant in places with very low prevalence of improved sanitation. Rapid adoption of technology by middle classes may

have a demonstration effect on other households.<sup>xlv</sup> The programme would need to quickly evolve out of the supply-led mode in order to address longer-term issues, such as developing strong suppliers in the local market, and including poorer households.

The three programmes also illustrate different approaches in regard to what gets external funding. In Lesotho, the government programme subsidised sanitation marketing, hygiene promotion, and training of suppliers, while households paid for materials and employed builders to construct the latrines.<sup>xlvi</sup> In contrast, in Mozambique and Zimbabwe, latrine construction was subsidized with households paying for around 40% of the total cost of the latrines in Mozambique and around 70% in Zimbabwe. Strong external support was important for the early achievements in these programmes, giving resources to appoint, train and retain good staff.

The dependence on external funding is reflected in the rise and fall in sales in Mozambique – see chart. A rise in sales occurred in 1984 when the programme attracted large external funding. In 1988, sales dropped because of a price rise in cement (due to currency devaluation). Sales recovered in 1990 when the government introduced a subsidy and waived sales tax. In 1992, the subsidy was increased, and sales rose further. In 1994, more regional production centres were established, and ‘sanitation animators’ were introduced for the first time to promote hygiene, and the use and maintenance of latrines. In 1997, the withdrawal of external funding led the government to cut the subsidy. The price of a slab increased 400%, and sales dropped rapidly.



In all three nations, there were difficulties reaching lower-income households. In Zimbabwe, latrine subsidies favoured the non-poor who could more easily afford the 70% household contribution, as well as those with local influence. Lesotho’s programme with no subsidy to households started with an explicit focus on middle-income groups and only targeted the poorest 20% after around a decade of implementation.<sup>xlvii</sup> This led to efforts to reduce the cost of the latrine (previously avoided to maintain its desirability to middle income households), extending loan repayment periods, reducing the deposit required, and introducing subsidies to target groups, such as old people living alone. However, the poorest households cannot get credit. Latrine construction has slowed down, which may indicate that most people who can afford a latrine have already built one. The Mozambique programme was meant to offer free latrine slabs to the elderly, the disabled, malnourished pregnant women, mothers with malnourished infants, and

female-headed households with children but this did not work in practice. Also no credit line was offered, and the household contribution had to be paid for in cash at the time of collection – so much of the subsidy went to better-off households.

All three programmes also offered only a standardised sanitation option; lower-income households are often better served by a range of options, including those that are very low-cost but that can also be upgraded incrementally.<sup>xlvi</sup>

In regard to implementation, in all three countries, successful pilot programmes were led by small, dedicated government units. Scaling-up required good coordination across ministries – which proved difficult in Mozambique and Zimbabwe even after major institutional reforms. In Lesotho, the main coordination was between the Ministry of Interior (on urban sanitation) and the Ministry of Health (on rural sanitation), and initial coordination problems were quickly solved.<sup>xlix</sup> Coordination of sanitation with the water supply sector also improved, as water supply professionals became increasingly aware of the significant health impacts possible from sanitation and hygiene. The Lesotho programme also benefited from a more effective national decentralization programme. It also had more provision for community participation. Community participation in Mozambique remained weak. The Zimbabwe programme with its roots in the Ministry of Health always had an emphasis on hygiene promotion, and gradually this included greater community participation. From the late-1990s, there has been greater involvement of NGOs, especially in forming Community Health Clubs – community-based organizations formed at village level to promote and improve family health. Donor support in Zimbabwe has switched away from the government programme towards NGOs. NGO involvement and community participation has led to the design of cheaper VIP latrines, such as those promoted by the Mvuramanzi Trust, and this has allowed subsidies to be cut by half.

Reviewing all six experiences reviewed in this section, government was important in all of them – but more as a facilitator than a provider. The total sanitation programme also began without government and could operate without government – as with the OPP example in urban areas. But both these also benefit from appropriate government support – and OPP never sought to create autonomous provision outside of government but to show a more effective model that government agencies could support. Private sector enterprises were important in most examples as suppliers of sanitation goods or services. In Mozambique, since 1999, support was provided for a number of private producers of latrine slabs in Maputo with training and equipment. Lesotho’s programme resulted in the strongest local private sector supply of latrines and even in rural areas, all latrines were built by private suppliers. The programmes in Brazil and Peru were primarily household-community organization-government. In Bangladesh, the private sector had an important role in producing a competitive market for latrine components.

**Table 4: Comparing the different experiences in rural areas**

<b>Programme</b>	<b>Source of innovation</b>	<b>Reducing unit costs</b>	<b>Funding</b>	<b>Going to scale strategy</b>	<b>Role of international agencies</b>
Total sanitation programme in Bangladesh and India	External facilitation to develop community consensus on the need for open-	Household construction using local materials which brings costs down far below	Seeks to avoid any external subsidy although some programmes provide funding for	Villages where it has worked encouraging other villages and urban settlements to initiate similar programmes; facilitation to support this	In some instances, support for facilitation



	defecation free settlement	conventional programmes	'poorest' households		
The Basic Sanitation in the Southern Highlands project (SANBASUR) in Peru	Local committees with external support for household-led provision for pour-flush toilets	Contribution of household labour; use of local materials	Local government	External support for local committees; success in one community encouraging others; complimentary programmes to improve sanitation in schools	Swiss aid
Rural sanitation in Lesotho	National programme to promote and support households to install VIP latrines and latrine builders	Market pressures	Households had to pay costs, external funding to promotion	District sanitation programmes creating market led demand, supported by efficient private sector	National government and donor funding
Rural sanitation in Zimbabwe	National programme with subsidy to households		Reliant on funding from governments and donors	Large scale programme achieved, because funding was there to support it	Large scale funding

The experience with these programmes suggests a need for a combination of support for both the demand-side and supply-side for households. Hygiene promotion can help stimulate household demand. In many instances, local private sector goods or service providers will be important and may need support so they can develop and market their products or services. Credit provision may help but this only works for households whose long-run incomes can cover repayments. Reducing unit costs is often more valuable for low-income households than providing credit because loan repayments are always a financial burden. In many locations, the lowest-income households may need some subsidy to help cover the costs of construction, but strong, accountable, pro-poor local organizations are needed to ensure that the subsidy reaches those who need it (and these are often not present). Subsidizing the support/facilitation to household and community action may be more effective; free latrine components have been wasted by some poor households because they have been unable to complete the construction (in other households, the reason was simply that the latrine was unwanted).

