



SECURING SANITATION

The Compelling Case to Address the Crisis

A report commissioned by the Government of Norway as input to the Commission on Sustainable Development (CSD) and its 2004–2005 focus on water, sanitation and related issues.



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Note to the Reader

For the 13th meeting of the Commission on Sustainable Development (CSD-13) the Norwegian Government commissioned the Stockholm International Water Institute (SIWI) to produce the report entitled *Securing Sanitation: The Compelling Case to Address the Crisis*. Collaborating partner for the report has been the World Health Organization (WHO).

In making its case, the report focuses on the economic case for investing in sanitation and explores ways and means to accelerate progress. Even though this report does not specify what kind of sanitary solutions that should be chosen, there is a need to emphasise that environmentally sustainable solutions are a prerequisite, if sanitation should contribute to all the MDGs.

The author of the report was Ms. Barbara Evans, Independent Water and Sanitation Specialist. SIWI and the author are indebted to the special input provided by Mr. Håkan Tropp and Mr. Anders Berntell, SIWI; Mr. Jamie Bartram and Ms. Laurence Haller of WHO; and Mr. Hans Olav Ibrekk, Norad.

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This report is a synthesis of two papers previously prepared for CSD-12 on behalf of the Norwegian Government and the Millennium Project Task Force on Water and Sanitation, respectively: B. Evans (2004) *Whatever Happened to Sanitation? Practical Steps to Achieving a Core Development Goal*, and B. Evans, G. Hutton and L. Haller (2004) *Closing the Sanitation Gap – The Case for Better Public Funding of Sanitation and Hygiene*. The report also draws upon a companion report produced for CSD-13 entitled *Making Water a Part of Economic Development: The Economic Benefits of Improved Water Management and Services*.



Securing Sanitation – The Compelling Case to Address the Crisis¹

Preface

Early in the morning Vidya slips out of his shack on the banks of the Sabermati River and, carrying a precious lot of water, hurries down to the dry river bed. Weaving between the excrement and rubbish he finds an “open” space and, in company with hundreds of other men from his community, he defecates. It is a bit smelly and not very private but he is one of the lucky ones. For a start his walk is short and safe, and his destination at least has the advantage of a freshening breeze even at the height of summer. Others are far less fortunate. As day breaks across the world precious hours are being wasted as men, women and children search for that elusive safe and secluded spot. Women, walking furthest and often running the risk of attack, ridicule and shame, pass young boys and girls who will miss school today because there are no toilets. In the cities working women are gearing up for a day with no chance of a “toilet break” while men will have to find any available open space to the disgust of passing observers. All of them face repeated cases of diarrhoea, schistosomiasis, trachoma or other water-related diseases. This is what it means to have no access to “basic” sanitation.

Meanwhile, in capital cities and across Europe and America, the morning starts in a more leisurely fashion; for the men and women on the other side of the sanitation divide the biggest annoyance is likely to be that the toilet roll is finished, or the water jug empty.

How can it be that at the dawn of the 21st century this is still true? With all that we know surely it is possible to provide this most basic of services, at once conferring dignity, safety, improved health and better living conditions on the millions who currently live without it. Why is Vidya still defecating in the riverbed and what can be done to change this precarious situation?

Photo: David Dahmén



1. The Challenge

1.1 The Sanitation Gap

Official statistics suggest that somewhere in the order of 2.6 billion people do not have access to “improved” sanitation. Seventy-five per cent (1.98 billion) live in Asia, 18% (0.47 billion) in Africa, and 5% (0.13 billion) in Latin America and the Caribbean (see Box 1 and Box 2)². The numbers may be even higher and this lack of sanitation at the household is exacerbated when the availability of sanitation in schools is limited as well (see Box 3).

Box 1: How Do We Know How Big the Gap Is?

The WHO/UNICEF Joint Monitoring Program (JMP) was established at the end of the International Drinking Water Supply and Sanitation Decade in 1990. It is executed jointly by WHO and UNICEF with technical support through an advisory group which is made up of individuals, academic and UN agencies. Funding support is provided by the United Kingdom’s Department for International Development and the Swiss Agency for Development Cooperation. JMP monitors progress in access to safe water and improved sanitation using more than 350 nationally representative household surveys and censuses. A rigorous review process is in place to ensure that the data are as reliable and robust as possible.

Box 2:

What Counts Towards the Sanitation Target?

While the choice of the word “basic” in the target may seem like semantic nit-picking it is not. It explicitly recognises that access is access – to any means of safe excreta disposal, and that this, linked to improved hygiene behaviour (principally handwashing) will yield large benefits.

Despite this, for the purposes of monitoring, a more pragmatic approach is needed, in light of the limited resources and experience to monitor “access” to “basic” sanitation. For its year 2000 and 2004 reporting the JMP, therefore, used an agreed shared definition of “improved sanitation” to facilitate inter-regional and inter-temporal comparisons. This has resulted in a clear definition of technologies “count” (i.e. on types of toilets and excreta disposal systems to which households have access.) In the JMP “improved sanitation” refers to the following:

- Connection to a public sewer;
- Connection to septic system;
- Pour-flush latrine;
- Simple pit latrine;
- Ventilated improved pit latrine.

The 2000 JMP coverage estimates considered simple pit latrines as well as “traditional latrines” as some sort of “improved” facilities. The 2004 estimates referred to 2002, revised this concept based on the evidence that many simple pit latrines and traditional latrines are in fact unsanitary. Where there was evidence on the actual type of pit latrine or traditional latrine referred to in surveys, then the coverage estimates were revised taking into consideration such information. Where this information was not available the JMP considered only a half of these latrines to be sanitary. Shared (semi-public) and public toilets are not considered as improved as the hygienic conditions of this type of latrine are very likely to be poor. In addition, they do not stimulate use especially by women and children. In assembling global data from household surveys, the JMP is not reliant on public-sector information generated at national level by governments or water utilities. Use of a simplified definition of sanitation has been a pragmatic decision to enhance the quality and robustness of the data.

Box 3: What About Schools?

A 1995 survey in 14 countries found that many primary schools could not provide more than 1 latrine per 50 students, and that none of the surveyed countries had increased the number of school toilets by more than 8% since 1990. These findings confirm the general conclusions of the School Sanitation and Hygiene Education programme of UNICEF which finds that the “sanitary conditions of schools in rural and urban areas in developing countries are often appalling, creating health hazards... thus schools are not safe for children”³.

Over the past twenty years progress has been slow. Between 1990 and 2000 an estimated additional 1 billion people have gained access to “improved” sanitation, but it has been difficult to keep pace with population growth; in Sub Saharan Africa the percentage of the population with access is estimated to have increased slightly (from 32% in 1990 to 36% in 2002), in Oceania it declined steeply (albeit from initial high levels)⁴. By contrast in East Asia the percentage coverage almost doubled, and in South Central Asia it rose by three-quarters. Since the 1990s progress in sanitation has lagged efforts in water (see Box 4).

Box 4: The Trouble with Integration

“Water supply and sanitation” occasionally joined by “hygiene” are words that often appear together in speeches and pronouncements, and indeed this trio belongs together as a cornerstone of public health as well as social and economic well-being. Sanitation and hygiene, however, somehow tend to disappear during the planning, policy making, budgeting, and implementation phases, while the lion’s share of effort and resources are allocated to water supply. Globally estimated public investment in sanitation in the dec-

ade to 2000 stood at one quarter of the investment in water supply in the same period. Total government and ODA funding for sanitation during the decade was estimated at USD 3.148 billion compared with USD 12.564 billion for water supply. Expenditure on sanitation includes all sanitary investments including wastewater treatment facilities. Note, however, that these estimates are subject to much debate and, amongst other possible errors, fail to account for private investments made by households⁵.



WHO burden-of-disease analysis suggests that lack of access to safe water, sanitation and hygiene is the third most significant risk factor for poor health in developing countries; the first is low bodyweight which in many cases will be causally linked to lack of water supply and sanitation⁶. Approximately 1.6 million deaths per year are directly attributed to unsafe water supply, sanitation and hygiene⁷ and efforts

are under way to estimate the indirect disease burden through malnutrition. Diarrhoea is the most significant disease associated with unsafe water, sanitation or lack of hygiene and causes the deaths of 1.8 million people every year, 90% of which are children under five. Those without access to adequate sanitation are 1.6 times more likely to experience diarrhoeal disease (see Box 5).

Box 5: Impact of Water, Sanitation and Hygiene on Diarrhoeal Disease

According to the multi-country study conducted by Esrey (1996), a reduction of 37.5% in diarrhoeal diseases can be observed when providing access to improved sanitation facilities to unserved population. A recently published study from Fewtrell et al. (2005) estimated the following impacts:

- Improved water supply reduces diarrhoea morbidity by between 6% and 25%, if severe outcomes (such as cholera) are included.
- Improved sanitation reduces diarrhoea morbidity by 32% on average.
- Hygiene interventions including hygiene education and promotion of hand washing can lead to a reduction of diarrhoeal cases by up to 45%.
- Improvements in drinking-water quality through household water treatment, such as chlorination at point of use and adequate domestic storage, can lead to a reduction of diarrhoea episodes by between 35% and 39% (see Figure 6).

It is important to highlight that the impact of an intervention depends on the local conditions⁸.

In 1993 the South East Asia Regional Office of WHO convened a meeting of health specialists to review the evidence linking sanitation interventions with improved health. The meeting gave safe excreta disposal, especially by diseased people and children and more water for personal hygiene, especially handwashing and protecting water quality, in that order as the most influential factors on reducing morbidity and mortality of diarrhoeal disease. This finding confirmed a 1991 review of 144 studies linking sanitation and water supply with health, which clearly states that the “role [of water quality] in diarrhoeal disease control was less important than that of sanitation and hygiene”⁹.

A 1986 study emphasises the importance of sanitation specifically, as compared to stand-alone water supply interventions. Seventy-seven % of the studies which looked at sanitation alone, and 75% of those which considered sanitation and water supply, demonstrated positive health benefits, compared with 48% of those which considered water supply alone¹⁰. Furthermore, the health impacts of improved sanitation go beyond diarrhoea. The 1991 study identified six classes of disease where the positive health impacts of water supply, sanitation and hygiene have been demonstrated (Table 1).

	Expected reduction in morbidity and mortality from improved water supply and sanitation (%)					
	All studies			Methodologically more rigorous studies		
	N	Median	Range	N	Median	Range
Ascariasis	11	28	0–83	4	29	15–83
Diarrhoeal disease						
Morbidity	49	22	0–100	19	26	0–68
Mortality	3	65	43–79	–	–	–
Dracunculiasis	7	76	37–98	2	78	75–81
Hookworm infection	9	4	0–100	1	4	–
Schistosomiasis	4	73	59–87	3	77	59–87
Trachoma	13	50	0–91	7	27	0–79
Child Mortality	9	60	0–82	6	55	20–82

Table 1: Impacts of Improved water supply, sanitation and hygiene on morbidity and mortality for six common diseases: evidence from 144 studies¹¹

Globally, approximately 160 million people are infected with schistosomiasis and 133 million people suffer from high-intensity intestinal helminth infections (Ascariasis, Trichuriasis, Hookworm disease), often with severe consequences such as cognitive impairment, massive dysentery, or anaemia^{12,13}.

