

Department for International Development

# Meeting The Water and Sanitation Millennium Development Goal

Main Report

April 2005

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## FINAL REPORT

Department for International Development

# Meeting The Water and Sanitation Millennium Development Goal

April 2005

Reference 0026288

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## ACKNOWLEDGEMENTS

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We would like to extend our thanks to: the Water, Energy and Minerals Team at the Department for International Development for the opportunity to undertake this project; the DFID Country Programmes who made themselves available to meet with our team of consultants; the Steering Committee, consisting of WELL, Overseas Development Institute, the Water and Sanitation Programme, and WaterAid; Guy Hutton at STI who collaborated on the sanitation study; and finally, the many stakeholders in country who made contributions to this study. **CONTENTS** 

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## 1.1 WATER AND SANITATION AND THE MDGS

At the Millennium Summit in 2000, the global community committed itself to the Millennium Development Goals (MDGs). The MDGs are a set of mostly time bound targets to extend the benefits of development to a substantially increased proportion of the world's poor. The targets aim to reduce poverty, improve education and health, promote gender equality, improve environmental sustainability, and develop global partnerships for development. With specific reference to water and sanitation, Target 10 is

"to halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation."

According to current estimates, one-fifth of the population in developing countries lack access to water, and one-half lack access to sanitation. While improvements in access to services vary amongst and within regions, on the whole progress has been slow and the proportion of people without access to water and sanitation has not increased in pace with the changes required to meet the MDG. Clearly, "business as usual" will not be enough to achieve the target. Given the inter-linkages between water and sanitation, and health, education, hunger, gender, and poverty reduction, failure to achieve Target 10 will likely hinder progress towards other MDGs.

The economic case for action is clear - recent research has noted that economic benefits from improved water and sanitation, resulting from better health, agriculture, industrial, and domestic sectors would range from US\$3-US\$34 per US\$1 invested if the MDGs for water and sanitation are achieved. Viewed at a global level, the annual economic benefits that could be gained from achieving MDG Target 10 are estimated at US\$84 billion.<sup>1</sup>

Further, the political opportunity for taking action is currently particularly tangible. 2005 is the start of the the International Decade on Water, and marks the second year that the UN Commission on Sustainable Development focuses on water, sanitation, and human settlements. In September 2005, the UN Millennium Summit will review progress towards all of the MDGs. The UK is also in a particularly influential position to affect change during this time, as it has assumed leadership of the G8 and has recently spearheaded the Commission for Africa report.

(1) SIWI, 2005. "Making Water Part of Economic Development: The Economic Benefits of Improved Water Management and Services." SIWI input to the CSD 13. Internet: http://www.siwi.org/downloads/Reports/CSD\_Economics.pdf

# 1.2 STUDY BACKGROUND

Against this context, the Water, Energy and Minerals Policy Group of the UK Department for International Development (DFID) commissioned this study to investigate the common characteristics of those countries which are currently considered to be "on track" to achieve MDG Target 10, and those which are likely to fail. A core objective was to draw lessons, which could be used to improve progress in countries that are "off-track".

# Box 1.1 On/Off Track for MDG Target 10

The WHO/UNICEF Joint Monitoring Programme (JMP) <sup>(1)</sup> gathers data on coverage/access to water and sanitation in developing countries. It is the most commonly used source of information to determine whether countries are "on" or "off" track to achieving MDG Target 10. It compares data from 1990 (the baseline year for the MDGs) with current progress to determine whether countries are on track for achieving Target 10. The JMP conducted an interim analysis in 2002, half way through the MDG commitment period (ending in 2015) to assess those countries on and off track.

Importantly, achieving Target 10 means more than increasing basic infrastructure provision. The International Decade on Water Supply and Sanitation (1980-1990) saw a strong supply-side focus on infrastructure development for water and sanitation following a mainly project-based approach. While this approach made important contributions to the sector through increased investment and expansion of infrastructure systems, projects did not always respond to the needs of the consumer, infrastructure was not always maintained, and hence the long term sustainability was often overlooked.

The 1990's were characterised by an increased focus on demand responsive approaches to water and sanitation supply. The concept of demand led service provision relies on the often correct assumption that water and sanitation solutions that respond to consumer demand will be more financially and technically sustainable in the long term due to high levels of community buyin to operation and maintenance of facilities. However, a disproportionate focus on the community runs the risk of limiting government buy-in to the process, restricting development of institutional capacity to help deliver demand responsive approaches.

Drawing on these lessons of the past few decades, provision of sustainable access to water and sanitation services thus seems to depend as much on the capacity (and desire) of government to deliver those services (or provide a space for the private sector/civil society/others to deliver) as it does on the technology and finance available to support them. Governance in the sector requires strong commitment on the part of government to not only reform sector policy, but successfully deliver those reforms to ensure sustainable water and sanitation services. Hence, good governance exists where

(1) WHO/ UNICEF, update July 2004. "Joint Monitoring Programme for Water Supply and Sanitation, Coverage Estimates: Improved Drinking Water".

government shows not only a capacity to engage in a reform process of its water and sanitation policy framework, but also to reform mechanisms for implementation and regulation of sector policy at all levels of government. Consequently, understanding governance issues within the water sector is important for assessing whether countries are "on track" to achieve – and sustain – MDG Target 10.

DFID acknowledges this central role of the state and governance reform issues in ensuring sustainable service provision. According to DFID, a core role of an effective state should be to "guarantee equitable and universal provision of effective basic services".<sup>(1)</sup> DFID's "drivers of change" analyses emphasise the need to build the capabilities of governments as the most important condition for sustainable development. Hence, in order to engage with governments to effectively reform the sector, a clear understanding of the economic, social and political factors that block or drive change to improved water and sanitation delivery is needed.

The importance of governance issues for meeting MDG Target 10 complements the findings of the Millennium Task Force 2005 report on water and sanitation. <sup>(2)</sup> The Task Force identified four factors that need to be addressed to achieve progress in the water and sanitation sectors; institutional, political, financial, and technological. A focus on improving governance can help to overcome constraints in each of these areas.

## 1.3 APPROACH TO THE WATER AND SANITATION STUDIES

Based on these trends discussed above, the water study analysed the sector from more of a governance perspective. The capacity of government to engage in a reform process for the water sector varies from country to country. Some countries show very strong progress in expanding water coverage and reforming governance processes for water delivery, while others are clearly struggling. Therefore, the water study investigated the ability of government to deliver sustainable water services, and the effectiveness of other stakeholders to influence reform, and compared characteristics of countries that are on and off track for achieving Target 10.