In almost all instances, special attention needs to be paid to ensuring the needs of women and children are met both in what is built and in how it is managed. Women often value sanitation more than men, and need secure, private facilities more than them. But it is usually men that control household incomes and women may have little influence on what might be spent on improved household toilet provision. In any programme to support households to build or improve toilets, women may be unable to access it – for instance if loans are to support this and are only available to those who have household assets as collateral (and men own the assets).

In concluding this section on rural sanitation, some of the key issues noted for urban areas are also valid here: the need to ensure the involvement of those with unmet needs for sanitation in developing and implementing the solutions; the need to work with what can be afforded locally, building on existing provision and working with local skills and within local institutional and financial constraints; working with non-subsidized solutions where possible; the importance of having a local capacity to reduce unit costs for installation, maintenance and management; the importance of innovations which, when they succeed, set precedents from which others can learn.

As in urban areas, contexts vary so much that little can be said about the ‘best’ approach or technology. In nations with competent, accountable, pro-poor local governments, more ambitious programmes of public support are possible, although these should avoid the problems of supply-driven approaches noted above. Large scale success also generally depends on a good interface between health and environment institutions.

### *Involving Children*

Some sanitation programmes have involved communities by involving their children. Children have been effective in sanitation advocacy, such as in constructing latrines in schools, disseminating information, educating other children, and monitoring progress within their community. Children can reach segments of society that may not be reached as easily by outsiders, and can transfer hygiene knowledge into the household, their local communities, and to children not in school (see box 3).

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### **Box 2: Children as change agents**

Studies of sanitation schemes that put children at the centre of behavioral change have reported significant positive developments both at the level of the community and among the children themselves. In Mozambique, children across the country have been trained to teach other children about appropriate use of latrines, hand-washing, sanitation-related diseases and disposal of solid waste. Changed habits in childhood can improve hygiene behaviour for a lifetime, and be transmitted to subsequent generations. A similar programme operates in Uganda.

Schools sanitation programs in Tajikistan have been particularly creative using an interdisciplinary curriculum focused on lifeskills, community service and peer-to-peer interaction. In one scheme, messages about basic sanitation were displayed at athletic events, and in another scheme, school theatre groups were used to disseminate information. To date, 1,400 peer groups have been formed in 280 schools with approximately 11,000 students involved. In Bangladesh, ‘student brigades’ have been formed by NGOs to monitor sanitation and hygiene using participatory methods that allow the results to be shared easily with their communities. For many of the girls involved, this is the first time they have been able to engage in leadership activities.

**SOURCES:** IRC International Water and Sanitation Centre, 2004. “Symposium Proceedings & Framework for Action. School Sanitation & Hygiene Education Symposium. The Forward: Construction is not Enough.” Delft, The Netherlands, 8-10 June 2004; ITN International Training Network Centre, 2003. “Chapter 5: Thematic Presentations and Discussions” in *South Asian Conference on Sanitation 2003*. Bangladesh University of Engineering and Technology (BUET); UNICEF/ IRC International Water and Sanitation Centre, 2005. “Water, Sanitation and Hygiene Education for Schools: Roundtable Proceedings and Framework for Action” Roundtable Meeting 24-26 January 2005, Oxford, UK.

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## **5. Judging success**

The search for solutions for sanitation and perhaps the frustration from seeing so little progress in many places leads to many ‘recommendations’ by governments and international agencies and

many judgements as to what is the best solution. But there is no consensus as to what these are. Many recommendations are made regarding what sanitation technology should be used – as if one particular technology could be appropriate to very different contexts. Judgements are made based on international comparisons that are false – as illustrated by the earlier discussions where inappropriate use of the JMP statistics suggests that provision for urban sanitation is very good in Kenya and Tanzania and actually much better than that in Brazil.

Perhaps the first point to acknowledge is the inadequacy in the knowledge base to allow judgements to be made. This can be illustrated by the case of Brazil. Looking at changes in provision for water and sanitation in Brazil over the last 30 years, it is possible to admire these for the very substantial improvements in provision and expansion in the proportion of people served; also for the range of technical, institutional, political and social innovations that have underpinned these. 90 percent of Brazil's population have access to piped water networks and around 75 percent have access to sewers. But it is equally valid to wonder how a nation as wealthy as this can still manage to have so many people lacking good quality provision. Within Brazil, there are many urban centres with close to universal provision for good quality water and sanitation (including some in the less-wealthy regions and states) and with great innovation in developing models of provision that are more transparent and accountable – yet also many municipalities without this. It was in Brazil that the concept of condominial sewers (and later condominial water systems) was developed which greatly reduces the cost of good quality household provision and these systems now serve hundreds of thousand of households – yet these are still unused in most of the places where provision is worst and their need is greatest. There are also many examples of rural innovation, especially as rural communities join together to form cooperatives that provides them all with technical and administrative support – but four fifths of the rural population still lack adequate provision for sanitation. Brazil has one of the most complete and detailed data systems on provision for sanitation of any middle-income nation – yet this needs to give more consideration to the quality of provision and of access. Since 2003 when the Workers Party came to power, there has been considerable progress in developing a stronger political, legislative, administrative and financial base for supporting improved sanitation – yet the key legislation on this is stalled in Congress and long-term investment plans are hindered by the lack of clarity in regard to the relative role of state companies and municipalities.<sup>1</sup>

It is also difficult to know how to judge the innovative rural and urban programmes described in the previous section. All can be applauded for the scale they achieved - but also judged negatively for not having reached more people. All have their limitations – places where there were difficulties in acting or in sustaining the initiative, places where they were not as effective as they could have been, places where they failed. Some commentators use these difficulties or deficiencies to dismiss the validity of these programmes. External commentators often seek total and unambiguous successes – which are usually unrealistic, especially when working with those groups in society with the least influence (and often groups that face discrimination from governments and higher income groups).

All the more successful programmes also faced opposition – although this was not necessarily related to any limitations in their approach. For instance, OPP's methodology and the technology they proposed was strongly criticized by an international 'expert' prior to its success and widespread adoption.<sup>ii</sup> All the initiatives described in the previous section have faced opposition. Most community-driven sanitation initiatives in 'slums' face the powerful vested interests that oppose representative community organizations. These interests may also seek to take over management of any community facilities (toilets or standpipes) because of the profits these can make (but which then inhibits or prevents the lower income groups from using them). Many politicians dislike the organizations and federations of the poor who develop sanitation initiatives

because they will not align with their election campaigns; many contractors dislike them because they threaten these contractors' profitable (and often corrupt) relationships with local governments. Many community-driven initiatives also generate hostility from NGOs, including those that have 'housing rights for the poor' as their core agenda. The reasons for this are not clear. These may stem in part from the challenge the federations provide for these NGOs' legitimacy to speak 'on behalf of the poor'. In part, they stem from different opinions regarding strategies to change government approaches and regarding what is achievable.<sup>lii</sup> Many of these innovations have also inspired governments or international agencies to replicate them – but in ways that actually undermine their effectiveness – for instance as they over-funded them or subsidized models that should be developed without subsidy, because this is the means by which they can go to scale.<sup>liii</sup>