The numbers of deaths and incidence of illness caused by lack of adequate sanitation and poor

or inadequate water supply are comparable with other major disease groups. Globally diarrhoeal disease alone kills more people than Tuberculosis or Malaria. This burden falls most heavily on children. Four times as many children die because of diarrhoeal disease as die because of HIV/AIDs for example (see Figures 1 and 2 and Annex 1). In developing countries the overall disease burden of

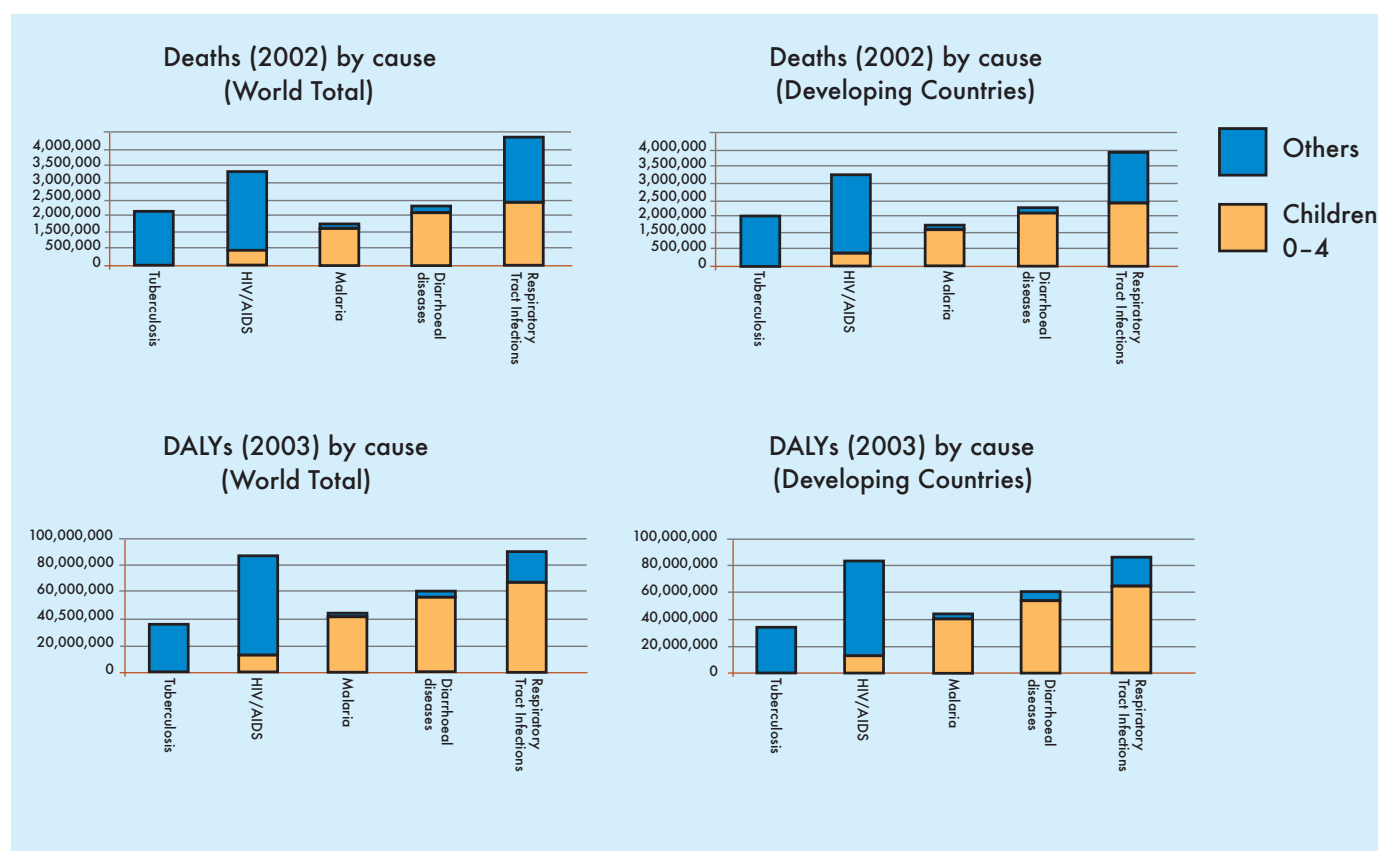


Figure 1: Leading causes of death and disability

Cause of Death (Children 0–4) Developing Countries 2002

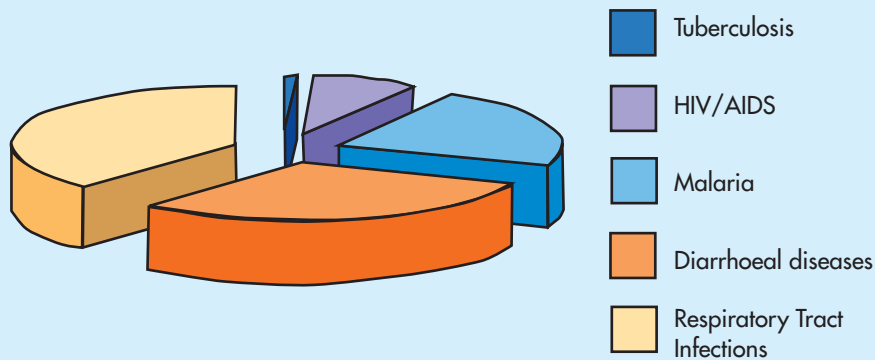


Figure 2: Leading causes of death in Children in developing countries

these two major diseases is comparable. Furthermore lack of adequate sanitation in the home constrains the quality of care which can be provided by families to victims of these other diseases.

Lack of sanitation also impacts on educational access and potential (see Box 6), and economic productivity (see Box 7).

Box 6: Sanitation and Education

School children in the age range of 5–14 are particularly prone to infections of round worm and whip worm and there is evidence that this, along with guinea worm and other water-related diseases, including diarrhoea, result in significant absences from school¹⁴. A second impact arises due to the impact of illness on learning ability. Helminth reduction programmes in schools can have a dramatic impact on

health and learning¹⁵. Improvements in educational attainment of girls are likely to further bring down infant mortality rates – the 1993 World Development Report estimated that maternal education was highly significant in reducing infant mortality and cites data for thirteen African countries between 1975 and 1985 which show that a 10% increase in female literacy rates reduced child mortality by 10%.



Box 7: Linking Sanitation and Growth

The WHO commission on macroeconomics and health links low initial infant mortality rates with strong subsequent economic growth. Table 2 shows growth rates in a selection of several dozen developing countries over the period 1965–1994, according to their initial income levels and rates of infant mortality. The table shows that for any given initial income interval, economic growth is higher in countries with lower initial infant mortality rates. Overall WHO estimates that a 10 year increase in average life expectancy at birth translates into a rise of 0.3–0.4% in economic growth per year¹⁶.

On the negative side of the equation inaction can be costly. Peru's 1991 cholera epidemic is estimated to have cost the national economy as much as USD 1 billion in health costs, tourism and production losses. The outbreaks of plague in India in 1994 meant a loss of two billion dollars due to import restrictions. On top of that was the loss from thousands of cancelled holidays and public health costs. Even more extreme impacts have been noted by the WHO Commission on Macroeconomics and Health which cited research showing a strong correlation between high infant mortality and subsequent state collapse.

Initial GDP, 1965 (PPP-adjusted 1990 USD)	Infant Mortality Rate			
	≤ 50	50 – ≤100	100 – ≤ 150	>150
≤ 750	–	3.7	1.0	0.1
750 – ≤1,500	–	3.4	1.1	–0.7
1,500 – ≤ 3,000	5.9	1.8	1.1	2.5
3000 – ≤ 6000	2.8	1.7	0.3	–
>6,000	1.9	–0.5	–	–

Table 2: Growth Rate of per capita Income 1965–1994 by income (GDP) and infant mortality rate, 1965

Lack of a toilet in the home means millions of people have to spend time walking to unhealthy and sometimes unsafe locations to defecate. Sanitation lies at the heart of poverty reduction and is thus a central

plank of all the MDGs, not just those directly referring to water and sanitation. In short, lack of access to sanitation and the means of good hygiene is an assault against human dignity.



Photo: Mats Lannerstad

1.2 The Targets

The over-riding or “governing” target for sanitation was agreed at the World Summit on Sustainable Development in Johannesburg; to halve the proportion of people without access to basic sanitation by 2015. Importantly the Johannesburg Plan of Implementation also calls for an improvement in sanitation in public institutions especially schools.

What does this target really mean? At the simplest level it means that at least 1.47 billion additional people need to gain access to basic sanitation before 2015¹⁷. Numerically the biggest challenge appears to be in Asia but many Asian countries will be on target if they maintain current rates of progress. Perhaps more worrying are regions where progress is slow – in Africa, for example, many countries which are extremely poor and/or experiencing civil strife face numerical targets which seem almost insurmountable (see Box 8).

For rural areas as a whole the target means doubling the rate of progress of the last decade. For urban areas, the longer the delay the harder it will be to rectify the situation – rapid unplanned urban growth can seriously hamper the ability of technicians to deliver workable sanitation infrastructure¹⁸.

Finally it is important to remember what this target does NOT mean. It does not mean that everyone will have access to services. If it is achieved, in 2015 there will still be 1.7 billion people living in the world without access to basic sanitation¹⁹.

Box 8: Difficult Choices

In the year 2002 it was estimated that India and China between them were home to more than 1.2 billion rural people without access to improved sanitation. Serving them alone would go a long way to meeting the target in rural areas. Furthermore in Asia some 370 million urban dwellers currently have no access to sanitation; serving them along with new populations moving to the cities and towns of the region would significantly improve global access in urban areas. However, India and China, and many of the smaller countries of Asia are home to the sort of economic growth and development which may enable them to make steady progress without high levels of external financial support, provided political will exists. By contrast many smaller countries and those in other regions (particularly Sub-Saharan Africa, Central America) are unlikely to be able to make this sort of progress unaided. These are areas where external assistance might be best deployed.



Photo: Mats Larmerstad

1.3 The Costs and Benefits

Estimates of the costs of reaching the 2015 target vary widely due to differences in approach as well as the weak information base from which all estimates must be made. Detailed analysis from WHO estimates the total annual cost of meeting the 2015 target for sanitation to be just over USD 9.5 billion or nearly USD 11.3 billion when water supply is included (see Box 9). If all current estimates were correct, this means that resources in the sanitation sector would have to almost quadruple to meet the 2015 target (although estimates of current spending are themselves probably low because they underestimate the contributions made by households to their own sanitation services). Adding full tertiary wastewater treatment for urban areas waste streams takes these numbers up towards a figure of USD 100 billion. This figure approximates the current annual level of all overseas development aid: diverting so much to sanitation alone is implausible. More cost-effective alternatives need to be explored as a matter of urgency if the sanitation target is to be met.



Box 9: Cost Estimates

WHO cost estimates have been updated for this report using the latest UN population projections for 2015²⁰. Table 3 shows the breakdown of costs by region.

World Region	Population (m.)	Sanitation MDG 2015		Water MDG Annual cost	World population receiving improved water and sanitation Annual cost
		Annual cost	People receiving improvement (millions)		
Sub-Saharan Africa	968	1.531	220	491	4.043
Latin America	624	617	75	171	1.577
East Mediterranean & North Africa	373	206	32	57	526
Central & Eastern Europe	460	198	27	60	515
South and SE Asia	2.162	3.692	592	403	8.189
West Pacific developing countries	1.673	3.056	490	566	7.243
Developed regions	923	222	32	36	516
All regions	7.183	9.521	1.468	1.784	22.609

Table 3: Total annual costs (investment and recurrent) of meeting sanitation MDG (USD million)

The costs of meeting the MDG were calculated by applying estimated annual cost per person covered with each type of intervention to the population that would need to receive improved sanitation in order to meet the MDG for 2015. The analysis was done at country level and aggregated to the regional level. Current coverage levels of improved sanitation facilities and UN population estimates for 2015 were used for each country. The costs included were investment costs per capita for each level of technology (provided by national governments) and recurrent costs (based on expert estimates and literature references for operation and maintenance, sewage disposal, and hygiene and sanitation education for each type of improved sanitation which includes sewer connection, small bore sewer, septic tank, pour flush, VIP, and simple pit latrine). Each technology was

given an estimated length of useful life in order to calculate equivalent annual cost.

Hutton (WHO) estimates that the total annual costs of serving the whole world's population with regulated water supply and a household connection to sewerage would be USD 136 billion. The most often quoted estimates to reach the MDGs are based on the work of John Briscoe at the World Bank. For the Camdessus panel, these estimates were collated together and the published figures suggest a total annual investment of USD 17 billion for sanitation and hygiene promotion, with a further USD 70 billion needed annually for municipal wastewater treatment. While the exact numbers vary one thing is clear; there is an urgent need to find ways to manage urban waste streams in ways which are more effective and cheaper than those commonly used today.