The sanitation study investigated the economic argument for investing in sanitation. The sanitation sector, in contrast to the water sector, is typically characterised by very low levels of progress in coverage and weak (or nonexistent) sector reform for service delivery, due to a variety of factors. For example, political will to increase coverage is weak because sanitation is widely considered a private issue, and not a public good; in many cultures, discussion about defecation is considered taboo. Without political buy-in to drive forward change, finance to the sector also tends to be low and institutional reform is slow. Technological solutions tend to be expensive rather than based on demand and willingness to pay, which hinders long

<sup>(1)</sup> DFID Governance TSP, September 2001(2) Millennium Task Force on Water and Sanitation, 2005. "Health, dignity, and development: what will it take?"

term, sustainable solutions. Importantly, political will to stimulate reform is constrained by a lack of understanding of the impacts of sanitation on poverty reduction and economic growth.

# 1.4 STRUCTURE OF THE REPORT

This report is therefore divided into two distinct studies for water and sanitation. It complements the associated set of keysheets, which include:

- A keysheet on the water study;
- A keysheet on the sanitation study; and
- 13 country specific diagnostics (please note that more detailed country summaries can be obtained on request from DFID).

The report is accompanied by the following Annexes:

- Annex A: List of stakeholders consulted for the water study
- Annex B: Bibliography for both the water and sanitation studies

# 2.1 STUDY OBJECTIVES

The overall aim of this study was to investigate:

- Characteristics of those countries that are likely to succeed in achieving the water MDG, and those that are likely to fail; and
- Lessons that can be drawn from successful countries and applied to less successful ones.

This study was designed to complement broader policy studies, such as the MDG Task Force Report, by taking a more in-depth look at the policy and implementation capacity of government (and the role of external actors that influence government) to deliver improved water services to meet the MDGs.

This report is structured as follows:

- *Section 2.2* describes the study methodology;
- *Section 2.3* presents the country specific findings;
- *Section 2.4* presents broader lessons that can be learned from a comparison of the country studies; and
- *Section 2.5* highlights recommendations for DFID's engagement in the water sector based on these findings.

# 2.2 METHODOLOGY

The water study was focused and intensive, undertaken during a six-week period in January/February 2005, in response to a request from DFID's Secretary of State. The study was conducted by Environmental Resources Management (ERM) in conjunction with a Steering Group comprised of WaterAid, Overseas Development Institute, WELL <sup>(1)</sup> and the Water and Sanitation Program (WSP). The study also received comments from one of the lead authors of the MDG Task Force Report on Water and Sanitation.

The study involved 11 in-country studies in Africa and Asia and 2 desk studies. The countries were selected by DFID and were deliberately chosen to represent a range of on track and off track countries with respect to the MDGs. Over 170 stakeholders were consulted (see *Annex C*). The countries selected were:

- *Africa*: Ethiopia (desk study), Ghana, Nigeria, South Africa, Tanzania, Uganda, Zambia;
- *Asia*: Bangladesh, Cambodia, China, India, Sri Lanka, Vietnam (desk study).

(1) WELL is the institutional collaboration between Loughborough University's Water Engineering and Development Centre and the London School of Hygiene and Tropical Medicine In consultation with the steering group, ERM developed a diagnostic to assess, broadly, (i) the ability (and desire) of the government in each country to deliver sustainable water services (or provide a space for the private sector/civil society/others to deliver); and (ii) the level and effectiveness of other stakeholders such as donors, IFIs and civil society to influence or reform governance processes in this sector. (See *Annex A* for the diagnostic.)

The diagnostic was used to gather a range of information in each country. As a first step, the diagnostic included an analysis of how water is prioritised in PRSPs/country strategies. Importantly, the diagnostic also gathered information on how effectively the water policy framework is implemented throughout different levels of governance. The diagnostic further explored the relevant stakeholders in the water sector, with the specific aim to identify possible change agents in each country. As such, a range of stakeholders were interviewed from the domestic and international public, private, and NGO sectors. DFID's activities in each country in relation to water, as well as other sectors, were also discussed.

The findings were used to identify common institutional and governance relationships and characteristics of those countries that are on track to meet the water MDGs, and those that are likely to fail, to identify possible patterns. This information helps to draw out evidence-based lessons from those countries that seem to be on track to meet the water MDGs, which might be applied to those countries not on track.

# 2.2.1 Limitations

The remit of this study is understandably large, and, while every effort was made to collect as much information as possible, a fully comprehensive diagnosis of factors affecting progress in the water sector could not be conducted within the time frame of two week country visits. Specifically, the study was constrained by the following factors:

- Because of the short time frame, it was not always possible to meet with all contacts in country (e.g. due to travel schedules) and in some instances, individual country studies had to accommodate national holidays.
- The quality of information for each country study was very much reliant on the transparency of institutions in country, and therefore individual studies vary in the types and depth of information that was collected.

# 2.3 STUDY FINDINGS

# 2.3.1 Overview

The information gathered in the country studies was used to draw comparisons across countries, comparing those that are on and off track. This process involved a number of steps:

- First, it was necessary to identify those countries that are likely to succeed and those that are likely to fail, by examining factors that could be used to define success and failure.
- Second, based on this categorisation, common characteristics of those countries that are likely to succeed/fail were analysed.

# 2.3.2 Defining success/failure to meet the MDGs

# JMP Data

As described in the introduction, the WHO/UNICEF JMP indicator <sup>(1)</sup> is commonly used and is a very good starting point for categorising countries according to whether they are likely to succeed or fail to meet the MDG Target 10. It is useful for benchmarking progress across countries, and can be a valuable tool for stimulating reform in those countries that are failing.

However, while the JMP data is regarded as the most reliable source of data on water and sanitation coverage, quality and reliability of statistics can vary significantly. In addition, the JMP data only show absolute levels of access/coverage. These statistics can often mask underlying issues over water and sanitation provision, such as:

- Effectiveness of installed infrastructure at delivering services;
- Whether installed infrastructure functions or is used;
- Equity issues (coverage levels for the poor tend to be lower than average);
- Sustainability issues (variability, reliability, and affordability of supply);
- Safety of water supply (e.g. arsenic issues in Bangladesh); and
- Regional disparities.

Hence, as shown in *Box 2.1*, countries that are on track according to the JMP may nonetheless struggle to meet Target 10.