There is also an acrimonious debate about which sanitation technology is most appropriate. For many, the water-flushed toilet linked to sewers is considered inappropriate. Thus, the kind of toilet that is almost universal in homes, workplaces, schools, hotels and public areas in high-income nations and also available to most high-income groups elsewhere is under attack for its high use of water and its contribution to water pollution. Much of this attack is from people who hardly ever use any other form of sanitation. Before considering its disadvantages, it is worth reflecting on what this kind of toilet does well. In terms of private and public health, it removes human faeces from the home and the settlement very efficiently. It eliminates the problems of flies and other insect disease vectors having contact with human excreta in the home and its neighbourhood – and thus eliminates the various diseases to which these contribute. It greatly reduces the problem of smells, has a strong element of self-cleaning and is very convenient for the household because it involves very little maintenance – including not having to worry about emptying pit latrines or septic tanks. It needs very little space in the home (unlike pit latrines, eco-sanitation or septic tanks) and this makes it particularly useful in places where space is a constraint (in many urban contexts, low-income groups have 1 square metre of housing space per person or less). It works well in multi-storey housing (most competing technologies do not) and copes well with high-volume use (even for dozens of people using it each day). It does not have the disadvantage of many pit latrines for children of being frightening - dark, smelly and having a large pit. With water piped to the toilet for flushing, it also means a water supply immediately available for a tap or basin for hand washing. The 'sewers' are also needed, whether or not there is a water-flushed toilet, if households have water piped to their home, since this waste water needs to be collected and disposed of. Many of these advantages also make it work better for public or communal toilets too.

It has four potential disadvantages: unit cost (but these come down with higher concentrations of people and there are innovations that have reduced costs per household to what low-income households can afford); dependence on a continuous water supplies and high use of water (although water use can be cut); water pollution and loss of nutrients (but this is not necessarily so – it depends on how sewage is managed); and a need for a competence and capacity in the public, private or non-profit organization that is responsible for installing, expanding and maintaining the sewer system that is often not present.

It is often assumed that on-site sanitation is superior to any form of sewer system because of the problem generated by the 'sewage'. But on-site sanitation can be just as problematic – for instance as it pollutes groundwater or as pit latrines overflow during storms and flooding, contaminating the whole settlement with faecal matter. In most urban contexts, if on-site systems are used, latrines need to be emptied regularly, which can be costly and may push their annual running costs above that of toilets served by sewers. Sewer systems need not generate problems of 'sewage' since with inexpensive treatment, their waste water can be used in agriculture.

Thus, it would be a mistake to ignore water-borne sanitation provision, especially in a rapidly urbanizing world which produces many contexts where this is the best solution. But equally, it would be a mistake to think that this is always the best system (an attitude which inhibited improved sanitation reaching tens of millions of people in Brazil<sup>liv</sup>). In addition, it is important to reduce its need for freshwater and seek lower-cost and more effective ways of managing sewage.

Finally, there is the often acrimonious debate about the relative merits of private sector versus public sector provision. The potentials of privatisation to expand provision for sanitation (and water) were certainly greatly overstated during the 1990s and sometimes still are. But the importance of getting cost recovery where possible and managing water and sanitation provision in a more business like way is now widely recognized whoever is managing provision. So too is the important role of many private enterprises for different aspects of sanitation. Thus, there is an emerging recognition of the range of institutional/financial options, including several with different possibilities for (small scale and large scale) private sector. But also options that include non-profits, cooperatives and various types of local government-local utility-NGO-grassroots organization.

One returns to the point that local circumstances, contexts and user preferences should have the dominant role in influencing the choice of what is most appropriate for toilets/latrines and for supporting management and financing systems. This means a much reduced role for external groups – engineers and other professionals, funders – in determining such choices. External pressures to promote ecological sanitation can be as ‘supply driven’ as promoting sewer systems.

## **6. Ways ahead: More local development, more engagement with the unserved**

### *Avoiding inappropriate models of sanitary improvement*

For most people without adequate sanitation, conventional sewer systems may do more harm than good. This is not just because the outflows and leaks from sewers often contaminate water used by those still unconnected to either sewer or piped water systems. Nor is it primarily because building and extending conventional sewerage systems often requires loan finance, and subsidised connections, which when coverage is only partial tend to divert public funding to the already better-off residents. Rather, the main problem is that the model of sanitary improvement associated with sewerage networks is so influential, and so inappropriate to most settlements where sanitation is very poor.

Influenced by the experience of affluent urban centres, the conventional vision of sanitary improvement is still one of a utility extending sewers along with piped water. Sanitary engineers can control such systems, which has long been part of their appeal within the water sector. In people’s homes the water only leaves the water pipes for a short time before it enters the sewers. In order to gain the full benefits of this system, people must adopt certain hygiene behaviour. For the most part, however, sanitary and hygiene improvements can be driven from the supply side. In areas beyond the reach of sewerage networks, this supply-driven model has also been applied to other sanitation technologies.

There are still places where extending conventional sewers is the best means of improving sanitation provision, and where a supply-driven approach is appropriate. In most of the areas where sanitation is inadequate, however, neither the residents nor their governments can afford more than extremely partial coverage with conventional sewerage systems. If improvements come at all, they will come from more affordable, less standardised, more locally adapted

technologies, that depend far more heavily on the contributions of residents and the groups and private enterprises they work with. As a general rule, as one moves from household water closets with conventional sewers, to condominium sewers, to improved pit latrines and communal toilet facilities, one also moves towards technologies that require more local involvement, to build, operate and maintain.

As a long run goal, it is fine to aim for sanitary facilities of the highest standard, requiring little or no management by residents and community groups. But this long run goal is usually best achieved through an incremental approach. A simpler supply-driven model is rarely a good starting point. Rather, a central feature of most efforts must be to engage with the people that lack adequate sanitation, and to build on or respond to their concerns and initiatives.

### *Engaging with the unserved and finding affordable solutions that can persist and spread*

Successful experiences with improving sanitation indicate that the solutions that actually reach the groups facing the worst sanitary conditions come from the organizations that listen to, work with and support them in their localities. What works locally and what can be afforded locally is what gets developed.