The choice of latrine technology is constrained by water and land availability and funding (Table 4). The choice of wastewater treatment options is also constrained by land and financing (Table 5).

Table 4: Household latrines: range of technology choiceTable 5 Wastewater treatment (off site): technology choice

Technologies per se are only meritorious when they are appropriately used. In general sanitation technologies need to be locally appropriate and based on what people want and are willing to use and maintain. Nonetheless professional and political pressures do sometimes resist the use of “alternative” or “low-cost” options. There is a body of evidence

The range of technologies used does, however, have an important impact on overall costs. Table 6 shows a range of technologies and a range of estimates of their costs which provide some guidance as to both the difficulty of developing meaningful global estimates of costs, and also the impact of making the right “appropriate” technology choices.

taken. These range from an annual cost of USD 3.1 billion (using the simplest possible approaches) to USD 80 billion (using the most expensive technologies including tertiary wastewater treatment (see Box 10)).

IMPROVEMENT	INITIAL INVESTMENT COST PER CAPITA (USD)					
	JMP estimates			Other estimates	Recurrent Costs	
	AFRICA	ASIA	LA&C		Level	Source
Sewer and WWT				450 ²²	v. high	User fees/ household
Sewer connection	120	154	160	150–260 ²³	High	User fees/ household
Small bore sewer	52	60	112	120 ²⁴	Medium	User fees/ household
Septic tank	115	104	160		High	Household
Pour-flush	91	50	60		med/low (lumpy)	Household
VIP	57	50	52		low (lumpy)	Household
Simple pit latrine	39	26	60		low (lumpy)	Household
Improved trad. Practice + Hygiene Promotion				10 ²⁵	low (USD 0.60 per an- num)	Household

Table 6: Sanitation Technology Cost Estimates (USD 2000)²¹

The wide range of cost estimates reflects the significance of making the best choices about ways and means of extending access to sanitation. A key consideration is the design-life of facilities. The benefit stream from investments will be cut short if they fail after a short time – because of inadequate initial investment, poor maintenance or even corruption. Making sure facilities are used properly and last is at least as important as getting them built in the first place. While this is a consideration that may get lost during debates about technology choice it should not be; getting the technology right can go a long way to ensuring that it lasts.

There are further problems with cost estimates. The WHO calculations are based on data provided by member states to the JMP – the unit rates are likely to be those attached to official (usually subsidised) sanitation programmes. These may be artificially high because: standardized designs are elaborate; a state monopoly has driven up costs; official rates are subject to “manipulation”; or they represent a level of service which is higher than it needs to be. WHO estimates of recurrent costs, on the other hand, appear to be reasonable.

By contrast the lower-bound UNEP estimate (annual costs of USD 3.1 billion) almost certainly underestimates the minimum rate of investment needed to meet targets. The accuracy of the UNEP estimate is hard to assess; it is likely to underestimate total costs because significant proportions of unserved populations will demand a higher level of service (in Latin America for example many urban populations will demand piped sewerage); it may overestimate costs because it uses the full cost of latrine and hygiene promotion rather than the incremental costs for populations already

having some degree of access. Nonetheless it does indicate that some progress could be made even if the level of investment remains steady at the levels reported through the nineties.

While the costs of investing in sanitation may seem huge, they are dwarfed by the potential economic benefits.

- 1.47 billion people (20% of world’s population in 2015) would benefit if the sanitation target was met, rising to 2.16 billion if water and sanitation are both addressed. 391 million cases of diarrhoea would be averted annually simply by meeting the sanitation target.
- Total economic benefits of reaching the sanitation target may be of the order of USD 65 billion annually. This rises above USD 260 billion annually if 100% access to improved water and sanitation could be achieved. The bulk of the economic value of these benefits is associated with time savings derived both directly (from time saved finding a safe place to defecate) and indirectly (from productive time which is not lost to illness).

From the perspective of the health sector alone reaching the water and sanitation target a cost-effective intervention. It is particularly cost-effective in regions where mortality from diarrhoeal disease is high (see Annex C)²⁶.

Not surprisingly the benefits of reaching the MDG accrue especially in the poorest regions of the world (see Figure 3). What is surprising is that the largest share of the total benefit arises from meeting the MDG targets in Sub-Saharan Africa²⁷.

The cost-benefit ratio of meeting the combined water and sanitation target is consistently high across all regions, not falling below USD 2.8 per USD 1 invested and rising considerably higher in some cases see Table 7²⁸.

While the cost and benefit numbers sometimes appear so large as to preclude rational decision making a look at two country-cases provides a more comprehensible sense of what investments in sanitation could achieve. In Tanzania for example an annual invest-

ment of USD 20.5 million would achieve the sanitation target, with potential economic benefits to the health sector alone of USD 15.4 million each year and more than 1.5 million diarrhoea cases averted every year. In Vietnam an annual investment of USD 96.7 million would avert more than 4 million cases of diarrhoea alone, and achieve potential savings in the health sector of over USD 66.7 million.

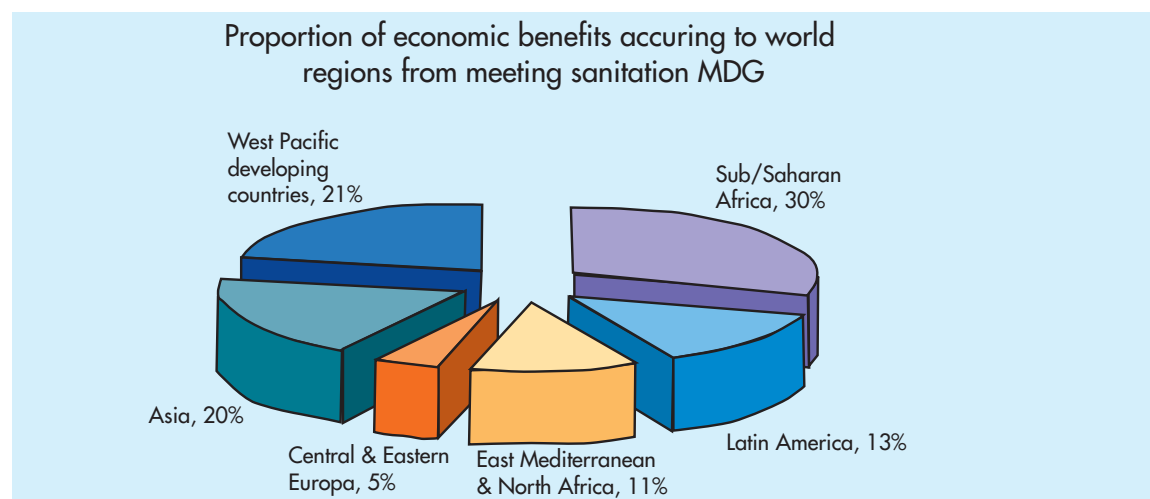


Figure 3: Proportion of economic benefits accruing to world regions from meeting the sanitation MDG target²⁹

World Region	Population (m.)	Cost-benefit ratio
Sub-Saharan Africa	968	8.7
Latin America	624	9.9
East Mediterranean & North Africa	373	23.2
Central & Eastern Europe	460	10.0
South and SE Asia	2.162	2.8
West Pacific developing countries	1.673	3.4
All regions	7.183	5.9

Table 7: Cost-benefit ratios of meeting combined water and sanitation MDG³⁰



Photo: SIMI

2. Ways and Means

2.1 So What Do We Know?

The numbers are extraordinary – sanitation matters and, if the calculations are correct, could have significant impacts on poverty. So what is going wrong? Why is sanitation proving such a hard development

nut to crack? To find the answer to this question it may first be necessary to look back at the birth of modern public health engineering.

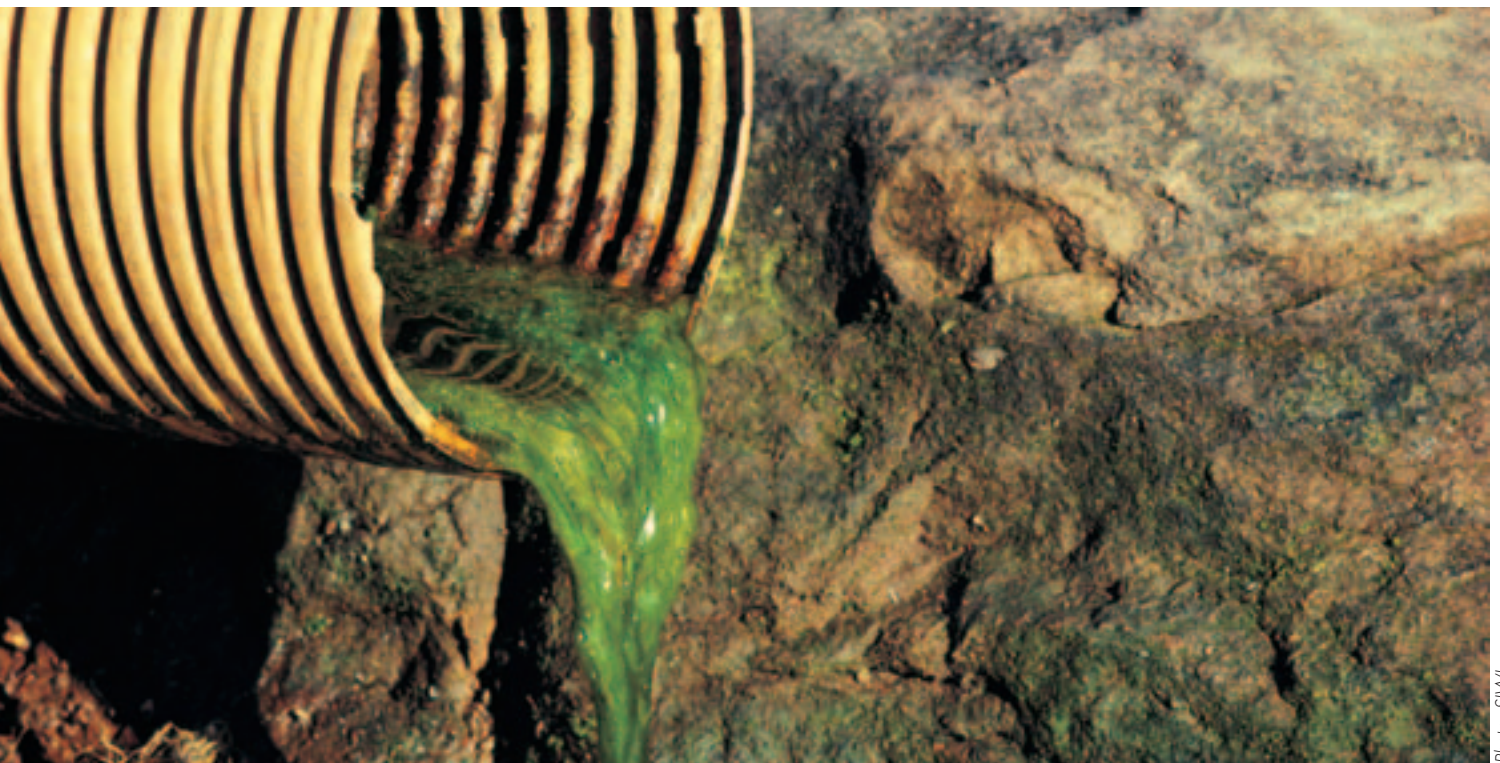


Photo: SIWI

2.2 Lessons and an Inheritance from the 19th Century

The importance of sanitation is well recognised in the industrialised nations where sanitary issues are overseen by government; services are delivered by a range of public and private bodies; professional regulators oversee environmental standards and keep a watching brief on prices, and funding is raised from public, commercial and household sources. Sanitary policy and its management are usually considered in combination with other public health issues, primarily water supply.

Yet this was not always the case; once upon a time the then newly industrialising nations witnessed the same sort of debates we now see on the international stage.