(1) The JMP measures access to safe drinking water as the percentage of the population using improved drinking water sources, and access to sanitation means as the percentage of the population using improved sanitation facilities.

## India

According to the JMP, India is on track to achieve the water MDG. Coverage increased from 68% in 1990 to 86% in 2002, and hence India has already achieved the target for water coverage. However, coverage data in India represent access to infrastructure rather than provision of services. While the presence of water infrastructure is important, coverage data on this basis can be misleading, because it does not reflect whether the infrastructure is actually functioning and/or being used. Indeed, the latest government statistics indicate a 17% slippage in water coverage since 1996 (which is not accounted for in the JMP data), as a result of water supply systems that have stopped functioning. Stakeholders interviewed believe that slippage data could be significantly higher than these official statistics.

### Uganda

According to the JMP, Uganda is on track. Coverage increased from 44% in 1990 to 56% in 2002. Therefore if progress continues at the same pace, Uganda should meet the MDG target for water. However, these figures hide a number of issues:

 Inequality in water supply between regions, within regions, and between different population groups. For example, some districts in the Northern part of the country, which has been in conflict for the last 18 years, registered safe water coverage at only 27% in 2003.
 About 30% of the installed hand-pumps in rural areas are not functioning, even though these areas are technically "covered".

3) Data on coverage does not take into account over-utilisation of sources, which results in a sharply increased waiting time for users at pumps.

4) Many of the shallow wells and protected springs are contaminated to some degree.

Source: ERM country analyses

## Elements of governance in the water sector

Success in delivering sustainable water supply thus requires a deeper understanding of water service provision and the factors that are driving success or failure, than that which a binary on/off track assessment such as JMP can provide.

According to key literature on water issues as they relate to the MDGs and governance processes,<sup>(1)</sup> seven key elements of governance reform that contribute to the government's ability to deliver sustainable water services can be broadly identified:

- Good diagnosis of water-poverty-economy linkages;
- Development of national policy frameworks for water;
- Coordination of institutions within the sector;
- Development of financing plans and budgeting;
- Implementation through a process of decentralisation;
- Engagement with and reaction to popular opinion and voice; and
- Monitoring and evaluation.

(1) Millennium Task Force Water Report; WSP, 2003. "Water Supply and Sanitation in Poverty Reduction Strategy Papers in Sub Saharan Africa: Developing a Benchmarking Review and Exploring the Way Forward"; ODI/WaterAid, 2004 . "Implementation of Water Supply and Sanitation Programmes under PRSPs: synthesis of research findings from sub-Saharan Africa".

These categories are by no means definitive or exclusive, and can overlap and encompass a variety of sub-issues. For example, clear regulation for the water sector, implemented and monitored by a dedicated regulatory body, is a priority for ensuring good governance, but it is not included as a distinct element because it tends to cut across several of the categories – strong regulation requires policies in place, good coordination among institutions and the regulatory body, as well as monitoring to ensure compliance with regulations. Other issues such as private sector participation are similar.

However, an investigation of these elements adds depth to the JMP indicators, by providing a greater understanding of the political economy of water delivery. The first two elements focus on ensuring political buy-in and policy creation for the water sector. However, while a strong water policy or PRSP is critical to ensuring progress, its practical implementation is often lacking. Therefore the remaining five elements are focused on aspects of policy implementation.

# Diagnostic for achievement of MDG Target 10

These elements of governance reform were used as a framework for analysing information from the country studies. Importantly, given the nature of this study, they were used as tools to assess progress specifically related to governance; they are not intended as definitive indicators. Clearly, the analysis does not account for other constraints to improved water coverage, such as issues of water scarcity. The assessment is necessarily subjective, but nonetheless provides a reasonable comparison of factors across countries.

*Table 2.1* describes each of these elements in greater detail, as well as the criteria used for ranking each of the countries. *Table 2.2* provides a summary of each country with respect to these elements of governance. The individual country diagnostics describe, for each element of governance reform, the rationale for the country ranking, and country specific highlights and limitations.

Table 2.1	Elements of G	overnance in	the Wate	er Sector
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Element of	Definition	Country Scoring
Governance Reform		
Good diagnosis of water-poverty- economy linkages	A clear understanding of water's role in economic development and poverty reduction is important for reform. A simple assessment of a government's understanding and articulation of water's importance to broader development goals, especially from an economic and political point of view, is important.	The score is low if there seems to be no diagnosis; medium if some kind of diagnosis does exist; and high if the diagnosis seems to have a high level of political support or "buy in".
Development of national policy frameworks for water	A comprehensive and robust policy framework is essential for governments to demonstrate their water sector strategy goals. This framework should encompass countrywide strategies and programmatic approaches, as well as a clear medium-term action strategy. It is also important that adequate attention is paid to water within the PRSP process (where applicable).	The score is low if there is no policy; medium if there is some kind of policy; and high if a policy with clear, time-bound objectives exists.
<i>Coordination of institutions within the sector</i>	Effective coordination of institutions responsible for the water sector, both vertically and horizontally, is essential to avoid fractured responsibilities and conflicts over budgeting. Transparency and accountability are also important. In particular, SWAps can work to coordinate institutions effectively, and link broad national policy development with implementation, by combining country ownership, donor coordination, sector budget support, harmonised procedures and results-based management.	The score is low if there is no coordination/ sector wide approaches for water; medium if some degree of coordination or sector wide approaches is taking place; and high if a relatively sophisticated sector wide approach for water is occurring.
Development of financing plans and budgeting	Converting coordinated sector strategies into time-bound, clearly costed action plans within a countrywide, medium-term expenditure framework is necessary to ensure water policies are adequately resourced. Development of financing plans reflects long term thinking about resources and policy goals.	The score is low if there is no coordinated or sector approach for water financing; medium if some degree of sector financing is taking place; and high if a medium term expenditure plan, or an equivalent, for water has been constructed.
Implementation through a process of decentralisation	Decentralisation can improve accountability by separating policy making from service delivery activities, and may increase the influence of civil society over decision-making. However, decentralisation should only be implemented where there is adequate capacity and attention to sequencing, and where central government maintains an active role in oversight by retaining control over certain key governance functions.	The score is low if vague policies exist for implementing water sector strategy through a decentralised approach, or if the process is just beginning; medium if a decentralisation policy exists but implementation is weak; and high if a decentralisation policy exists and is being implemented robustly.
Engagement with and reaction to popular opinion and voice	Advocacy on the part of NGOs and other stakeholders to mobilise popular opinion are often important factors in driving political commitment to progress in water supply.	Score is low if there no engagement with NGOs or civil society to contribute to water sector approaches exists, or is preliminary; medium if there is some degree of engagement; and high if a relatively sophisticated level of dialogue is occurring.
Monitoring and evaluation (M&E)	M&E is essential for performance improvements over time. A logical framework for activities is important, along with monitoring for input-output (efficiency) and outcome-impact (development effectiveness). Reporting should be integrated into the overall planning system of the government, both to improve planning of current and future water sector activities, as well as promote accountability for those implementing policies and programmes.	Score is low if M&E approaches for the water sector are very limited, apart from project-related M&E medium if there is some degree of M&E for the sector; and high if a relatively sophisticated sector wide approach for M&E in relation to the MDG and other human development indicators is in place.