The importance of finding better ways of responding to the political and economic demands of low-income groups applies to virtually all important services. As expressed in the World Bank's World Development Report, better services to low-income groups can only be achieved by "putting poor people at the centre of service provision; by enabling them to monitor and discipline service providers; by amplifying their voice in policy making, and by strengthening the incentives for providers to serve the poor."<sup>iv</sup> However, in many of the experiences described in the previous section, the involvement of low-income groups was actually more than this. They contributed to the choice of what was done and to its implementation, and did not just make demands on the provider and the government.

Many of the cheapest means to improve sanitation require extra time, responsibility and cost for low-income households. These will not work unless the women, men or children from within these households are prepared to take on these extra tasks and pay these extra costs. The role of women can be particularly important – they often have different and higher sanitation priorities than men, and are usually more aware of the hygiene behaviour of children and infants, who are most at risk from sanitation-related illnesses.

### *Tapping collective demands for better sanitation*

Collective demands for sanitation are often greater than the sum of individual demands. In experiences with Community Led Total Sanitation it has been found that when residents participate in walking through the village, describing sanitary practices and identifying locations of open defecation, strong demands for improvement often emerge. Alternatively, even in a comparatively well-served city such as Porto Alegre in Brazil, participatory budgeting helped to make sanitary improvement a priority. These examples are perhaps not surprising, given that sanitary burdens do often arise at the scale of communities and settlements. Thus many of the benefits of basic sanitation only come when the overall quality of provision in the neighbourhood improves –even if, for example, a household builds a new and better latrine, they still face sanitary hazards if others are practicing open defecation. What often does drive individuals and households to improve their sanitary facilities is not health concerns, but more social concerns: the shame of open defecation, or of using a public toilet; the status of having a clean latrine or a flush toilet.

Successful efforts to improve sanitation need to find a way to tap these collective demands, if they are to avoid the constraints of supply driven approaches. Even private vendors can try to tap demands linked to social values, such as dignity – indeed, it is often argued that social marketing should be an integral part of sanitation programs. Alternatively, collective demands can be tapped more directly by groups working in deprived communities. As indicated, this is central to approaches like Community Led Total Sanitation. Many of the other initiatives described rely on community groups to help drive the improvement process, and this can itself become a means of tapping collective demands. There are also other reasons to emphasise community organization and collective engagement.

### *Supporting community groups in organising for better sanitation*

Some of the best sanitation solutions require neighbouring households to work together. Local circumstances may prevent this. There may, for example, be tensions between different groups such as landlords and tenants or between different classes or castes, or certain groups may be excluded by discrimination. In poorly served urban neighbourhoods, problems of legality, disputed land tenure, and bad relations with government can add to or compound such tensions, as well as inhibiting provision from the local utility. In deprived rural areas, there is unlikely to be a utility in the first place, but bad relations to local government can still exacerbate social tensions, making sanitary problems more difficult to address.

Alternatively, social harmony and good local organization can help people to work together to address their sanitary problems. This does not mean that social harmony and organization need to precede sanitary improvements. To the contrary, successful efforts to improve local sanitary conditions can be a means of improving social relations, and demonstrating the advantages of effective organization. Particularly in urban settlements where land disputes are a problem and eviction is a concern, if water and sanitary improvements are supported or at least condoned by the government, this can give residents greater land security, and become a first step in a process of regularization.

Moreover, local organizations working closely with community groups can help make sure that unit costs are kept down and support mechanisms to ensure that the lowest-income households in any neighbourhood or village can afford to become part of these schemes. Again, one of the ways in which low-income households can afford good quality solutions is through their own contributions. Examples such as OPP in Pakistan and condominal sewers in Brazil are important because they show how good quality toilets in each home are possible and affordable, even for low income groups. They have also been shown to work in villages as well as urban centres.

### *Promoting good hygiene*

If changing people's defecation habits is a critical part of better sanitation, more attention needs to be given to promoting 'hygiene' behaviour among low-income groups. This might be viewed as paternalistic and top down – and sometimes inappropriate in that it is not a lack of knowledge but a lack of provision for water and sanitation that is the problem. Governments may also seize on 'hygiene promotion' as 'the solution' and not address sanitation problems. Avoiding diseases and keeping children healthy would challenge even the most knowledgeable person in many rural and urban contexts where incomes are low, housing is overcrowded and of poor quality and provision for water and sanitation is very inadequate. However, dramatic reductions in many diseases that can be achieved by hand washing - after defecation, or after handling children's faeces, after handling raw meat, before food preparation, eating, feeding children and handling water.<sup>lvi</sup> Hand washing could save a million lives a year.<sup>lvii</sup> In general, the worse the provision

for sanitation, the greater the potential benefits from good hygiene behaviour – although also, often the most difficulty in doing so (for instance in being able to access water for washing). However, good hygiene promotion attempts to engage households directly. It may be targeted at poorer groups not because they know less about hygiene than other groups (wealthy and educated groups are also often remarkably ignorant of hygiene issues) but because it can reduce the health burden of inadequate sanitation.

To change their hygiene behaviour, households need to be aware of better options (which they can afford) and this must be followed by intention to act and then implementation.<sup>lviii</sup> There are constraints at each of these stages – for instance, no knowledge of affordable solutions inhibiting intentions to act, competing priorities inhibiting action or no land on which to build a latrine stopping implementation. The actual constraints and their relative importance varies so much from context to context and for different households within each context – and few studies have sought to quantify the relative importance of different constraints between locations or for different subgroups in a location.<sup>lix</sup>

### *Encouraging local government to be more responsive to demands for sanitary improvement*

Improving sanitation also needs local capacity – to maintain, extend, improve and sometimes to replace existing sanitation infrastructure or sanitation services. Again, most low-cost solutions require a capacity among households and their own community organizations because professionally delivered, managed and billed solutions are too expensive. This also requires a capacity to adapt – for instance, to extend provision for a rapidly growing city or to change the form of provision in a settlement with increasing densities and more multi-storey buildings and decreasing plot sizes.

In most contexts, local governments are a key influence – as potential supporters or as principal constraints of good solutions. In part, this too is about capacity; the investment budgets of most local governments in low-income nations is very small or non-existent (as all revenues are spent on staff salaries or other recurrent costs); so too is their technical capacity. For instance, in Temeke, one of the three municipalities that make up Dar-es-Salaam, Tanzania's largest and wealthiest city, the municipal council's comprehensive health plans June 2004-June 2005 provided an allocation of 3000 dollars for on site sanitation for a municipality where 630,000 people are dependent on on-site sanitation.<sup>lx</sup>

But perhaps as importantly, it is also about what local governments encourage and support or inhibit or prevent. Formal rules and regulations – for instance those within building codes and land subdivision standards – may be making illegal the very forms of sanitation provision that are most appropriate. One obvious influence on the effectiveness of local government in improving sanitation is the quality of its relationship with those unserved by sanitation (mostly those with low incomes). This is often antagonistic; many local governments see the poor and their informal settlements as the problem. Much of their vision of 'city development' is bulldozing these informal settlements. Hardly surprising in such contexts that provision (for water and sanitation and much else) is usually awful. Examples of how much sanitation can improve among the poor when governments change this attitude and work with them were given earlier. Local governments with a capacity to work with low-income residents and their community organizations on sanitation with appropriate technical and financial models can make limited local budgets go a long way – as has been demonstrated in so many locations and contexts in Pakistan and India.