In common with today's experience in rapidly urbanising developing nations, the now industrialised countries also passed through a period of unplanned and unchecked urban growth. As industrialisation gathered

pace, poor rural families migrated to the cities to find work, forming a pool of cheap labour upon which the first industrial revolution was built. Wages were low, and investments in services even lower; this first phase of rapid urbanisation was accompanied by massive failures in public health and the growth of unplanned slums. Meanwhile the situation in many rural areas failed to improve. Middle class and wealthy households simply moved out from congested city centres or paid for better individual services, enabling them largely to insulate themselves from deteriorating health conditions. Far away from the slums, those in positions of power were able to largely ignore the plight of the poor; commonly problems of ill health and insanitary conditions could be attributed to the poor themselves, and their inherently "immoral" condition.

This situation was only reversed when sanitation became a popular political issue. This in turn happened in the UK for example only when Edwin Chadwick and others were able to show that preventing environmental degradation was “cheaper and more effective” to society than continuing to pay the price of failure, namely paying directly for poor relief and indirectly for the health costs imposed by the deteriorating sanitary situation in urban slums and poor rural communities³¹.

Even then it still took more than twenty years for a properly organized sanitation system to be established; in the meantime middle-class interests were active in trying to protect municipalities from both the responsibility and the financial burden of providing services to the workers living in the slums. Eventually, however, local authorities were persuaded to take on this responsibility and a massive programme of public borrowing ensued. Between 1880 and 1891 urban authorities in Britain borrowed more than UK£ 3.2 million for waterworks and UK£ 7.7 million for sewage works alone.

With technological advances and the influx of public funds, sanitation finally became a true “public good” with services extended to the entire population

in the late nineteenth century. Eventually the public provision of sanitation became “uncontroversial and just a part of every day life”³².

Today, the provision of safe (and unseen) means of sanitary excreta disposal is taken for granted in those countries that benefited from an early public investment such as that enjoyed in Victorian Britain. Public policy debate, and significant public funding, now generally centre on ever-higher standards of environmental protection while management approaches nearly always pull together two “utility” services (sewered sanitation and piped water supply). Today in the professional world of sanitary engineering, the issue is generally seen as one of environmental health and environmental protection, economies of scale in piped water-borne sanitation are taken for granted, and the early focus on (un-)hygienic behaviours within the household has faded from the collective memory even though the reality in so many countries remains quite different. At the political level it is easy to forget that universal access to sanitation was not always seen as the norm; and to underestimate how hard it is to change this “world” view.

2.3 Waiting for the 21st Century Miracle

Today’s calls for concerted action to improve access to sanitation seem resonant of those early sanitary campaigners in the Victorian era. While few disagree with the need to “do something” opinions vary about what exactly should be done. More money seems to be needed, but there is little clarity about what it is needed for. International pronouncements stress the need for “coordination” and “integration”, calls are made for links with Integrated Water Resource Management, better re-use and recycling of wastes, concerns have been expressed about “equity” and the need to pay special attention to women and children³³. Meanwhile, many countries are facing the reality that sanitation service delivery is embedded institutionally within national, regional or municipal water supply agencies (an inheritance of the European models which developed over a century ago).

There are powerful interests at play – professional experience and prestige, access to funds, ability to influence investment decisions. Further the economic circumstances of most countries with low sanitation coverage are not comparable with those in Victorian Britain. Most countries are not in the throes of an industrial or commercial revolution; few can envisage public borrowing on the scale that was possible 140 years ago in Europe and America. More money is

clearly needed but little is available. What is really needed is to find ways to spend what public funds are available more effectively at the point of access and to recognise the important role to be played by households themselves in investing in sanitation and hygiene behaviour change. Only then are more people going to be able to get to and use a safe means of excreta disposal.

Sanitation is at heart of all the MDGs and we need action now. But before we can take that action we need to:

- think again about what we mean by sanitation;
- think again about how to do it right; and
- think again about how we are going to find the money.

This is in line with WHO’s key principles of doing the right things, in the right places, in the right way³⁴.

Fundamentally we have to stop assuming that the situation is comparable to that experienced in countries where universal coverage is the norm or even to that experienced in Victorian Britain where municipalities had access to funds that enabled them to establish a networked service available almost universally, and to finance (or ignore) the costs of cleaning up the mess afterwards. We need a new idea of sanitation.



Photo: WaterAid

2.4 Thinking Creatively About What “Sanitation” Means

The first challenge for countries seeking to solve the problem of access to sanitation is first defining what “sanitation” really means. The second challenge is to decide what aspects are the most important; in other words, what aspect of the problem is going to be dealt with as a priority. This problem is not a simple one and many professionals confuse the two steps. With respect to defining sanitation, most professionals would agree that “sanitation” as a whole is a “big idea” which covers *inter alia*:

- safe collection, storage, treatment and disposal/ re-use/ recycling of human excreta (faeces and urine);
- management/ re-use/ recycling of solid wastes (trash or rubbish);
- drainage and disposal/ re-use/ recycling of household wastewater (often referred to as sullage or grey water);
- drainage of stormwater;
- treatment and disposal/ re-use/ recycling of sewage effluents;
- collection and management of industrial waste products; and
- management of hazardous wastes (including hospital wastes, and chemical/ radioactive and other dangerous substances).

All these sanitation “challenges” also arise in a range of situations – urban/ rural/ small towns, in planned and unplanned settlements, and in different types of communities.

Focusing on the “whole sanitation challenge” can of course seem very daunting, and there is no doubt that in many cases, the enormity of the problem results in stasis. What is often forgotten is that the whole problem does not have to be solved at once. In many cases, more progress can be made by focusing on a few solvable problems, and dealing with the most important sanitation challenges first, before turning to the management of the overall sanitation situation, which may have to be deferred to a later date. Looking back historically, this was the experience in many countries which now enjoy universal access. This is not to say that the approaches of 100 years ago should be followed blindly – we know a lot more now about the environment for example which should enable us to come up with solutions which do less damage in the long run than some “conventional approaches”. Nonetheless, while it may be useful to plan for a holistic solution, practicality and resources may dictate that a phased or stepped approach must be taken to implementation.

Working out what is important: For countries with very low access to basic sanitation increasing the effectiveness of management of excreta at the household level may have the biggest health implications and it may be the biggest challenge. For this reason some countries may legitimately decide to focus their efforts at this level in the short term. In other cases specific interlinkages between elements of sanitation mean that a more complete solution may be better – for example in a particularly congested urban community some form of off-site (sewered) sanitation may be the only viable technical choice – in which case there will probably need to be some interventions to improve management of solid wastes and stormwater drainage – otherwise the sewers won't work. Yet other countries or communities may try for a more complete solution which includes a focus on protecting the environment from contamination (as is

the case in countries which already have universal access). In some cases it will be possible to start with an "ecological" approach to sanitation which seeks to contain, treat and reuse excreta where possible – thus minimizing contamination and making optimum use of resources.

The key issue here is that each community, region or country needs to work out what is the most sensible and cost effective way of thinking about sanitation in the short and long term and then act accordingly. Flexibility and pragmatism should be the key words – and both professionals and politicians need to try and see past "experience" and ideas which are developed elsewhere – a pragmatic local approach with an eye to wider environmental issues is likely to result in more progress than blind adherence to a rigid global definition.

2.5 Getting Household Excreta Management Right

For the moment, we will concentrate on what is known about management of excreta at the household level because for many countries this remains the largest single challenge and no real progress can be made unless access starts to increase. Some of the lessons that have been learned about how to increase effective use of sanitation are outlined briefly below. Readers are directed to additional sources for lengthier discussions of these issues.

- Hardware alone is not sufficient: The health gains of universal access to basic sanitation only accrue if people (a) use the available sanitary facilities properly and (b) practice some key hygienic behaviours. This means that hygiene promotion and social marketing are always needed in tandem with hardware provision³⁵;
- Household decision making is crucial: because behaviour change is central to achieving health gains from sanitation it follows that service providers need to focus primarily at this level. Not only does this mean that hygiene promotion is central to any sanitation strategy, it also means that hardware should be appropriate. In simple terms it is no good selling – or even giving – people a toilet which they don't want and are not keen to use³⁶;
- Change in the entire community is imperative: while household behaviour is critical, individual households alone may not be able to influence health outcomes. For the majority of poor households in poor rural settings or overcrowded urban settlements, the actions of the community as a whole matter even more. Excreta needs to be removed from the environment in which children play and adults labour. For this reason, interventions at household level need to be coordinated across the community as a whole;
- The public nature of sanitation remains important but public and private benefits need to be in balance: There remain public good aspects of sanitation (primarily environmental protection and public health) and while many commentators may call for a "scaling down" of all public provision, it is not feasible to expect households or local communities to take responsibility for wider societal concerns. Thus government has to find pragmatic ways of balancing local/household needs with wider societal ones. Linking household service provision with community level planning (either through "voluntary" type community processes, commonly used in rural areas, or through the due process of local government, more commonly applicable in urban areas) can be vital in creating local mechanisms which can achieve this balance³⁷.

3. The Right Fit:

Are Our Institutions Up to the job?

Excreta management is arguably the most challenging aspect of sanitation for governments precisely because change revolves around household level decisions and community action – behaviour and investments³⁸. Supporting this change is the role of local and national governments and the international community. For countries with very low access this means that public funds should be used in ways which maximise the impact on household behaviours and decisions and community actions. The problem is that most countries don't have institutions that do this very well. It is much more common to find organisations which mirror those arrangements commonly found in countries with very high or universal access to sanitation. Far from focusing on the household,

these institutions have evolved to maximise the efficiency of operating utility services, with a focus on managing the public good elements of sanitation (protection of the environment and management of environmental health at the societal level). Most of the organisations in industrialised nations no longer have much to do with households at all; hygienic household behaviours are entrenched, and the facilities that make them possible (reliable, abundant piped water and hygienic toilets in the house) are nearly universally available.

So a key question for countries where access to sanitation remains very low is how to devise new institutional arrangements which do achieve the needed focus on the household.



Photo: Ffida Lanshammar

The 2003 World Water Development Report notes that in “conventional” service delivery arrangements, the same agency is often responsible for both service delivery and oversight while the “citizen/ consumer” is a passive recipient rather than an active participant. The report notes that service delivery has tended to be very much “supply-driven” and centralised (suited to a “public-good” approach to sanitation and assuming that economies of scale could be achieved). Sanitation and water supply have often been delivered in tandem irrespective of relative levels of demand for each service. Over time, however, the faults in this approach have become more apparent and many communities who have remained unserved or whose “public” facilities have collapsed over time, have turned to self-provision or provision through unregulated third-party providers, small-scale independent business, or staff of the government agency operating in a private capacity. Recent research in India indicates as many as 8% of rural households across the country had invested their own money and used small private providers to construct latrines which is significant when compared with progress made through the national sanitation programme³⁹. Research in Africa confirms that the role of the small scale private sector in sanitation provision is significant⁴⁰ and these findings are backed up from anecdotal evidence of a high degree of self-provision in East Asia. JMP confirms this finding; between 1990 and 2000 the additional people served with sanitation was much larger than could have been expected as a result of the reported investment.

New approaches need to increase the focus on and influence of the citizen/consumer. For sanitation this probably means recognising the important role played by small scale service providers, and households themselves in provision, and also the potential for a wide range of additional actors to engage with households and communities at the local level. Even greater gains could arise if sanitation can be brought within a wider process of development at the local level⁴¹. This would have two broad advantages: firstly in increasing the ability of local governments and communities to have a real influence on investment decisions; and secondly in reducing the costs of local government support by utilizing a common set of human resources to support collective community and household action on a range of developmental issues.

The implications of this may be quite fundamental in many countries.