# Table 2.2Country Progress in Key Water Sector Governance Elements

	Good diagnosis of water- poverty- economy linkages	Development of national policy frameworks for water	Coordination of institutions within the sector (a clear lead)	Development of financing plans and budgeting	Implementation through a process of decentralisation	Engagement with and reaction to popular opinion and voice	M&E	Overall	JMP Status
South Africa								High	On track
China								High/Medium	On track
Uganda								High/Medium	On track
India								Medium	On track
Sri Lanka								Medium	On track
Tanzania								Medium	On track
Ghana								Medium	On track
Bangladesh								Medium/Low	Off track
Vietnam								Medium/Low	Off track
Nigeria	_							Low	Off track
Zambia								Low	Off track
Cambodia								Low	Off track
Ethiopia								Low	Off track

Low Low/Medium Medium Medium/High High					
	Low	Low/Medium	Medium	Medium/High	High

The analysis clearly demonstrates the relationship between the JMP categorisation, and the degree and depth of reform in the governance of water, suggesting that governance reform is closely linked to driving progress on water coverage. It also highlights the importance of looking beyond a static measure of progress, such as the JMP, to the more dynamic governance elements driving reform in the sector. Such an analysis can help to identify areas of intervention where donor activities could be most effective.

For example, while Tanzania is on track according to the JMP, and "medium" using the subjective "scoring" detailed in *Table 2.2*, many stakeholders believe that Tanzania will not achieve MDG Target 10. While donors are largely responsible for the considerable increase in coverage, this attention is historic; attention to O&M of installed systems is very poor, and while the government now seeks to govern the sector as a whole, inadequate resources and lack of capacity at all levels of governance hinder translating policy ambitions into action. Hence further engagement in a programme of decentralisation, with associated financing plans, may be required to ensure sustainable progress.

Alternatively, while Ethiopia is clearly off track to meet its water MDG, the government does have a good understanding of the linkages between water and poverty/economic growth, and as a result has created a strong policy framework for water. This activity could be used as a building block to leverage further change.

It is interesting to note that most countries have some kind of policy framework in place, while reforms associated with sector coordination, finance and budgeting, implementation of decentralisation processes, and engaging with civil society are limited. Monitoring and evaluation (M&E) of water sector progress, and its impact on poverty alleviation, is almost non-existent in all of the countries studied; at best, M&E is project centric, for government /donor monitoring requirements.

# 2.3.3 Defining the characteristics of on/off track countries

*Figure 2.1* presents the countries studied within the framework presented above, along a continuum according to progress in governance for the water sector. By grouping countries according to their degree of governance reform, common characteristics of countries that are succeeding/failing to meet the MDG Target 10 can be assessed.



# Characteristics of countries that are off track

Countries at Pole A tend to be characterised by a scenario where governance reform in the water sector has been limited; it is likely that countries toward Pole A are "off track" in terms of their water coverage.

The common characteristics within the water sector of these countries can be summarised as follows:

- Water sector activities tend to be driven by external agents, most likely donors and IFIs. Activity tends to be focused less on reforming the full range of water sector governance issues applicable to the sector, and more on discrete water sector projects or programmes. At best there may be some focus on one or two water-related governance factors (e.g. the development of a national policy), possibly occurring alongside a wider IFI project.
- NGOs tend to be service providers, filling important gaps in government provision in the sector, but act in a relatively uncoordinated, off-budget manner, especially in rural and peri-urban areas.
- Most countries have a good diagnosis of water linkages at a central level. However, this understanding tends to be weaker at a decentralised level, and hence buy-in to reform processes can be constrained as priority tends to focus on other issues such as poverty reduction and health.
- Equally, water tends to be a high priority in PRSPs and/or country strategies. This is an important first step in the governance reform process, as it indicates government commitment to water sector reform and provides a clear framework for delivering on reform. However, in practice, adequate governance to implement policies is weak, and, in some countries, concerns may exist about the real desire of the government to focus on the sector. Access to HIPC or PRSC funds may be

suspected as a more prevalent reason for government support for activity in the sector, and may help explain why policy does not receive support in practice.

# Characteristics of countries that are on track

Countries at Pole B tend to be characterised by a scenario where reforms have taken place successfully within many of the elements of water sector governance detailed in *Table 2.2.* It is likely that countries toward Pole B are considered "on track" to achieve their coverage target (and may have developed goals that exceed MDG Target 10) and that their water sector activities are generally sustainable.

The common characteristics within the water sector of these countries can be summarised as follows:

- The reform agenda for these countries tends to be owned and driven by government, rather than external agents who are generally decreasing their overall presence in the sector, bar one or two lead agencies.
- Government expresses the linkages between water, poverty and economic development in high-level policy frameworks.
- NGOs can be very effective advocates and informal "regulators" of decision-making in the sector, via the use of public opinion, which in turn has helped to drive water as a policy issue.
- Implementation of water sector reform, as detailed in key policy documentation, tends to be active. It is likely that SWAps may be in place, together with medium term financing plans, pooled donor funding and other forms of institutional coordination.
- Issues of effective decentralisation (autonomy of decision making and financial management) and M&E in the sector are, in most cases, weak relative to the other water sector governance factors.

It is important to note, however, that while these countries tend to be on track at the aggregate, national level, there may be many important issues relating to effectiveness, equity and sustainability of water supply, especially at the sub national level.

# Differences between the Africa and Asia country studies

A number of key differences between Africa and Asia were evident from the country studies:

• *State – citizen relationship:* The relationship between the state and citizen with respect to water tends to be weaker in Africa – water sector stakeholders tend to have less influence on government policy making and there is less of a social voice to influence reform. When combined with the technical challenges (large, dry rural areas with low population density) and financial challenges (low levels of affordability, high cost/capita connections and operations) this issue can create an additional

challenge for the reform agenda in Africa.