### *Obtaining national support for locally-driven sanitary improvement*

It is clearly important to have political systems that respond positively to pressure from those ill-served or unserved. In Latin America, democracy and decentralization and new models of urban governance that are more responsive to poorer groups have been important for better provision. There is also need for political leadership at higher levels of government. Sanitation rarely has a strong institutional champion when, as is typically the case, there is strong national ministry through which to work.

Good leadership from the top can be created by strong pressure from grassroots organizations and from other local actors. In many places, local innovation has also had great importance for showing new ways of improving and financing sanitation – and of setting precedents that encourage action and innovation in other places. There are good examples of local innovation/precedent setting changing not only local government practice but also policy – and changing national policy which then results in much increased support for the multiplication of the original innovation. Every nation needs local innovation to drive discussion and learning – and this has to be rooted in the preferences and priorities of those who lack good sanitation. Of particular importance here is the growing number of examples of local innovation undertaken by grassroots organizations that are to show governments (and external funders) that there are more effective ways to improve sanitation. In the examples given earlier in India and Namibia, the promoter and developer of the innovations was partnerships between federations of the urban poor (which are made up of community managed savings groups) and a local NGO who then developed partnerships with local governments. In Pakistan, the innovator was a Pakistan NGO working with resident organizations formed by those living in ‘a lane’.

### *Going to scale and reaching the MDG targets*

Going to scale and reaching MDG targets clearly needs different strategies in different nations. For many middle-income nations, these can build on what they are doing already, but with more attention to reaching low-income groups and the best means to do so – in rural and urban areas. The Baan Mankong programme in Thailand is an example of a national framework supporting community-driven development and community-local government partnerships on a scale that can meet ambitious MDG targets for sanitation (and water). In Brazil, the innovation shown by the best local governments (in rural and urban areas) needs to infect the local governments (and their state governments) in places where provision is poor. For cities with successful economies, going to scale needs investment in bulk infrastructure (piped water supplies, sewers, drains) into which community driven provision can fit.

Going to scale in many other places will be around local innovations and precedents (including local government-community organization partnerships) from which others learn. So the local innovation generates ripples of innovation as other potential implementers (such as local governments and community organizations) learn from it – and learn from those who implemented it. So going to scale is by multiplication, not replication. In addition, many of the ways in which low income households have got better provision (for water and sanitation) is through initiatives that are not 'water and sanitation' projects - eg slum and squatter upgrading, micro-loans for housing improvements – so these also need support.

### *What role for international agencies?*

In one sense, the role of international agencies is obvious. The inadequacies in provision for sanitation in any settlement which concentrates people (and their wastes) needs more competent, effective local sanitation providing or supporting organizations in each settlement in which the unserved and ill-served have influence. With such organizations promoting and supporting and perhaps helping finance, design and implement the interventions that are possible, building on the infrastructure and local organizations that already exist. This intervention may at one extreme be motivating everyone in a village to agree on an action plan to eliminate open defecation and/or providing advice to individual households to solve their own problems – for instance latrine designs and key components (for instance the squat plate) and information that households find useful and relevant about hygiene behaviour. At the other extreme, it may be providing all households with connection to sewers (for which they are charged) and managing these and the wastes that go into them. There are many options for what can be done and for how it should be done – for instance in regard to the roles taken by households, grassroots organizations, local NGOs, government agencies, private enterprises (large and small) and international agencies.

But in many ways, these solutions are the nightmare for any international funder. They involve a very large numbers of local initiatives, each unique as they respond to local contexts, many of which require very little funding. Most of them are designed and implemented by people who cannot speak the funder's language. To do this means knowing how to support the development of more pro-poor, more accountable local sanitation (and water) providing or supporting agencies in tens of thousands of localities. In many urban contexts, these localities are 'illegal' so local governments do not want to work there (or may be prevented from doing so). This needs to be combined with a recognition that local contexts and local possibilities for success vary greatly so the actual form that these local organizations take will also vary a lot. What is needed in each of these tens of thousands of location is the best possible mix between good quality convenient provision that can improve sanitation even for the lowest income groups, what can be afforded and what can be managed (or 'sustained') locally. For working at scale, it obviously needs the support and engagement of local governments. Indeed, where local governments are capable of supporting pro-poor sanitation (including those developed by civil society), they become the most valuable intermediaries through which external funding can be channelled.

While this is obvious, the means by which international agencies can support this is not. The official development assistance agencies were not set up to support a multiplicity of local initiatives in each nation but to channel funding to national recipient governments. To be effective in supporting local initiatives, they need to find and support effective local partners since few of the official development assistance agencies actually implement initiatives on the ground. To work at scale in such local engagement, they also need the approval of national governments who are often reluctant to allow this – and who may be hostile to it. In most localities, there is generally a lack of technical capacity for the systems that have the potential to work best. In addition, external support – whether from national governments or international agencies - has not proved very good at supporting the most locally appropriate and locally-driven pro-poor development – for sanitation and for other local needs.<sup>lxix</sup>

The 'solutions' to the inadequacies in provision for sanitation proposed by international agencies usually centre on much increased international funding and sometimes on the promotion of particular sanitation technologies which are often not the most appropriate local solution. There may also be a pressure to produce sanitation facilities that recover their costs from users – which can be unrealistic in many locations, if good quality provision is to reach the lowest-income groups.