- Firstly it suggests breaking the automatic link between delivery of water supply and sanitation,

and creating much stronger linkages with other services which engage with households and communities in a more direct and continuous manner (such as health, education, agricultural extension, rural development etc.). The role of local government and community in service provision may have to grow at the expense of centralised service delivery agencies⁴²;

- Secondly it suggests a change in attitudes to sanitation – with a greater focus on sanitation as a business that functions at the level of the household. Public funds could leverage access more effectively where they are directed towards hygiene promotion and sanitation marketing along with other “ancillary” services (micro finance for example) and to supporting an emerging market of smaller service providers who can respond to changing demand at the household level⁴³; and
- Thirdly it suggests a redirecting of direct public investments away from household facilities towards explicit “public good” elements of the system (waste water treatment and networks in urban areas for example)⁴⁴.

Many newer water supply programmes in developing countries seek to replace centralised service delivery agencies with a range of service providers, offering a wider range of support services. In sanitation progress has sometimes been slower, and there are a number of legitimate technical reasons for this including a weak understanding of how governments can most effectively support and promote demand for sanitation and changed hygiene behaviours.

However, political resistance may be a more significant factor. One hundred and forty years ago middle class Victorian Britains failed to grasp the pressing need to increase access to basic sanitation for everyone; fearing that public expenditure on such services would be wasted and worse, would divert scarce public resources from other “more important” needs. Today the same concerns exist, but in addition countries now have to overcome the institutional barriers of restructuring organisations which are currently geared up to deliver the wrong sorts of services. The costs of doing this may be too high for many politicians.

In sum it seems likely that increased access to sanitation is bound up with an increased ability on the part of the citizen/consumer to influence wider developmental outcomes. Despite a raft of international resolutions, the real political implications of getting sanitation right may still not be fully understood.

4. The Implications for Scaling up Sanitation – a New Role for Government

Given the arguments above we can now ask the question – can existing institutions deliver increased access to sanitation hardware and widespread behaviour change at scale?

Clearly there is no single “right approach” to sanitation, but most of the success stories focus on supporting the household and community to make changes and make use of a wide range of partner organisations, suggesting that public-sector actions can be most effective when they are geared up for:

- Stimulating demand for sanitation;
- Promoting behaviour change;

- Supporting new providers of services;
- Building capacity of providers and consumers;
- Funding “public” elements of sanitation; including importantly school sanitation, sanitation in health centres and community centres, and elements of trunk systems and environmental infrastructure; and finally
- Regulating, for public policy reasons,
 - management of the environment,
 - hospital waste,
 - hazardous waste,
 - industrial waste
 - costs and pricing; and
 - cost effectiveness.

Where sanitation is confined within an old-fashioned “utility” organisation it may be difficult to reach households effectively. New skills may be needed; these may be drawn from existing utility service providers, other government agencies (health/ education/ agricultural extension), small scale commercial ventures, civil society groups, NGOs, and community based organisations. At the same time government has to get better at playing its key roles as facilitator and regulator, finding ways to foster and promote innovation while holding service providers accountable and affording the right degree of protection to the environment.

For many countries with low levels of access public funding and institutional arrangements for sanitation are not geared up in this way. While the calls for action on sanitation seem to be getting louder (and arguably more complex), there may not be enough recognition that radical change is needed at the ground level, and there is not enough support for countries seeking to make such changes.

To make the needed shift in progress, many countries need:

- institutional transformation;
- increased focus on household behaviours and community action;
- increased attention to raising demand;
- increased range of technologies and approaches;
- improved effectiveness of public expenditure on sanitation and hygiene promotion; and
- more money spent more effectively.

But to do this they need support, money and new ideas.



Photo: SMM



5. Overcoming the Barriers

5.1 Institutional Transformation

Institutional transformation is difficult because it may entail a radical change in the way things are done. It has implications for organisations and individuals, it may lead to a change in the way people are trained, what jobs they do and where they work. It may also result in a shift in power – with different organisations, professions or individuals having more or less influence over what is done, and over how money and resources are deployed.

The key issue is how to get the right skills and mix of staff working at the right locations. For some this may mean getting more people involved, in other situations it may also mean cutting back on certain staffing arrangements (for example, where small scale service providers can build latrines more effectively, centralised latrine-construction agencies may need to be scaled back).

To be effective the system of sanitation service delivery needs:

- presence at the local level (a relationship with households and communities);
- skills to work with communities and households;
- experience and willingness to work with local civil society and/or private sector partners; and
- an ability to innovate and adapt solutions.

The range of possible solutions is wide and needs to be thought through creatively – think about it this way – it may be more important for Ministry of Health outreach workers to know about sanitary disposal of excreta and promote it within the context of hygiene behaviour change than to try and teach water supply engineers how to do hygiene promotion.

Human resources can be found in a wide variety of locations including:⁴⁵

- government agencies: including water and sanitation agencies, health departments, education departments, environmental agencies, rural development teams, urban planning departments, local government. Human resources may be available at all levels of government from the national down to the local level;
- civil society: households themselves, NGOs (working in water supply, sanitation, social development, health, education etc.), community based groups, self-help groups, local/community government, micro-finance organisations etc.; and
- private sector – small scale private providers, soap companies, building contractors, advertising agencies, media etc.

Given this range of human resources the challenge is to find ways to use them most effectively to make progress.

5.2 Focus on Household Behaviours and Community Action

In general existing water supply and sanitation organisations are not very good at thinking about or engaging with communities and households. Organisational shifts and new partnerships may enable people with the right skills to have an incentive to promote sanitation and hygiene behaviour changes at the local level while those with technical skills provide support through;

- Responding to demand for sanitation created at the local/ household level and supporting the development of new technologies and

approaches (i.e. as service providers or in research);

- Supporting the provision of “public good” elements of sanitation such as public latrines, trunk infrastructure, pit emptying services, and environmental infrastructure (i.e. in the private sector or in research institutions); and
- Providing regulatory oversight on environmental and public health issues (i.e. in the public sector).



5.3 Increased Attention on Creating Demand for Sanitation

One of the most frequently cited reasons for the failure of sanitation programmes is the low level of expressed demand. This is often assessed within the context of an integrated water supply and sanitation project – the well-documented health benefits of improved water supply and sanitation have led many donor-supported and national programmes to tie delivery of these two services closely together. This can, however, be problematic because of the differing nature of demand for the two services. In situations where both water supply and sanitation services are scarce or of poor quality, demand for improved access to water will almost always outstrip demand for sanitation. The benefits of the former are immediate, primarily private and accrue to the household irrespective of whether other households gain increased access. The benefits

of sanitation, by contrast, are generally less immediate or obvious to the household (the connection between improved hygiene and health is often poorly understood), have a significant public element (improved health of the population as a whole is significant) and may not be fully secured by an individual household unless other households also act – a factor over which any individual household may have little influence. Demand for sanitation may, however, change over time, as access to water supply improves, and as an appreciation of the wide range of benefits from sanitation grows⁴⁶.

As well as access to water supply other factors which may influence demand for sanitation include⁴⁷:

- **Awareness:** knowing that the goods/services exist and that they have benefits. For example,

knowing that latrines exist and can be used to store excreta and knowing that a latrine can improve the health of children and have a positive impact on household income;

- **Priority:** deciding that the service is sufficiently important to merit needed investment. For example, deciding to build a latrine rather than construct an additional room in the house or invest in a bicycle. Priority may be influenced by access to other services or a range of other factors such as status or social conventions. Priority may also vary between members of the households – and it is important to target demand creation and assessment activities appropriately (for example building a latrine requires a decision by the member of the household responsible for major capital investments in the home and that person should be a key target of a latrine marketing campaign);
- **Access:** having access to a service provider who will market and provide the specific service. For example having a local mason who knows what types of latrines can be built, help decide what is the most appropriate type and build it; and
- **Influence:** being able to take effective individual action, or being in a position to participate in effective collective action. For example, having space to build an on-plot latrine, or being in a location where it is possible to participate in a condominial sewerage scheme.

Public funds can be legitimately used to improve marketing and hygiene promotion because these are areas that have significant public-good elements and which do not lend themselves to any form of commercial service delivery. One important area is clearly to keep up the pressure on development of good approaches to hygiene promotion. Other areas include development of new sanitation marketing approaches, supporting mass media and advertising as part of an overall marketing campaign, and improving the business and marketing skills of small scale service providers.

Marketing sanitation and promoting behaviour change are key areas where most countries have few skills, few incentives, and limited capacity. This is a priority area in the reshaping of public sanitation programmes.

Importantly countries need to use people and organisations who have an incentive to respond and who may be able to use their experience to develop new approaches. A first step is to look at who is providing latrines, soap and other hygiene-related goods and services and use them as part of the solution.

Photo: Mats Lannerstad



5.4 Increased Range of Technologies and Choices

For many countries and regions, technical innovation is constrained by a series of limitations imposed through policies, planning regulations, technical norms and standards, and conventions. Technical conventions are usually developed for good reasons and may embody the technological “state-of-the-art”. This does not prevent them from constraining innovation and preventing progress being made against access targets. The problem for sanitation is that many of these norms have been imported from elsewhere without due attention being paid to the local situation. Furthermore, written norms tend to describe a “best case” approach – an idealized solution which theoretically provides for a uniformly high level of services. This may be inappropriate if it is prohibitively costly or irrelevant (typical problems include a very high specification for levels of service, absence of appropriate standards for congested urban areas and rural districts and lack of flexibility).

Changing these norms and standards can, however, be challenging. Entrenched resistance may arise from technocrats who have a stake in preserving the status quo and whose training is rooted in accepted norms and standards. Organisations may also resist change as they may not be geared up to deliver innovation and improved approaches were standards to be modified.

However, we know that this is an important issue. It is clear that the world cannot afford water-borne sewerage sanitation for all, and that this approach would not work for many of the communities and households that currently lack access. Even some of the best known “appropriate” technologies cannot appropriately be used in every situation (it is rarely “appropriate” for example to build a ventilated improved pit latrine in a dense urban settlement). We also know that money is in short supply; well-written norms and standards can facilitate the appropriate use of least-cost and effective solutions to sanitation problems. The key probably lies in supporting local innovation based on a good understanding of what has been tried elsewhere and focusing on outcomes not inputs (i.e. does a latrine keep faeces away from humans?).

This is one area where the international community can clearly provide needed support – through development and research, through support to indigenous research and development, both in the private and public sectors; and through establishing modern normative guidance. The key role of international standards-setting has long been recognised through the work of WHO on drinking water quality standards and in other areas for example.

5.5 Improving the Effectiveness of Subsidies in Sanitation and Hygiene Promotion

Increased access to sanitation and improved hygienic behaviours have a significant positive public health impact; public subsidies are therefore justified. Traditionally, many subsidy programmes have focused solely on latrine construction – with public funds made available to households either before or after completion of a latrine. Many of these subsidy programmes appear to be pro-poor, and therefore usually attract strong political support. However, there is growing evidence that they may not be the most effective vehicle to increase access to sanitation and may also be subject to corruption and malpractice. Subsidy programmes which focus solely on construction of latrines may fail because:

- they are not self-sustaining – the level of funding required to finance needed increases in access

cannot be maintained at the prices set by the subsidy regime;

- they fail to raise demand – either because cost is not the primary constraint faced by the household, or because demand is so low that households fail to access the subsidy;
- they fail to reach the poorest people because the “household contribution” for a “standard” latrine is too expensive;
- they distort the market when overdesigned “standard” latrines keep prices at an artificially high level, pricing households and suppliers out of the market and preventing innovation; or
- they distort demand when poorly constructed subsidised latrines fail to attract households.



Subsidies need to be designed to achieve whatever public policy objective has been agreed upon. Thus in countries where increased access is deemed to be the priority subsidies should be designed accordingly. Where environmental protection is rated more highly, more funds can be diverted for this purpose.

Where subsidies for latrines are being considered the following general principles may be helpful⁴⁸:

- in the public interest use subsidies to maximise health benefits and increase access specifically to groups who are persistently excluded;
- subsidise the lowest possible level of service to maximise spread and avoid distortions to the market. Leave room for households to make incremental improvements over time;
- base subsidies on solid and rigorous information about what types of service people want and are willing-to-pay for, what is the affordability for the target group, and what can be scaled up in the long term.