- *The role of the private sector* tends to be more prevalent in Asia. In particular, small scale, independent private sector suppliers in rural areas are more common in Bangladesh, Sri Lanka and Vietnam and less common generally in the African case studies, with the exception perhaps of South Africa. Conversely, the role of community based management schemes in rural water supply seems more prevalent in the African countries via NGO and other development agency work.
- *DFID's approach*, broadly, seems to differ between the two regions. In larger, Asian economies, where donor input reflects a small portion of overall development assistance, DFID activities focus on using their comparative advantage in a targeted manner to stimulate governance reform and capacity in specific sectors; in more ODA dependent economies in Africa, funding is used to support more general core government reform at a central level, supporting dialogue and SWAps for key sectors, while also building capacity within NGO/civil society sectors for advocacy.

Despite many specific country differences, the political-economic dynamics of reform remain broadly similar between Africa and Asia. For example:

- Rural-urban migration poses significant challenges to sustainable water supply in urban areas, and particularly to peri-urban areas.
- Water reform is highly political, requiring long-term commitment from the state.
- The focus on project-based interventions seems to be shifting to a recognition of the need for more outcome based approaches to reform.

# Rural/urban differences

Water services delivery varies considerably in rural and urban areas, with regards to market structure, technology, finance, and governance. While this report does not discuss all of these differences in great detail, a number of distinctions between rural and urban areas were observed through the country studies:

• *Government and donors tend to prioritise either rural or urban areas:* Reform in a given country tends to be focused on either urban or rural water service delivery. The factors driving this focus can vary – there may be strong advocacy on one part or the other, or particular urban or rural issues may be prominent in the national consciousness. In general, where reforms have taken place, more focus has been placed on improving coverage in rural areas (India, Sri Lanka, Bangladesh, China, Ghana and Uganda for example). As a result, progress towards achieving the MDG tends to vary by country.

- *Government coordination tends to be fragmented:* The ministries for urban and rural water issues tend to be separate, and therefore facilitation of dialogue to ensure that both rural and urban issues are addressed does not occur.
- *Benefits from decentralisation are more limited in rural areas:* Decentralisation tends to pose more challenges in rural versus urban areas, given the remoteness of rural water ministries from central government, as well as greater issues of capacity to implement decentralisation. Thus the benefits of greater control at lower levels of government are more limited.
- *Rural-urban migration is constraining service delivery in peri-urban areas:* The impacts of urbanisation on water services is a prominent concern in most countries surveyed. Increasing population size in these areas strains existing infrastructure in urban areas, and peri-urban areas prove difficult to serve via piped networks. Urban/peri-urban systems are often underfinanced and the reform process to improve their financial sustainability and management is more heavily politicised (tariff rises, role of PSP etc). Therefore it is anticipated that governance (as well as financial and technical) issues in the water sector will become essential.

# 2.4 LESSONS LEARNED

The analysis of the country studies identified a number of lessons important for donor engagement in driving governance reform in the water sector to achieve progress towards MDG Target 10. They can be categorised as follows:

- Identifying drivers of change, for initiating reform in the water sector;
- Sequencing of reforms; and
- Identifying urban/rural drivers of change.

# 2.4.1 Identifying drivers of change

Governance reform in the water sector poses clear challenges. Water sector reform can be very political (for example, tariff reform to ensure cost recovery for water services is a highly politicised topic) and governments often do not have incentive to change and do not tend to embark on water sector reform without inducement.

This study identified a number of triggers that have helped to stimulate sector reform for countries. These triggers have been important not only to initiate a process of policy reform, but equally to ensure implementation of reform through processes such as decentralisation. As such, they have been important for countries towards both Pole A and Pole B of the continuum:

- The attraction of HIPC funds, which require reform conditionalities (Tanzania, Uganda, Ghana);
- A successful pilot project that has impacted on policy (India, Sri Lanka);

- Environmental stress enforcing policy change (Bangladesh, China and Ethiopia); and
- Political change that creates a (unique) opportunity for widespread political reform, including water (Nigeria, South Africa).

Interestingly there are two types of trigger apparent: one which is externally controlled (environmental shock, political change) and one where donors have much more influence (use of reform conditionalities, and programmes to promote reform).

*Box 2.2* describes the cases of Nigeria and South Africa to show how donors can react in different ways to political change as a trigger for reform.

# Box 2.2 Donor Engagement in Political Change

Both Nigeria (post military rule) and South Africa (post apartheid) experienced an upheaval in political rule. However, donors used these opportunities for change in very different ways. The level of donor support and engagement in the water sector in South Africa post-apartheid was very high, especially in the reform arena and this support has helped to place South Africa's water sector in a robust position a decade or so later. In Nigeria, by contrast, institutional engagement in water has been much lower over the past five years of civilian government, resulting in little progress in sector reform, despite the clear indications among government and society that support and engagement in the water sector is desired. With a wider donor concern about governance generally in Nigeria, the political economy of water could be read more strategically, and water could be used as a reform arena in which to engage state government.

An understanding of the political economy of the water sector in a given country, and the triggers, or drivers for reform, has played an important role in identifying ways in which government and other stakeholders can initiate change on a whole range of water sector reform issues, from policy formulation to decentralisation and monitoring and evaluation. This process is important because the pattern, timing, and type of reform has differed substantially by country, depending on, for example, the existing state of reform, the context of urban and rural issues, and whether a country is low or middle income.

# 2.4.2 Sequencing of reforms

The sequencing of reforms can play an important role in driving progress in the water sector. Importantly, successful reform, as observed in the country studies, does not rely on a specific formula, but rather the order and timing of reforms can vary. Hence, as before, a detailed understanding of the political economy of the water sector in a country is important to effectively structure donor engagement in a reform process. It is important to note that the sequencing of reforms can be dynamic; for example, a successful pilot project may influence policy, which in turn is implemented and offers lessons for further reform.

Water sector reform also needs to be placed in the context of reform in other sectors. As discussed previously, health and education reform has tended to be given greater priority, particularly in first generation PRSPs. However, in

the development of second and third generation PRSPs (via the window of the 3-year revision process), both confidence and experience will have increased within government and the donor community around the issue of sector reform and coordination. Within this context, the will for tackling more difficult reform issues, such as water, may be greater. The evolution of Tanzania's PRSP is a good example of this (see *Box 2.3*).