For most international agencies, there is also a declining commitment to directly support projects on the ground and an increasing emphasis on providing recipient governments with budgetary support.<sup>lxii</sup> Increased support for improving sanitation thus depends on recipient governments making this a priority – and also acting to support the development of more pro-poor, effective sanitation providers in each locality. There are good reasons for supporting this shift in development assistance – to get more buy-in from recipient governments, to improve coordination between donors. But what is not clear is the extent to which this will make ‘development’ work better for low-income groups. There is such a large physical and institutional distance between low-income groups and the decision-making processes of international agencies and national governments – including the national Poverty Reduction Strategies which are meant to make more explicit the link between what is funded and meeting poorer groups’ needs. The formulation of these PRSPs may strive to have some ‘civil society’ input but it is rare for poor households to have their own representative organizations – and even if they do, these are rarely included in PRSP discussions. It is also difficult for low-income groups to express their needs in terms of national policy change. Their main needs and priorities will generally be for immediate local changes – and changes in their relationships with local governments and other service providers and often with powerful local groups. These kinds of very context and location specific needs and priorities are not easily included in general discussions of national priorities. It may be that increasing donor assistance to budget support and to national PRSPs ends up “contributing to the reproduction and reinforcement of the prevailing patterns of patronage that they are trying to eliminate through their good governance agendas.”<sup>lxiii</sup> There is still too little recognition among the donor community that pro-poor development has to involve political change that produces tangible results in each locality that benefit low-income groups; bilateral and multilateral donors still primarily view low-income households as recipients of public services rather than as active participants in local development and international aid.<sup>lxiv</sup> The donor community has committed itself to increase aid effectiveness in the Paris Declaration, yet this Declaration has no indicator of progress concerning the participation of the very people whose unmet needs are the justification for development assistance.

To address sanitation requires another focus - more emphasis on supporting local initiatives in which the unserved and ill-served groups have a central role. In many places, this will need to centre on partnerships between these groups and local water and sanitation agencies and local governments. This also means less emphasis on ‘big’ donor funding and more emphasis on a great range of means for cutting unit costs and generating cost recovery; also working with official (private or public) agencies in ways that recognize their limited capacities and keep down their costs. Combining government, community and household contributions.<sup>lxv</sup> In effect, supporting innovation and experimentation in many locations with inadequately served or unserved groups – where much of this is around innovation in regard to the partnerships between the different groups. From this can come a multiplicity of locally-driven innovations which learn from and support each other in each nation; not surprisingly, in the largest initiatives described in this paper, in India, Pakistan, Bangladesh and Thailand, there has been a large and constant flow of community organizers and local government and NGO staff visiting each other, learning from each other. This is what produces the ‘scale’ and the pro-poor ‘policy change’ that all donor agencies seek. Much of the ‘pro-poor’ policy change achieved in high-income nations over the last century or more was catalysed by local bottom-up innovations – which showed what was possible and set precedents from which others could learn and from which national policy could be developed – but this is often forgotten within contemporary debates about development.

It is also worth highlighting how in three of the initiatives described in this chapter, in India, Namibia and Thailand, federations or networks of ‘slum’, ‘shack’ and homeless groups had

central roles. Comparable federations are active in many other nations and also engaged in initiatives that provide or improve sanitation directly (for instance through developing toilet blocks similar to those developed in India) or indirectly (through upgrading programmes or programmes that develop new homes).<sup>lxvi</sup> These federations also follow similar methods to those described in this paper for India and Namibia – support their member grassroots organizations to develop initiatives and when these work well, use these as precedents from which other groups learn and through which to develop partnerships with local governments. These federations also learn from and support each other – for instance the women from *Mahila Milan* in India who developed the community toilets have advised many other national federations on how this was done. These federations also have their own umbrella organization, Shack Dwellers International, which helps link the different federations and supports the development of federations in new nations.<sup>lxvii</sup> All these federations are examples of the means by which those who lack good provision for sanitation (and much else too, including good provision for water, secure tenure ....) are developing local responses to this and offering local governments and other official sanitation providers partnerships to do this on a much larger scale. OPP has a slightly different methodology, as it trains and supports community organizers and local NGOs to work with groups of low-income households to provide good quality sanitation. In all these instances, improved sanitation is important but it is one among many goals – and is sought within a broader goal of changing the relationships between low-income groups and local governments.

One worry with this approach might be that it is institutionalising a model that absolves government of its responsibility and places a large burden on grassroots organizations that is also difficult to fulfil. Few community organization would want to manage their sewers or community toilets if they could get good value competent management from external agencies. Might supporting community-managed provision divert attention from a need to address systemic problems? It may mean that successful action is limited to those places with strong, representative community organizations – so it does not work well in many places. But the examples of community action for sanitation in this paper should not be seen as ‘poor people solving the problem themselves’ but a combination of two things: pragmatic responses to addressing their needs which they could influence (so what was done works better for them); and developing relationships (and where possible partnerships) with local government and other official agencies. The community-action was needed to demonstrate new models of provision that worked better for low-income groups – and also to set precedents that showed the need to change many official approaches and regulations including sanitation codes, building regulations, minimum plot sizes, contracting procedures..... And the development of relationships with official agencies. It is difficult to see sanitation working for low-income urban households without this active engagement – and this is a point that the quote from the World Bank made earlier in this paper misses. This is not neglecting ‘good governance’ but driving ‘better governance’ from the bottom up. The important issue is not so much ‘community-provision’ but urban poor groups who lack provision for sanitation influencing what is provided and getting accountability from the providers.

This community-driven approach is sometimes considered to be in opposition to the ‘rights based approach’ – but it is better conceived as the ‘rights-plus’ approach.<sup>lxviii</sup> Grassroots organizations do not get very far, demanding the fulfilment of their ‘rights to water and sanitation’ from weak, ineffective government agencies that are unable to meet their demands. But if these same grassroots organizations (usually supported by local NGOs) demonstrate how the state can work with them to ‘meet their needs’ in ways that are affordable and possible locally, it can dramatically change the possibility of these rights being fulfilled. So the kinds of interventions described in this chapter are not in conflict with pressures for greater equity and ‘good governance’; indeed, they should be seen as essential components of this, as the very groups

whose sanitation needs are not addressed gain more influence over what is done and stronger relationships with official providers.

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<sup>i</sup> See the WHO/UNICEF JMP site [http://www.wssinfo.org/en/35\\_san\\_dev.html](http://www.wssinfo.org/en/35_san_dev.html); see also WHO and UNICEF (2000), *Global Water Supply and Sanitation Assessment, 2000 Report*, World Health Organization, UNICEF and Water Supply and Sanitation Collaborative Council, 80 pages; UNICEF and WHO (2004), *Meeting the MDG Drinking Water and Sanitation Target: a Mid-Term Assessment of Progress*, WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, UNICEF and WHO, New York and Geneva, 34 pages.

<sup>ii</sup> Hardoy, Jorge E., Diana Mitlin and David Satterthwaite (2001), *Environmental Problems in an Urbanizing World: Finding Solutions for Cities in Africa, Asia and Latin America*, Earthscan Publications, London, 448 pages.

UN-Habitat (2003), *Water and Sanitation in the World's Cities*, Earthscan, London

<sup>iii</sup> Since 1990, there has been a small reduction in total numbers lacking 'improved sanitation' – from 2.66 billion in 1990 to 2.55 billion in 2002 – see the WHO/UNICEF JMP site [http://www.wssinfo.org/en/35\\_san\\_dev.html](http://www.wssinfo.org/en/35_san_dev.html)

<sup>iv</sup> UNICEF and WHO 2000, op. cit.