However, there is also a strong argument for viewing subsidies in a holistic manner – looking at the full range of services and support needed to increase access, and distributing public funds accordingly. A clear understanding of the current situ-

ation – what people want and are willing to pay for, and the reasons why households are failing to adopt hygienic practices or construct latrines, can provide insights into the most effective ways of supporting increased access. In general governments may end up deciding to:

- commission and pay for formative research to identify what motivates behaviour change;
- pay for national programme of hygiene promotion;
- pay for a elements of a national programme designed to stimulate demand for sanitation through mass media, social marketing etc.;
- support the development of a supply-side market of small scale independent service providers;
- promote and finance technical innovation;
- finance school sanitation and sanitation in health and community centres; and
- pay construction costs only for elements of the system whose public benefit is greater than the private benefit (trunk infrastructure, shared facilities, household facilities for the minority of households whose demand would otherwise not be high enough to construct hygienic means of excreta disposal, environmental infrastructure, etc.)⁴⁹.

5.6 More Money, Better Value for Money

There is no doubt that, even if investments can become very much more effective, there is still need to increase resources to this important development sector, if progress is to be made towards the MDG targets. The majority of funding comes ultimately from a single source; the household. Households contribute

- Directly – through investments in latrines, soap, home improvements etc. and by paying local levies for sanitation services; and
- Indirectly – through paying taxes which pay for public services and repayment of debt.

Beyond the household there are a limited range of sources of funding including:

- central government;
- regional/ local/ urban government;
- external support agencies (donors);
- the large scale private sector;
- shared community resources; and
- the small scale private sector.

However any private sector investment will ultimately be repaid from one of the other sources (government, community or household) while the majority of donor funds will also have to be repaid from government sources and the burden ultimately falls back on the household.

Currently the bulk of the investment is probably coming from government, donors and households

themselves although exact figures are hard to estimate because household investments are rarely counted and most public investment in sanitation is bundled together with general investments in water supply and sanitation.

Attracting additional funds into the sector is difficult because no-one knows much about how to do sanitation well at scale; donors fear funds will be wasted, the private sector is unwilling to invest because demand is not clear and institutional constraints may make investments risky and household demand is often too low to precipitate investments.

What we do know is that good policies and institutions will attract more funds. For many this means that there needs to be an overhaul of the system to attract more money. This may sound like an insurmountable challenge but in many cases it is not – in many countries it may simply be a case of getting people who are already out in the field to work more effectively on sanitation marketing and hygiene promotion; to influence the quality of investments made at household level. Furthermore, a thorough review of the effectiveness of existing national or local programmes may conclude that money currently used to finance construction of latrines for example, may be more effectively used elsewhere. Substituting appropriate levels of household investment for public investment may free up additional funds.



Photo: David Dahmén



6. Monitoring and Evaluation – Better Numbers

While the profile of sanitation is rising slowly, it is difficult for governments and civil society to know how best to respond. While some of the resistance to making progress lies in entrenched interests (i.e. from resistance to change and corruption in technical agencies, and political interests) part of the problem lies in the lack of reliable information about what is happening and what could be done to improve access effectively. While some resources can be justified to improve global evidence, monitoring and evaluation, perhaps a more important area is in building capacity of local and national entities to generate and make use of data at the local level.

6.1 Monitoring

The WHO/UNICEF JMP is constrained by limited resources and does not generate significant data of its own, but it collates and reviews a large data base of household survey data. This is a vast improvement on earlier global reporting which relied on information provided by their Member States (who are not disinterested parties and may not place a high prior-

ity on providing reliable data). However, more could be done to strengthen the collection and use of data at the local and national level and in sharpening the information available globally.

Globally for example it would be useful to know more about:

- how much money is currently being spent, where it is being spent and by whom. Current classification systems make tracking hard. Governments and donors would gain much if they could establish how much money is really being invested in sanitation (as distinct from water supply) and within the field of sanitation if it were possible to track the various mechanisms for delivering public subsidies. At the very least it would be useful to know the relative levels of public investment in:
 - o large-scale and public infrastructure (an easily justifiable public subsidy),
 - o small-scale local infrastructure and household services (which may or may not be a justified targeted subsidy to increase access) and



- o hygiene promotion, sanitation marketing and support to small scale providers (where there is a strong case for a public subsidy).

The current convention of bundling water supply and sanitation together, and further bundling “public” sanitation infrastructure with household level investments make it hard to assess how effectively public funds are being directed to address the MDG access target.

- household expenditure. While many sector specialists agree that households are investing heavily in sanitation more information is needed about the circumstances under which this occurs, and the best means of providing financial support so that the poorest households can also participate. At the local level technical agencies often discount this investment and well-designed support for participatory research could also improve local understanding of how household really invest and seek to solve their own sanitation problems. In addition it would be useful to know more about investments made by small scale independent providers – the provision of services outside the public sector may be an important mechanism for increasing choice and reach, and improving the link between what is on offer and what households want and are willing to pay for. More information is needed to help government find the best ways to support providers in this emerging market.
- access and hygiene behaviours. The current data does not tell us what people really have access to. As time passes, having a real feel for access will matter more and more, if the MDGs are not to matter less and less. Current approaches – which currently often focus at the local level on counting all the latrines ever built, will simply create an impression of progress without showing us what is happening on the ground. But assessing access is extremely hard and needs to cover inter alia:
 - o numbers of latrines (public and private) built, including the full range of latrine types, complemented with an assessment

of how many remain in use and in good repair;

- o levels of access, degree of proper use and identification of “pockets of exclusion” within the household, the community or nationally ;
- o prevalence and robustness of key hygienic practices; and
- o proxy indicators of outcomes (health, economic, educational impact) data.

Here there is a strong case for incorporating monitoring of sanitation and hygiene into established processes of social monitoring (household surveys and so on) as a priority.

6.2 Evaluation

This type of ongoing monitoring needs to be supported by periodic evaluations of:

- effectiveness of subsidies and public expenditure (penetration, sustainability);
- effectiveness of hygiene promotion;
- effectiveness of sanitation marketing; and
- empirical confirmation of theoretical benefits

External support agencies have an important role to play, providing both funds and institutional support for independent evaluations of public sanitation programmes.

6.3 Capacity Building for M & E

Having said all of this it would be easy to roll out the inevitable call for “capacity building”. But in the case of sanitation it is perhaps more important to think first about building political capacity to face up to a problem which is often not talked about, and rarely acted upon. In the arena of monitoring and evaluation local and national actors will need support if they are to re-evaluate the situation and establish a meaningful benchmark from which we can measure progress towards the MDGs. Skills training is needed of course, and it will be necessary to find ways of helping technicians, health professionals, social development specialists to work together. But first we need to establish how bad things really are, and take some collective responsibility for it⁵⁰. Better monitoring of progress will follow once the commitment to making that progress is secured.

7. What Next?

Raising the Political Profile of Sanitation and Hygiene

Raising the profile of sanitation and hygiene is difficult principally because it is a topic subject to wide ranging cultural taboos. In industrialised nations and amongst those in positions of power, this plays out as a reluctance to discuss the looming, ever present sanitary crisis (no-one wants to read about toilets in their morning paper). Lacking the facts, many people have assumed other development issues dwarf the sanitation crisis – there is a lack of public awareness and support for sanitation as a core development concern.

There are, however, lessons to be learned from the experience with HIV/AIDS, another subject riven with cultural taboo, which has nonetheless succeeded in gaining the spotlight and mobilizing general support across cultures. The problem with this comparison is that HIV/AIDS is something which has touched people in rich and poor countries and across households irrespective of wealth or influence. It has also been able to mobilize support around some key actions with clear cut goals and objectives (the development of ever-improved drugs for example and the success of national campaigns which have brought the disease under a degree of control in some middle-income and wealthier countries).

Nonetheless some lessons can and have been learned. The importance of a single coherent call for action cannot be played down – and indeed the impact of a coordinated campaign of awareness raising has already been felt with sanitation being added to the MDGs in Johannesburg. Much of the credit for this achievement can be laid at the door of the Water Supply and Sanitation Collaborative Council whose advocacy campaign: “Water, Sanitation and Hygiene for All (WASH)” has had impact at international level. This

has been achieved largely because the Water Supply and Sanitation Collaborative Council, formed as it is from a coalition of many key sector players, has been able to coordinate and use all their efforts to speak to a few selected simple messages which have all served to reinforce each other. The campaign has also highlighted the importance of information – and there are still many key information gaps which could usefully be filled to help analyse the most appropriate ways to increase access to sanitation.

At national level too, there is a need for coherence of action, and information. More efforts are needed to establish what is really happening in sanitation – a number of useful tools can be used to enable policy makers and professionals to start a dialogue with communities and households about how to better address their needs. Simply studying what people are doing, and exploring how they have changed their hygiene habits over time can open the way to such a debate⁵¹. Finally of course, the lesson of the WASH campaign can be replicated at local level – if more people can be drawn into the process of promoting sanitation, both the strength and the coherence of the message will grow until it is undeniable. This is a process which requires support and may take time. As we saw at the beginning, sanitation has many facets and difficult decisions may need to be taken about how to best deploy public funds over time to achieve the overall objective. Such decisions can best be made in the context of open and fair discussions with all sector actors, based on a good understanding of what is currently happening, and by involving households and communities in an evaluation of their own needs.

8. A Final Word

The sanitation crisis is just that – a crisis. It is as shocking as AIDS, as debilitating as Malaria, and as solvable as Polio. Simply meeting the sanitation target by 2015 could avert 391 million cases of diarrhoea a year (and with them the loss of years of schooling, and years of productive and social life). Overall, meeting the target could garner an economic gain in the order of USD 65 billion every year. And if we

get it right all this could come at the price of just over USD 9.5 billion each year – it is a large number, but it is dwarfed by the potential gains which could result, and we already know that significant elements of this could be mobilized in households and within communities who are desperate to improve their appalling living conditions.



Photo: David Dahmén

Annex A – Disease Burden Data Tables

Table A1 and Table A2 show the deaths and total morbidity attributable to some of the major disease groups.

	World		Developed countries		Developing countries (high mortality)		Developing countries (low mortality)	
	Total	Children (0–4)	Total	Children (0–4)	Total	Children (0–4)	Total	Children (0–4)
Tuberculosis	1,604,819	40,548	80,813	192	977,714	36,044	545,287	4,289
HIV/AIDS	2,821,472	370,841	56,860	543	2,610,716	363,149	151,651	7,041
Malaria	1,222,180	1,098,999	151	44	1,196,085	1,076,074	25,093	22,232
Diarrhoeal diseases	1,767,326	1,578,583	20,187	12,114	1,509,541	1,360,321	236,483	205,355
Respiratory infections	3,844,724	1,919,083	454,004	35,464	2,749,685	1,692,473	636,668	189,974
	World		Developed countries		Developing countries (high mortality)		Developing countries (low mortality)	
	Total	Children (0–4)	Total	Children (0–4)	Total	Children (0–4)	Total	Children (0–4)
Lower respiratory infections	3,765,624	1,890,284	445,718	32,841	2,709,579	1,677,957	606,015	178,334
Upper respiratory infections	75,497	28,259	7,991	2,588	37,660	14,121	29,800	11,529
Otitis media	3,603	540	295	35	2,446	394	853	110

Table A1 : Deaths by age and cause (2002)

Source: World Health Report 2003

	World		Developed		Developing (high mortality)		Developing (low mortality)	
	Total	Children (0–4)	Total	Children (0–4)	Total	Children (0–4)	Total	Children (0–4)
Tuberculosis	35,361,041	1,484,288	1,705,998	7,904	23,552,560	1,313,151	10,079,835	162,330
HIV/AIDS	86,072,449	12,669,214	2,081,536	18,875	78,955,133	12,403,703	4,974,370	242,948
Diarrhoeal diseases	61,095,069	55,204,697	852,874	543,308	50,194,080	47,194,529	10,007,757	7,435,931
Malaria	44,715,596	40,491,492	19,949	3,526	43,553,813	39,668,459	1,113,096	795,592
Respiratory infections	90,251,887	67,634,673	3,513,538	1,249,943	74,566,653	59,031,525	12,095,819	7,309,230
Lower respiratory infections	87,022,413	66,395,618	3,187,983	1,137,114	72,849,645	58,392,859	10,913,254	6,822,953
Upper respiratory infections	1,794,995	972,703	178,845	87,930	964,015	490,703	650,627	393,351
Otitis media	1,434,479	266,352	146,710	24,898	752,993	147,963	531,939	92,926

Table A2: DALYs by age and cause (2003)

Source: World Health Report 2003

Annex B – Benefits Data Tables

Total benefits across all regions for meeting the sanitation MDG are shown in Table B1 and the benefits breakdown is shown in Table B2 and Figure B1.