# Box 2.3 Tanzania's PRSP and Water

The health and education sectors were a high priority in the first generation PRSP, and were developed using a Sector Wide Approach and engagement in PER reform. As a result, the budgetary building blocks are now in place for a more sophisticated second generation PRSP (the MKUKUTA). The MKUKUTA moves away from a focus on priority sectors to an outcomeoriented approach, emphasizing inter-sectoral linkages that contribute towards achieving development outcomes. The MKUKUTA includes a defined set of national targets for the water and sanitation sector and a new water policy, which puts an emphasis on sector coordination (via a SWAp) and decentralisation. A National Water Sector Development Strategy to implement the policy has also been drafted and will be promulgated by the passing of a new Water Act, later in 2005. Thus, in the 2nd generation PRSP, health and education have progressed from a sector reform focus toward receiving budgetary support from donors, and water has been engaged in more fully through a SWAp, building on the lessons learned in the 1st generation PRSP.

# 2.4.3 Urban/rural drivers of change

The countries studied tend to have a stronger reform agenda for either the rural or the urban water sector; the two sectors are rarely addressed to the same degree and hence there is little crossover or understanding across the two sub-sectors. Successful pilot projects seem to have been the most prevalent driver for raising awareness of water service delivery issues and influencing decision making. Again, however, these have tended to occur specifically for the rural or urban sector, and rarely complement both (see India, Sri Lanka, Bangladesh, Ghana for urban examples; Tanzania for a rural example).

UN Habitat work in urban areas of Sri Lanka (see *Box 2.4*) provides a useful case study of an effective "trigger" for urban reform in the water sector. <sup>(1)</sup>

(1) Note that the urban water policy development process in Sri Lanka has now broken down due to political arguments about the role of PSP and water tariff changes

# Box 2.4 UN Habitat in Sri Lanka

UN Habitat is working on a water related initiative in 12 towns across Sri Lanka as part of a wider UNDP Urban Governance Reform Programme. They are using a process based approach established under the UNDP Programme to design water connections according to the specifications of individual CBOs. They are also acting as brokers between the CBO and the Water Board to agree payment levels and charging arrangements.

Buy-in from government was initially slow. However, as a result of observed success to date (more CBOS are becoming connected, and are paying regularly) The National Water Board and the municipalities are now on board. UN Habitat has also helped the municipal government develop special planning regulations to create security of tenure for CBO households once the new water connections are in place, which has increased tax revenues to municipal governments.

This process-based approach is playing an important role in implementing decentralisation policies in urban areas. It is hoped that the success of these CBO water initiatives will encourage municipalities to explore further reforms and decentralisation of other services. The process has been funded by relatively small amounts of money (US\$250,000).

Source: ERM country analysis, personal communication

By contrast, the Mvula Trust in South Africa provides an example of a "trigger" for rural reform (See *Box 2.5*). By building partnerships with local government, the Trust has had an important role in shaping and influencing government reform in the rural water sector.

# Box 2.5 The Mvula Trust in South Africa

The Mvula Trust was founded in 1993, and is now the largest water and sanitation NGO in South Africa, with an annual operating budget of over US\$10 million. It operates a successful, national level, demand-driven social investment fund in close collaboration with the lead water Ministry, DWAF, providing financial support to historically disadvantaged rural and periurban communities needing access to water and sanitation services. Importantly, the key objective of the Trust is to establish partnerships with local government to ensure that local capacity for sustainable development (especially in the provision of water services) is built. To this extent, the added value that Mvula brings above and beyond being a NGO service provider is its proven track-record, expertise and trust in working with poor communities and facilitating service delivery partnerships between these communities and their municipalities. As a consequence Mvula Trust helps to shape and influence government policy for water in rural areas, as well as provide services.

Source: www.mvula.co.za

# 2.5 RECOMMENDATIONS

A number of recommendations can be drawn for donor and, more specifically, DFID engagement in the water sector reform process to support progress towards MDG Target 10.

On the one hand, it is clear from the country studies that a number of barriers exist to donor engagement in the water sector:

• Health and education are commonly seen as "easier" points of engagement, and maintain a higher priority in many donor strategies (particularly DFID). This is often the case despite the water sector being

characterised by a poor institutional state and a high priority for citizens (as the examples of Zambia, Ethiopia and Nigeria illustrate).

• Donors can benefit from the development of long term relationships with government through a highly project based and capital-intensive approach to water (for example, this study shows how GTZ/ KfW, JBIC/ JICA and Danida tend to provide capital intensive water and wastewater investments and develop long term, project-based relationships with government as a result).

Nonetheless, the country studies highlight a variety of ways in which donors, particularly DFID, have found innovative and successful interventions to use governance reform as a platform for ensuring sustainable progress in the water sector.

# 2.5.1 Examples of donor engagement

Donor engagement in the water sector in developing countries varies, from developing infrastructure to supporting capacity building. The country studies highlighted a number of ways in which DFID engages with government on water sector reform. Some DFID interventions are common across both low and high progress countries, whereas other interventions vary. These are outlined in *Table 2.3* below.

# Table 2.3Sample DFID interventions in low to high scoring countries

	High
	► Tiigii
• Engage in the water sector through PRSP	Engage in the water sector through
and other political processes	PRSP and other political processes
Second staff to central ministries for	<ul> <li>Second staff to central ministries for</li> </ul>
capacity building	capacity building on a more systematic
capacity summing	and ongoing basis
• Support training for all stakeholders to	<ul> <li>Support training for all stakeholders to</li> </ul>
• Support training for an stakeholders to	• Support training for all stakeholders to
the water sector (including service	the water sector (including service
providers)	providers), on a more systematic and
	ongoing basis
Bring national and state-level officials on	Second government officials into donor
project/site visits	projects and programmes
• Support programmes at central levels of	Support programmes at decentralised
governance	levels of governance
<ul> <li>Develop demonstration projects to</li> </ul>	Provide trust fund or direct support to
illustrate new ideas and techniques and	I Howater projects to ansure pro poor
influence notional policy making	approaches
miluence national policy making	approaches
• Support and strengthen NGO	• Partner with IFIs to add governance
community for service delivery and	reform to infrastructure projects
advocacy functions	<ul> <li>Establish and participate in</li> </ul>
• Provide support for NGO networks to	coordinating bodies
create an advocacy voice for reform	ž
through PRSP/other political processes	
P	

# Multi-country initiatives or "regional resource centres"

Regardless of where a country is along the continuum of reform, a clear message emerging from the study is that progress in the water sector needs to be achieved through a process of reform rather than through the output of projects. In order to tackle the elements of reform holistically, there may be an opportunity for donor engagement through multi-country initiatives, or regional resource centres.