<sup>v</sup> UNICEF and WHO 2004, op. cit.

<sup>vi</sup> This does not include bucket latrines, public latrines or latrines with an open pit; see WHO/UNICEF 2000, op. cit.

<sup>vii</sup> UN-Habitat 2003, op. cit.

<sup>viii</sup> UNICEF and WHO 2000, op. cit; later statistics for 2002 suggested that 554 million urban dwellers lack improved provision in low- and middle income nations.

<sup>ix</sup> WHO (1999), "Creating healthy cities in the 21st Century", Chapter 6 in David Satterthwaite (editor), *The Earthscan Reader on Sustainable Cities*, Earthscan Publications, London, pages 137-172.

<sup>x</sup> World Bank (1993), *World Development Report 1993; Investing in Health*, Published for the World Bank by Oxford University Press, Oxford, 329 pages.

<sup>xi</sup> Hunt, Caroline (2006), *Sanitation and Human Development*, Background paper for the 2006 edition of the Human Development Report, 17 pages.

<sup>xii</sup> Heller, Léo (2006), *Access to water supply and sanitation in Brazil: historical and current reflections; future perspectives*, Background paper for the 2006 edition of the Human Development Report, 51 pages

<sup>xiii</sup> Heller 2006. op. cit.

<sup>xiv</sup> UN Habitat 2003, op. cit. Note that the latest WHO/UNICEF JMP statistics show a much lower proportion of the urban population in Kenya and Tanzania (and many other low-income nations) having 'improved sanitation' in 2002 than for its previous figures for 2000 ([http://www.wssinfo.org/en/35\\_san\\_dev.html](http://www.wssinfo.org/en/35_san_dev.html)).

<sup>xv</sup> UN Habitat (2006), *Meeting Development Goals in Small Urban Centres; Water and Sanitation in the World's Cities 2006*, Earthscan, London

<sup>xvi</sup> UN Habitat 2003, op. cit.

<sup>xvii</sup> Jenkins, Mimi and Steven Sugden (2006), *Rethinking Sanitation – Lessons and Innovation for Sustainability and Success in the New Millennium*, Background paper for the UNDP Human Development Report 2006, London School of Hygiene and Tropical Medicine, London, 36 pages.

<sup>xviii</sup> UNCED, 1992, paragraph 18.47

<sup>xix</sup> If "80 percent of all diseases" and "developing" are Googled, the result is ten pages of references, most of which refer to contaminated or polluted water, but several of which also refer to hygiene or sanitation, or refer to water-related diseases, which also include malaria.

<sup>xx</sup> Jenkins and Sugden 2006, op. cit.

<sup>xxi</sup> Menegat, Rualdo (2002), "Participatory democracy and sustainable development: integrated urban environmental management in Porto Alegre, Brazil", *Environment and Urbanization*, Vol. 14 No. 2, pages 181-206; Souza, Celina (2001), "Participatory budgeting in Brazilian cities: limits and possibilities in building democratic institutions", *Environment and Urbanization*, Vol 13, No 1, pages 159-184.

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<sup>xxii</sup> UN Habitat 2006, op. cit.

<sup>xxiii</sup> This draws on a case study of the Orangi Pilot Project-Research & Training Institute prepared for a Research Project of the Max Lock Centre, Westminster University, London, UK by Arif Hasan, April 2003; Hasan, Arif (1997), *Working with Government: The Story of the Orangi Pilot Project's Collaboration with State Agencies for Replicating its Low Cost Sanitation Programme*, City Press, Karachi, 269 pages; Rahman, Perween (2004), *Katchi Abadis of Karachi: A Survey of 334 Katchi Abadis*; OPP-RTI; Hasan, Arif (2006), "Orangi Pilot Project; the expansion of work beyond Orangi and the mapping of informal settlements and infrastructure", *Environment and Urbanization* Vol. 18, No. 2.

<sup>xxiv</sup> Burra, Sundar, Sheela Patel and Tom Kerr (2003), "Community-designed, built and managed toilet blocks in Indian cities", *Environment and Urbanization*, Vol. 15, No. 2, pages 11-32.

<sup>xxv</sup> Boonyabancha, Somsook (2005), "Baan Mankong; going to scale with 'slum' and squatter upgrading in Thailand", *Environment and Urbanization*, Vol. 17, No. 1, pages 21-46.

<sup>xxvi</sup> Melo, J. C. (2005), *The Experience of Condominial Water and Sewerage Systems in Brazil: Case Studies from Brasilia, Salvador and Parauapebas*, Water and Sanitation Program Latin America, Lima.

<sup>xxvii</sup> Sarmiento, V. (2001), *Low-cost Sanitation Improvements in Poor Communities: Conditions for Physical Sustainability* (PhD thesis), University of Leeds, Leeds.

<sup>xxviii</sup> Guimarães, A. S. P. (1986), *Redes de Esgotos Simplificadas*, Ministério do Desenvolvimento Urbano e do Meio Ambiente, Brasília.

<sup>xxix</sup> ABNT (1986), *Projeto de Redes Coletoras de Esgoto Sanitário*, Associação Brasileira de Normas Técnicas, Rio de Janeiro.

<sup>xxx</sup> Mara, Duncan (2005), *Water Supply and Sanitation Options for Small Towns and Large Villages in Developing Countries*, Background Paper for UN Habitat (2006), op. cit.

<sup>xxxi</sup> Mitlin, Diana and Anna Muller (2004), "Windhoek, Namibia: towards progressive urban land policies in Southern Africa", *International Development Planning Review*, Vol. 26, No. 2, pages 167-186.

<sup>xxxii</sup> Hanchett, Suzanne, Shireen Akhter and Mohidul Hoque Khan summarized by Stephen Mezulianik and Vicky Blagbrough (2003), "Water, sanitation and hygiene in Bangladesh slums; a summary of WaterAid's Bangladesh Urban Programme Evaluation", *Environment and Urbanization*, Vol. 15, No. 2, pages 43-56.

<sup>xxxiii</sup> UN Habitat 2003, op. cit.

<sup>xxxiv</sup> Some of the Mumbai community-toilets draw on World Bank funding which had originally been intended to improve sewage outfalls.

<sup>xxxv</sup> This is drawn from analyses of data from 78 recent censuses; see Satterthwaite, David (2006), *Outside the Large Cities: The demographic importance of small urban centres and large villages in Africa, Asia and Latin America*, IIED Working Paper, IIED, London.