World Region	Pop'n (m.)	Current annual diarrhoea cases (millio)	Meeting sanitation MDG (annual figures, in millions)				
			Diarrhoea cases averted	Hours gained per year due to closer access	Productive days gained (15+ age group) due to less illness	Nr of school days gained (5–14 age group)	Baby days gained due to less illness (0–4 age group)
Sub-Saharan Africa	968	1239	115	38616	304	66	257
Latin America	624	552	25	9306	114	21	41
East Mediter-ranean & North Africa	373	286	9	4156	30	5	21
Central & Eastern Eu-rope	460	130	3	3818	17	1	7
South and SE Asia	2,162	1795	135	28445	587	61	287
West Pacific developing countries	1,673	1317	102	39929	1239	39	90
Developed regions	923	69	2	2253	15	0	3
All regions	7,183	5388	391	126523	2306	194	707

Table B1: Total annual benefits of meeting sanitation MDG in natural units

Source: Hutton – calculations updated for this paper

World Region	Population (m.)	Meeting sanitation MDG (annual figures, in USD million)				Cost-benefit ratio*
		Health sector treatment costs avoided	Patient health seeking costs avoided	Annual value of time gain	Total benefits*	
Sub-Saharan Africa	968	1.130	72	12.873	16.183	8.9
Latin America	624	514	16	5.695	7.325	10.0
East Mediterranean & North Africa	373	148	6	5.157	5.865	23.5
Central & Eastern Europe	460	60	2	2.381	2.508	10.6
South and SE Asia	2.162	1.378	84	8.112	11.104	2.5
West Pacific developing countries	1.673	1.645	64	8.905	11.619	3.1
All regions	7.183	4.955	244	51.525	63.269	5.5

Table B2: Some economic benefits of meeting sanitation MDG, and cost-benefit ratios

Source: Hutton – calculations updated for this paper.

Note*: Total benefits Includes time savings due to closer sanitation facilities, productive and educational time gain due to less ill from diarrhoea, and health sector and patient savings due to less treatment for diarrhoeal disease. Time savings per person per day from closer access to sanitation services was assumed to be 30 minutes. Days off work and school were assumed to be 2 and 3 days per case of diarrhoea, respectively, which were valued at the minimum wage for each country. A baby was assumed to be ill from a case of diarrhoea for 5 days, at a value of 50% of the minimum wage to take into account the opportunity cost of the carer. The economic benefits of reduced mortality were not included in the calculations of total economic benefit.

It is important to note that health sector costs are not actual costs saved, as the calculation includes health sector infrastructure and staff time, which are not saved in a real sense when a diarrhoeal case does not show up. This figure reflects the opportunity cost: in settings where services are used to 100% capacity, if someone does not show up with diarrhoea, then someone else with another disease can be treated

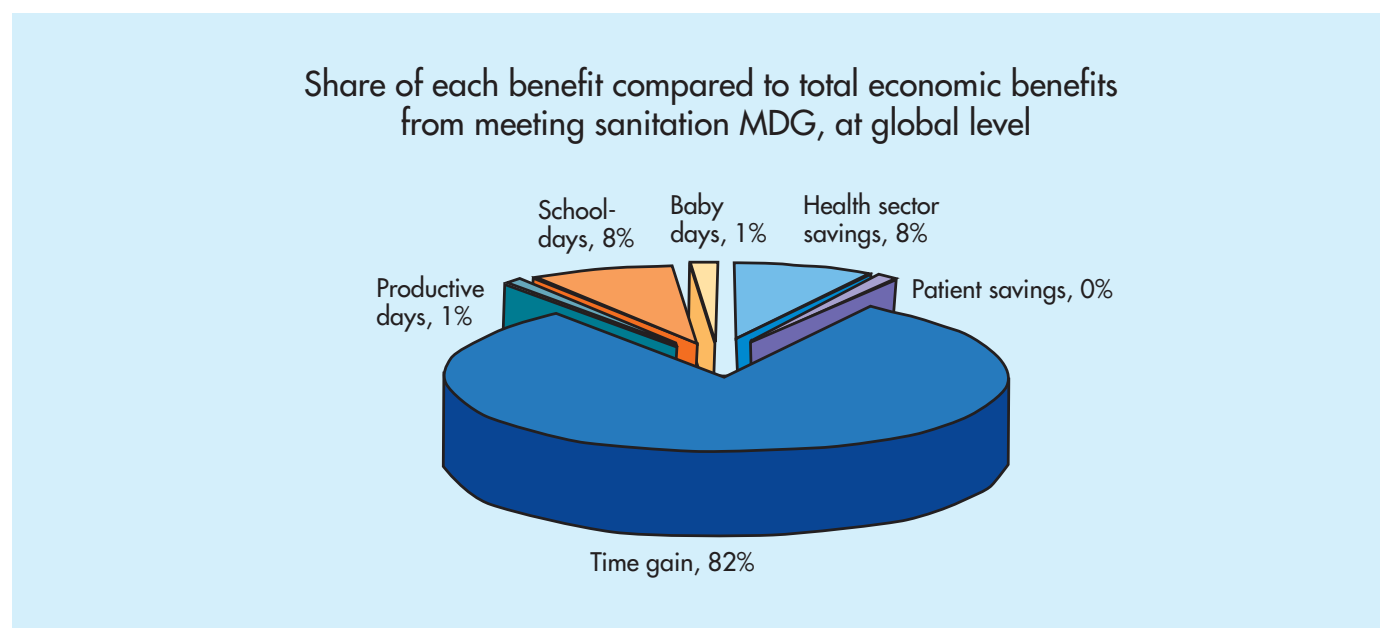


Figure B1 Distribution of Global Benefits

Source: Hutton – estimates updated for this paper

Notes: Where households fail to anticipate the full economic value of such time savings investments in sanitation may be undervalued at the household level. This is another reason why household subsidies for sanitation improvements can be justified, provided that they are used to effectively increase household access. Valuing time saved is a controversial field – however sensitivity analyses carried out by Hutton suggest that the benefits are large in comparison to costs, even where conservative assumptions are made about the value of time.



Photo: David Dahmén

Annex C: Cost-Effectiveness Ratios by Region

For each WHO sub-region, a set of potential interventions for improving access to safe water supply and sanitation service levels was assessed. Different proportions of population in each WHO sub-region were moved to lower exposure categories. All the intervention scenarios were compared to the situation in 2000, where coverage in water supply and sanitation services reported in the Global Water Supply and Sanitation Assessment 2000 Report (WHO / UNICEF, 2000), would be sustained.

Health benefits are presented in terms healthy years gained (or DALYs averted) by the whole population due to less cases

of diarrhoeal diseases. Costs consist of all resources required to put in place and maintain the interventions, including investment costs (planning, construction, house alterations...) and recurrent costs (operation, maintenance, monitoring and regulation...). Cost-effectiveness ratios are presented for each intervention in terms of USD per healthy year gained or DALY averted. Summary Cost Effectiveness Ratios (CER) data is shown on Table C1.

	AFRO D	AFRO E	AMRO D	SEARO B	SEARO D	WPRO B
Halve pop without access to improved WS	338.8	498.3	954.9	3,362.0	427.4	2,611.1
Halve pop without access to improved WS&S	686.0	822.5	1,898.4	5,654.0	1,117.0	5,618.6
Disinfection at point of use to pop currently w/o improved WS	23.5	26.0	94.3	156.8	25.7	156.8
	AFRO D	AFRO E	AMRO D	SEARO B	SEARO D	WPRO B
Universal access (98%) to improved water supply and improved sanitation (Low technologies)	648.5	718.9	1,886.6	5,251.2	1,116.1	5,618.5
Universal access (98%) to improved water supply and improved sanitation plus disinfection at point of use	283.8	332.7	736.6	1,484.1	471.4	2,552.2
Universal access (98%) to piped water supply and sewer connection (High technologies)	852.9	943.6	1,693.7	7,765.0	1,121.7	4,693.2

Table C1: Average CER by WHO Region (USD per DALY averted)

Source: Haller op.cit

Notes:

AFRO	D	Algeria, Angola, Benin, Burkina Faso, Cameroon, Cape Verde, Chad, Comoros, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Madagascar, Mali, Mauritania, Mauritius, Niger, Nigeria, Sao Tome And Principe, Senegal, Seychelles, Sierra Leone, Togo
AFRO	E	Botswana, Burundi, Central African Republic, Congo, Côte d'Ivoire, Democratic Republic Of The Congo, Eritrea, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, Swaziland, Uganda, United Republic of Tanzania, Zambia, Zimbabwe
AMRO	D	Bolivia, Ecuador, Guatemala, Haiti, Nicaragua, Peru
SEARO	B	Indonesia, Sri Lanka, Thailand
SEARO	D	Bangladesh, Bhutan, Democratic People's Republic Of Korea, India, Maldives, Myanmar, Nepal
WPRO	B	Cambodia, China, Lao People's Democratic Republic, Malaysia, Mongolia, Philippines, Republic Of Korea, Viet Nam

Annex D: Country Cost-Benefit Calculations

Table D1 details two country calculations

Variable	United Republic of Tanzania	Vietnam
Population coverage and impact figures		
Population 2015 (m)	49.3	94.4
Sanitation coverage in year 2000	90%	47%
Population not covered with sanitation services in 2015 at current sanitation coverage	4,930,000	50,032,000
Predicted diarrhoea cases averted from increasing sanitation coverage to meet the MDG	1'523'105	4'140'161
Costs		
Total annual cost from 2000 to 2015 to increase sanitation coverage to meet the MDG (USD) *	20'504'753	96'676'336
Benefits		
Health sector cost avoided (USD) **	15,389,056	66,754,137
Patient costs avoided (USD)	948,894	2,579,320
Total time gain per year (million hours) ***	2,049	3,781
Total work days saved (age 15+ years) ****	399,226	1,629,973
Total school days saved (age 5–14 years) ****	879,101	1,750,934
Total ill baby days saved (age 0–4 years)	3,401,973	9,499,770

Table D1: Estimate of costs and benefits – Tanzania and Vietnam

Source: Hutton – estimates updated for this paper

Notes:

* Based on investment costs per capita for different interventions to improve sanitation (taken from Global W&S Assessment Report 2000), and estimating associated operation and maintenance costs.

** Based on an average health sector cost per diarrhoea case averted of USD 10.10 in Africa, and USD 16.12 in Asia.

*** Based on an average time saving per person per day of 30 minutes due to more convenient sanitation service access

**** Based on an average 2 days off for working adults and 3 days off school for children

Once again it is important to note that health sector savings are calculated by multiplying the average cost of treating a case by the total cases averted. These are estimates because a) average costs are not saved, but only the marginal cost would be, i.e. the antibiotic or the ORS, and (b) the savings depend on treatment seeking behaviour. If only 20% of cases actually consult the health system, the actual savings would be a fraction of the stated values.