As an example, the Water and Sanitation Program East Asia and Pacific (WSP-EAP) has conceptualised an innovative program for the Mekong Region, entitled the Sanitation and Water Partnership for the Mekong Region (SAWAP) (see *Box 2.6*). SAWAP provides a platform for long term engagement and a coordinated approach by donors, governments, NGOs and others (with the intention of reducing the number of competing projects). It may be appropriate to replicate similar approaches in other regions, as a holistic approach towards water sector reform.

# Box 2.6 The SAWAP Programme for the Mekong Region

WSP established SAWAP with the intention that it will support and reinforce national efforts in Cambodia, Vietnam, Laos PDR and the Yunnan and Guangxi Provinces of China, to achieve the Millennium Development Goals (MDGs), as they relate to sanitation, water supply and health.

The figure below illustrates the approach WSP-EAP is taking, which focuses on a range of process-based approaches to reform key governance elements (action research and policy analysis to support policy development; linked to knowledge sharing and learning to improve capacity; that can help deliver practical approaches for delivery via demonstration projects, research and process-based support for larger scale investments.



# 2.6 RECOMMENDATIONS FOR DFID

DFID can play an important role by promoting and supporting sustainable governance in the water sector to achieve key development outcomes on human development. Importantly, DFID could more effectively capitalise on its organisational focus on governance issues and its "drivers of change" approach to address water sector reform issues.

Strategic and well-positioned engagement in the sector can offer DFID many political opportunities, which it is not capitalising on at present. Conversely, by not engaging in the sector, DFID's credibility with certain country governments and within the international community as a lead thinker and influencer may be eroded.

This section sets out some general recommendations, drawn from the above analysis, for DFID engagement in the water sector to help drive progress toward the water MDG.

- *Re-examine the political-economy dimensions of water sector reform and support processes of change accordingly.* DFID could use a diagnosis, similar to the political-economy approach of the drivers of change initiative, to assess strategic opportunities for engaging in water sector governance reform in different country frameworks to achieve development outcomes. The Policy Division is preparing a water sector diagnosis tool, and this could potentially be used by country offices for examining the political economy water sector reform.
- Actively encourage and leverage incorporation of the water sector into second and third generation PRSPs. DFID could use its influence in the PRSP process to help government's identify and build on existing experience in sector reform and coordination in sectors such as health and education in the first PRSP to tackle more difficult reform issues such as water. As identified in the country studies, prioritisation of water in PRSPs is an important step in the governance reform process to engage governments in water sector issues.
- *Maintain a long-term focus on governance reform.* In addition to actively supporting the creation of effective policy frameworks for water, DFID should maintain a long-term focus on supporting implementation of those frameworks, especially at different levels of governance, to ensure progress toward the water MDG is sustainable. Much of the support required lies within DFID's areas of comparative advantage, such as maintaining a pro-poor focus in water sector reform, supporting local institutions in the decentralisation process, establishing coordinating bodies, and ensuring monitoring and evaluation of outcomes (as opposed to outputs) of water programmes.
- *Identify opportunities for replicating governance reform initiatives across a number of sectors* to maximise development outcomes while minimising use

of DFID's resources. For example, DFID often engages in support of decentralisation processes in health and education. This engagement could potentially be replicated to the water sector.

- *Continue to work collaboratively with other water sector stakeholders.* While many agencies are often involved in the water sector, many do not have DFID's depth of experience in governance reform processes, combined with the political influence necessary to engage with government. DFID should continue to work with other stakeholders on water sector issues, recognising this comparative advantage.. For example, DFID could continue to build on trust fund support to IFIs to ensure that large water sector projects have a pro-poor focus. DFID should also continue its relationships with other stakeholders such as WSP and NGOs, who can benefit greatly from the flexibility of DFID financial support.
- Support regional agencies or resource centres for the promotion of water governance reform, such as the SAWAP programme described in the previous section. Similar regional initiatives could be supported for Africa and other parts of Asia and usefully linked in to the wide range of funding modalities and aid instruments currently being developed for the water sector. By providing programmatic funding to such initiatives, DFID could ensure its skills and comparative advantage in governance and processbased learning can be applied to the water sector in a range of countries over a medium-term time horizon, without necessarily requiring increased resources in any one country programme.

# 3 SANITATION STUDY

## 3.1 STUDY OBJECTIVES

As a result of the significant lack of progress in expanding sanitation coverage, it is increasingly recognised that governments and donors need to prioritise and act on sanitation issues. However, whereas the water sector has seen substantial development in the formulation of policy frameworks, and steps have been taken to implement these frameworks, progress in the sanitation sector is still largely unaddressed.

A key step to gaining government buy-in to sanitation issues is to demonstrate the linkages between poor sanitation and its impacts on human development outcomes and economic growth. An understanding of these linkages can often act as a starting point for government reform, and provide developing countries and donors alike with a compelling basis for ramping up investment in sanitation.

Therefore, this study uses cost benefit analysis (CBA) (see *Box 3.1*) to demonstrate the case for investing in sanitation. The key findings from the study are detailed in *Box 3.2* below. The remainder of this paper presents the technical analysis used to derive these findings in greater detail.

## Box 3.1 Cost Benefit Analysis

CBA compares the benefits and costs of a particular intervention over a project lifetime to assess its economic value. It is an important tool often used as a part of decision making for investment and valuing the benefits associated with interventions such as improved sanitation. CBA can be used to ascertain the net benefits or returns to the economy for every US\$ invested.

CBA typically involves the following steps:

- Definition of the project scenario, including a profile of the "do nothing" scenario as compared with the project intervention;
- Identification of the project costs and impacts;
- Quantification of the project costs and impacts; and
- Calculation of the Cost Benefit Ratio.

# Box 3.2 Sanitation Study: Key findings

Sanitation provision reduces diarrhoeal and other water-borne illnesses. Avoiding such illnesses saves time and money for both individuals, households, and government agencies, as healthier people are more economically productive.

The sanitation study built on a recent analysis by the WHO to analyse the CBA of sanitation investments in 12 of the countries analysed in the water study. The analysis included two sets of sensitivity analyses to test the underlying range of assumptions in the model, to yield pessimistic (worst case) and optimistic (best case) scenarios.