<sup>xxxvi</sup> Kar, Kamal and Katherine Pasteur (2005), *Subsidy of Self-Respect? Community Led Total Sanitation. An Update on Recent Developments*, IDS Working Papers - 257, Institute of Development Studies, Brighton, 68 pages.

<sup>xxxvii</sup> Kar and Pasteur 2005, op. cit.

<sup>xxxviii</sup> Government of Bangladesh (2005), *National Sanitation Strategy*, Ministry of Local Government, Rural Development and Cooperatives, People's Republic of Bangladesh, Dhaka; Government of India (2004). *Guidelines on Central Rural Sanitation Programme: Total Sanitation Campaign*, Department of Drinking Water Supply, Government of India, Delhi

<sup>xxxix</sup> Yepez, Nay-Ruth, Julio Alegria, Herberth Pacheco de la Jara, Rocio Mellado and Steven Hunt (2006), *Peru SANBASUR Rural Sanitation Financing Mechanisms*, Background paper for the Human Development Report 2006.

<sup>xl</sup> Sistema Integrado de Saneamento Rural no Estado do Ceará

<sup>xli</sup> Heller 2006, op. cit. This drew on Prince, A.A (1999), *Análise de experiências relevantes e sustentáveis na elaboração, implementação e gestão de projetos e serviços de saneamento básico em localidades urbanas de pequeno porte em áreas rurais no Brasil. A experiência da Central de Associações Comunitárias para a Manutenção de Sistemas de Abastecimento de Água - Estado da Bahia*, SEPURB, Brasília, 56 pages and Sarmiento, Verônica de Barros Araújo (2001), *Low-cost sanitation improvements in poor communities: conditions for physical sustainability*. PhD Thesis: Civil Engineering Research Institute, School of Engineering, University of Leeds, July

<sup>xlii</sup> Colin, Jeremy (2002), *National Sanitation Programme in Mozambique*, Field Note 9, Water and Sanitation Programme African Region, World Bank, Nairobi

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- <sup>xliii</sup> Unless otherwise stated, details about the programme in Mozambique are drawn from Colin, Jeremy (2002), *National Sanitation Programme in Mozambique*, Field Note 9, Water and Sanitation Programme African Region, World Bank, Nairobi and Saywell, D. and C. Hunt (1999), *Sanitation Programmes Revisited*, WELL Study 161, Loughborough University; details about the programme in Zimbabwe from Robinson, Andy (2002), *The Zimbabwe Experience: Lessons from a Review of 15 Years of the Zimbabwe Integrated Rural water Supply and Sanitation Programme*, Water and Sanitation Programme African Region, World Bank, Nairobi and details about the programme in Lesotho from Pearson, Ian (2002), *National Sanitation Programme in Lesotho*, Field Note 5, Water and Sanitation Programme African Region, World Bank, Nairobi and Dondo, Stanslous Mike and Rebecca Scott (2006) *Rural Sanitation in Southern Africa*, Background paper for the UNDP Human Development Report 2006
- <sup>xliiv</sup> Evans, P., R. Pollard and D. Narayan-Parker (1990) *Rural Sanitation in Lesotho: From Pilot Project to National Programme*, UNDP/World Bank Water and Sanitation Program and PROWESS Discussion Paper 3; Dondo and Scott 2006, op. cit.
- <sup>xli v</sup> Jenkins and Sugden 2006, op. cit.
- <sup>xli vi</sup> Pearson 2002, op. cit.
- <sup>xli vii</sup> Blackett, Isabel C. (1994), *Low-Cost Urban Sanitation in Lesotho*. Water and Sanitation Discussion Paper 10, World Bank, Washington DC
- <sup>xli viii</sup> Robinson, Andy (2002), VIP Latrines in Zimbabwe, Field Note 4, Water and Sanitation Programme African Region, World Bank, Nairobi; Colin 2002, op. cit.
- <sup>xli x</sup> Dondo and Scott 2006, op. cit.
- <sup>1</sup> Heller 2006, op. cit.
- <sup>li</sup> Orangi Pilot Project (1995), NGO Profile: Orangi Pilot Project, *Environment and Urbanization*, Vol.7, No.2, October, pp. 227-236
- <sup>lii</sup> Mitlin, Diana and David Satterthwaite (2004), "The role of local and extra-local organizations", Chapter 11 in Diana Mitlin and David Satterthwaite (editors), *Empowering Squatter Citizen; Local Government, Civil Society and Urban Poverty Reduction*, Earthscan Publications, London, pages 278-306.
- <sup>liii</sup> See for instance Hasan, Arif (1999), *Understanding Karachi: Planning and Reform for the Future*, City Press, Karachi, 171 pages; also Kar and Pasteur 2005, op. cit.
- <sup>li v</sup> Heller 2006, op. cit.
- <sup>li v i</sup> World Bank (2003), *Making Services Work for Poor People; World Development Report 2004*, World Bank and Oxford University Press, Washington DC, page 1.
- <sup>li v ii</sup> Bolt, Eveline (2005). Personal Hygiene Behaviour. WELL Factsheet, Loughborough University <http://www.lboro.ac.uk/orgs/well/resources/fact-sheets/fact-sheets-htm/personal%20hygiene.htm>
- <sup>li v iii</sup> Mooijman, Ana Maria (2003). Evaluation of Hygiene Promotion. WELL Factsheet, Loughborough University <http://www.lboro.ac.uk/well/resources/fact-sheets/fact-sheets-htm/ehp.htm>
- <sup>li v iii i</sup> Jenkins and Sugden 2006, op. cit.
- <sup>li x</sup> Jenkins and Sugden, personal communication
- <sup>li x</sup> Jenkins and Sugden 2006, op. cit.
- <sup>li x i</sup> Satterthwaite, David (2005), "Meeting the MDGs in urban areas; the forgotten role of local organizations", *Journal of International Affairs*, Vol. 58, No. 2, pages 87-112.
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- <sup>li x iii</sup> Eyben, Rosalyn and Clare Ferguson (2004) "How Can Donors Become More Accountable to Poor People?", in Leslie Groves and Rachel Hinton (eds) *Inclusive Aid: changing power and relationships in international development*, Earthscan, London, p 171
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<sup>lxvi</sup> D'Cruz, Celine and David Satterthwaite (2005), *Building Homes, Changing Official Approaches: The work of Urban Poor Federations and their contributions to meeting the Millennium Development Goals in urban areas*, Poverty Reduction in Urban Areas Series, Working Paper 16, IIED, London, 80 pages

<sup>lxvii</sup> For more details, see [www.sdinet.org](http://www.sdinet.org)

<sup>lxviii</sup> See Mitlin and Satterthwaite 2004 and D'Cruz and Satterthwaite 2005, op. cit.