Photo: Mats Lannerstad

Notes

1. This paper has been prepared by Barbara Evans and Laurence Haller at the request of the Government of Norway. It is a synthesis of two papers previously prepared for CSD-12.
- a) *Whatever Happened to Sanitation? – Practical Steps to Achieving a Core Development Goal* (March 2004) prepared by Barbara Evans on behalf of the Millennium Project: Task Force on Water and Sanitation. Funding was provided by the Government of Norway.
- b) *Closing the Sanitation Gap – the case for better public funding of sanitation and hygiene* (February 2004) prepared by Barbara Evans, Independent Consultant, Guy Hutton of the Swiss Tropical Institute, and Laurence Haller, Associate Professional Officer, Water Sanitation and Health Program, World Health Organisation, commissioned by the Right Honourable Simon Upton, chair of the OECD Round Table on Sustainable Development, as part of the preparation for CSD-12, and financed by the Millennium Project; Task Force on Water and Sanitation. Significant contributions to the original papers were made by Marcia Brewster, Meera Mehta and Andreas Knapp. Detailed comments have been provided by Jamie Bartram and José Hübner at WHO.
2. WHO/UNICEF (2004) *Meeting the MDG Drinking Water and Sanitation Target – A Mid-term Assessment of Progress*. Other data for this report references WHO/UNICEF (2000) *Global Water and Sanitation Assessment 2000 Report*. The latest estimates are available at the Joint UNICEF/WHO Monitoring Program (JMP) website at <http://www.wssinfo.org/en/welcome.html>
3. UNICEF (1997) *Progress of Nations p13 and Burgers, L. (2003) Background and Rationale for School Sanitation and Hygiene Education* UNICEF SSHE website at <http://www2.irc.nl/sshe/>
4. JMP – revised estimate 2001
5. WHO/UNICEF *ibid.* (2000)
6. WHO (2002) *World Health Report It is estimated that 4% (60.7 million Disability-Adjusted Life Years) of the global burden of disease are attributable to lack of access to safe water and sanitation.*
7. This figure corresponds to 88% of diarrhoeal diseases worldwide which is considered to be the attributable fraction of diarrhoea due to unsafe water supply, sanitation and hygiene, and the following diseases: trachoma, schistosomiasis, ascariasis, trichuriasis and hookworm disease.
8. Fewtrell L, Kaufmann RB, Kay D, Enanoria W, Haller L, Colford JM Jr. (2005). *Water, sanitation, and hygiene interventions to reduce diarrhoea in less developed countries: a systematic review and meta-analysis.* *Lancet Infectious Diseases* 5(1):42–52.
9. Esrey, S.A., J.B. Potash, L. Roberts and C. Schiff (1991) *Effects of improved water supply and sanitation on ascariasis, diarrhoea, dracunculiasis, hookworm infection, schistosomiasis and trachoma in Bulletin of the World Health Organisation*, 69(5): 609–621
10. Esrey, S.A. and J.-P. Habicht (1986) *Epidemiological evidence for health benefits from improved water and sanitation in developing countries in Epidemiological Reviews*, 8:117–128
11. Esrey, Potash et al. *ibid*
12. WHO (2003) *Looking back, looking ahead: five decades of challenges and achievements in environmental sanitation and health*
13. Additionally a number of significant diseases are related to inadequate water resource management (including poor drainage) including malaria and Japanese encephalitis. These 2 diseases account for 3% of the global burden of disease (45.4 million DALYs). The proportion of these diseases that could be prevented by better water management is still unclear.
14. WHO (1997) *Strengthening interventions to reduce helminth infections : an entry point for the development of health-promoting schools*
15. Nokes C, Grantham-McGregor S.M., Sawyer A.W., Cooper E.S., Bundy D.A. (1992) *Parasitic helminth infection and cognitive function in school children Proc R Soc Lond B Biol Sci.* 1992 Feb 22;247(1319): pp77–81; Nokes, C. and Bundy, D.A. (1993) *Compliance and absenteeism in school children: implications for helminth control Royal Society of Tropical Medicine and Hygiene*, 1993 Mar–Apr 87(2): 148–52, Wellcome Trust Research Centre for Parasitic Infections, Department of Biology, Imperial College, London, UK
16. WHO (2001) *Macroeconomics and Health: Investing in Health for Economic Development Report of the Commission on Macroeconomics and Health*
17. Hutton et al. (2004) *ibid.*
18. The scale of the challenge is probably masked in urban areas, by errors in estimation of poverty, coverage and the fact that slum dwellers and those who live on the margins of cities and towns are sometime excluded from longitudinal surveys because they have no “legal” existence.
19. WHO data updated for this report. WHO projections suggest that without a change in the status quo, there will be over 2 billion people without access by 2015.
20. Hutton, Guy et al. *op.cit*
21. Adapted from UNEP/GPA *Financing Domestic Wastewater Collection and Treatment in Relation to the WSSD Target on water and sanitation*
22. This and all “JMP” estimates adapted from WHO/UNICEF (2000) *ibid.* Unless stated, figures are based on the average construction cost of sanitation facilities for Africa, Asia and Latin America & the Caribbean for the period 1990–2000 and include a small charge to account for inflation and currency fluctuations. These data were provided by member states as part of the JMP data collection exercise.
23. PricewaterhouseCoopers (March 2001) *A World Financial Issue*. The figure is based on a per-head cost of USD20/year multiplied by 13 years to reflect the timescale required for meeting the MDGs.
24. Suez/Ondeo (March 2002) *Bridging the Water Divide*. The figure is based on a one-off connection cost for households in poor neighbourhoods in the Aguas Argentinas concession area and assumes the bartering of local labour in exchange for connection to a network. However, no data is given for the number of persons per household.
25. *From Sustainable Local Solutions, Popular Participation and Hygiene Education* (Richard Jolly) writing in *Institute of Public Policy Research* (February 2003) *Clean Water, Safe Sanitation: An Agenda for the Kyoto World Water Forum and Beyond*. The figure is based on the Vision 21 estimate of average external costs per person for sanitation and hygiene promotion.
26. Haller L, Hutton G., Bartram J. (2004) *Estimating the costs and health benefits of water and sanitation improvements at global level* WHO Geneva
27. While the absolute numbers of people affected is higher in Asia, the higher total benefits in Africa arise because of the higher estimated economic value of time in the region.
28. These cost-benefit ratios are very similar to the CBRs to meet only the sanitation MDG, due to the fact that the numbers of people to be served with sanitation are so large and the costs are relatively high.
29. Hutton – calculations updated for this paper
30. Hutton – calculations updated for this paper
31. Flinn, M.W. (ed) (1965) *Report on the Sanitary Conditions of the Labouring Population of Great Britain* by Edwin Chadwick (first published in 1842) Edinburgh University Press and see also Chaplin, S.E (1999) *Cities, Sewers and Poverty: India's Politics of Sanitation Environment and urbanisation* vol 11 No 1, April 1999.
32. Chaplin, S. E. (*op.cit.*)
33. Agenda 21, *The Program for implementation of Agenda 21 and the Johannesburg Plan of Implementation* all contain a number of references and commitments to sanitation. Sanitation was also touched upon in CSD-6.
34. Statement from Dr LEE Jong-Wook, Director-General, World Health Organization, 21 July 2003
35. *Environmental Health Project (2003) The Hygiene Improvement Framework: a Comprehensive Approach for Preventing Childhood Diarrhoea* Arlington VA
36. *Water Supply and Sanitation Collaborative Council (2000) Vision 21 – A Shared Vision for Hygiene, Sanitation and Water Supply and a Framework for Action* Geneva
37. See for example Wright, A.M. (1997) *Toward a Strategic Sanitation Approach: Improving the Sustainability of Urban Sanitation in Developing Countries UNDP-World Bank Water and Sanitation Program*
38. This is particularly true in the absence of public funds for universal operational piped water-borne sewerage since the bulk of hardware costs are likely to be carried at the level of the household.
39. Kolsky, P., E Bauman, R Bhatia, J. Chilton, C. van Wijk (2000) *Learning from Experience: Evaluation of UNICEF's Water and Environmental Sanitation Programme in India 1966–1998* Swedish International Development Cooperation Agency, Stockholm
40. Collignon, B. and M. Vezina (2000) *Independent Water and Sanitation Providers in African Cities: Full Report of a Ten-Country Study Water and Sanitation Program*
41. This can be done either through local government processes or external mechanisms such as social funds.
42. While many countries have already achieved this type of decentralisation others have not; many centralised water and sanitation agencies still take full responsibility for all aspects of sanitation service delivery. The links between water supply and sanitation are of course many and complex; poor sanitation may impact on drinking water supplies – particularly where these depend on shallow groundwater, and in urban settings the impact of networked waste collection and disposal on downstream users must be taken into account. However, such interlinkages do not require services to be delivered in tandem – what

is needed is good strategic policy making and planning to ensure that investments in water supply and sanitation are mutually supportive.

43. There is a pressing need for more analysis of the most effective ways of utilizing public funds to leverage increased access. The success of approaches such as that adopted by ZimAHEAD in Zimbabwe, and the total sanitation campaign in Bangladesh certainly point to the need to focus on and support local decision making. A recent evaluation of hygiene promotion programmes also suggested that their impacts are robust and long lasting (Bolt, Eveline (2004) Are changes in hygiene behaviour sustained? and Cairncross, S. and K. Schordt It does last! Some findings from a multi-country study of hygiene sustainability in Waterlines Vol 22, No 3 Jan 2004.) Further work is, however, needed to evaluate the conditions under which different approaches work best.
44. This is not to suggest that there is no role for subsidies where they are effective in promoting increased access, but it does suggest that some national sanitation programmes contain latrine subsidy elements which are out of proportion with their effectiveness in increasing access and promoting equity. Forthcoming research at the World Bank aims to improve our understanding of how well subsidies target poor households and contribute to increases in access.
45. LSHTM, PAHO, UNICEF, USAID, WEDC, WSP, WSSCC, WHO (2005) Sanitation and Hygiene Promotion: Programming Guidance WSSCC Geneva
46. It is well documented that people value sanitation for many reasons ahead of health. Other factors include reduced nuisance from smells and flies; cleanliness; privacy and status or pride in surroundings.
47. LSHTM et al (2005) *ibid*.
48. LSHTM et. al (2005) *ibid*.
49. The role of public funding in urban sanitation is crucial. In congested urban areas, shared infrastructure or systems of waste disposal are essential if household actions are to result in a cleaner and healthier living environment.
50. A number of simple tools can help. Latrine acquisition curves for example, which plot the take up of latrines from national or external programmes over time, can provide a useful picture of how and why households decide to change hygiene practices and invest in sanitation. More importantly, they need to be built up based on detailed discussions with householders about their toilets, about defecation and about hygienic practices. Such discussions can help to break down the taboo of talking about sanitation, and give technicians and decision makers a better feel for what is happening at the local level. In the same way that many countries have learned to discuss HIV/AIDS (with all its troubling associations) it is essential to build up a national ability to talk about defecation, toilets and handwashing.
51. Tools for doing this are many and varied – the construction of simple latrine acquisition curves for example will force professionals into a discussion with households about what has changed over time, and the reasons why some households have made investment and behaviour decisions about sanitation and hygiene. It also provides needed information which can be used in the development of hygiene promotion and sanitation marketing campaigns.

Photo: David Dahmén





Securing Sanitation: The Compelling Case to Address the Crisis

In 2002 the World Summit on Sustainable Development in Johannesburg recognised the central role played by sanitation when it adopted a target to halve, by 2015, the percentage of people without access to basic sanitation. Sanitation and the means to practice hygienic behaviours yield direct benefits in terms of health, education and economic productivity. Lack of access to this most basic of needs is an assault against human dignity. This report, the synthesis of two previously released papers, lays out the economic case for investing in sanitation: 1.47 billion people (20% of the world's population) stand to benefit if the target is met and the economic benefits could be as high as USD 65 billion annually. The greatest proportion of these benefits will accrue in the poorest regions of the world, particularly in Sub-Saharan Africa, but the benefit-cost ratio is consistently high across all regions.

The report goes on to explore ways and means to accelerate progress. Using a historic analysis of the public health movement in Europe in the late 19th century, it argues that institutions need to be reshaped to address the urgent need to increase access to basic services. An increased focus on the household and emphasis on creating and responding to demand for appropriate services are needed along with better and more efficient investments in public elements of sanitation, including sanitation in schools and health centres.

The report, commissioned by the Government of Norway, was prepared by the Stockholm International Water Institute (SIWI) with input from the World Health Organization and the Norwegian Agency for Development Cooperation.



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