The findings present a strong case for investment in sanitation:

- The net returns are positive (> 1) across all 12 countries, indicating that sanitation yields greater benefits than costs at the country level;
- The analysis finds that for every US\$1 invested in providing improved sanitation, resulting societal economic benefits of between US\$5 and US\$23 will be realised, depending on the country;
- Net returns are positive even in the most pessimistic scenario, for all countries studied.

The report is structured as follows:

- *Section 3.2* describes the methodology used to consider the economic case for meeting the MDG sanitation target (Target 10);
- *Section 3.3* provides an overview of the impacts of improved sanitation;
- *Section 3.4* presents the results of the CBA;
- *Section 3.5* explores the shift to demand responsive sanitation policy, and its implications for the economic argument for sanitation.
- *Section 3.6* presents conclusions and recommendations to help further inform the economic case for investment.

# 3.2 METHODOLOGY

The study's key objective is to raise the profile of the personal and societal benefits that result from sanitation investment, building on recent work conducted by the World Health Organisation (WHO).

The methodology for conducting the study included the following steps:

- A review of current literature on the benefits and costs of improved sanitation, as well as policy approaches to sanitation delivery; and
- Development of a model for CBA.

# 3.2.1 Literature review

The study began with a review of key literature on sanitation improvement (See *Annex B* for a full bibliography). The review aimed to identify existing studies on the economic benefits of sanitation, as well as current thinking on policy approaches to sanitation delivery (discussed in greater detail in *Section 3.5*).

The most recent and comprehensive related economic evaluation of sanitation was conducted by the Swiss Tropical Institute (STI) for the WHO in 2004 (see *Box 3.3*). Their report, "Evaluation of the Costs and Benefits of Water and Sanitation Improvements at the Global Level" presented an analysis of selected interventions to improve both water and sanitation services. This report is largely based on the WHO's findings.

# Box 3.3 WHO Study

The WHO study considered a number of interventions:

- 1. Improvements required to meet the millennium MDG for water supply;
- 2. Investments required to meet the water MDG plus halving by 2015 the proportion of those without sustainable access to adequate sanitation;
- 3. Investments required to achieve universal access to improved water supply and sanitation;
- 4. Investments required to provide disinfection at point-of-use over and above increasing access to improved water supply and sanitation; and
- 5. Investments required to provide regulated household piped water supply and sewage connection with partial sewerage for everyone.

Overall, the WHO study found that "in developing regions, the return on a US\$1 investment was in the range of US\$5 to US\$28 for the first intervention, remaining at similar levels for the second, third and fourth interventions."  $^{(1)}$ 

While much has been written on the benefits of improved sanitation (summarised in the following section), there is a scarcity of supporting empirical evidence about the economic value of these benefits, making it difficult to provide a quantitative argument for investment in sanitation relative to other development issues (e.g. water supply, health, education).

## 3.2.2 Development of cost benefit model

Given the large gap in economic analyses for sanitation improvement, this study sought to build on the WHO study. Whereas the WHO study analysed sanitation on a global/regional scale, a focus on specific countries is useful. Hence, this study conducted a more detailed analysis of sanitation interventions in 12 of the countries analysed in the water study accompanying this study. <sup>(2)</sup>

# Adaptation of the WHO study

ERM collaborated with the principal author of the WHO report to develop the cost benefit model, by adapting the WHO model:

<sup>(1)</sup> Hutton, G. and Haller, L, 2004. "Evaluation of the Costs and Benefits of Water and Sanitation Improvements at the Global Level." World Health Organisation.

<sup>(2)</sup> The countries studied included Ethiopia, Ghana, Nigeria, Uganda, South Africa, Tanzania, Zambia, Bangladesh, China, India, Cambodia and Sri Lanka. Vietnam was excluded from this study because it was added at a later data to the water study, once this study was completed.

- First, the WHO model was adjusted to capture only the costs and benefits of meeting the sanitation MDG Target 10 of halving by 2015 the proportion of those without sustainable access to 'improved sanitation'. <sup>(1)</sup>
- In the WHO report, data were presented for 17 WHO regions that were aggregated from individual country-level data. This study draws on the country-level data to conduct an economic analysis for investment in sanitation to meet the MDG target for the 12 countries mentioned above.

# Characteristics of the model

The following characteristics define the model used in this study:

- The sanitation investments are considered over a time period from 2000 until 2015;
- Country populations used in the analysis are based upon a forecast of population levels at 2015;
- The model assumes that an initial capital investment occurs in Year 0 sufficient to meet the MDG sanitation target, and that maintenance and operational costs recur throughout the 15 years<sup>(2)</sup>; and
- Costs and benefits were discounted at a rate of 3%.

# Sensitivity analyses

The CBA model considers a range of scenarios. A baseline assessment uses average values for costs and benefits. The total discounted costs are subtracted from the total discounted benefits to obtain the net benefit, or the net present value (NPV). In a cost benefit analysis, a positive sum or NPV (greater than one) indicates that a project is worthy of investment because the benefits outweigh the costs.

However, the costs and benefits used in the model are often based on a series of assumptions about the range of possible impacts. Therefore, a series of sensitivity analyses were used to test the CBA for both a pessimistic (assume high costs and low benefits) and an optimistic (assume low costs and high benefits) scenario. Additionally, some of the assumptions underlying the model were tested. Each of these sensitivity analyses is described in greater detail in the following sections.

(2) Although a more gradual investment profile may be more likely, this assumption avoids the value of the cost profile being decreased over time due to discounting, and does not significantly impact the output of the model.

<sup>(1)</sup> Improved sanitation was defined as follows: sewer connection; septic tank; pour-flush; simple pit latrine; and Ventilated Improved Pit (VIP) latrine

# 3.3 IMPACTS OF IMPROVED SANITATION

The impacts of poor sanitation are primarily health related. Poor sanitary conditions cause faecal-oral disease transmission, <sup>(1)</sup> resulting in infectious diarrhoea. Poor water supply and sanitation-related diarrhoea cause the deaths of 3,900 children globally every day. <sup>(2)</sup>

In addition to childhood mortality, poor health as a result of diarrhoea can reduce an individual's productive time and increase expenditure on medicines and travel costs (see *Figure 3.1*). <sup>(3)</sup>

# *Figure 3.1 Time and expenditure impacts from poor sanitary conditions*



## Source: ERM

Improvements in sanitation can result in a variety of benefits, through the avoidance of such costs. This section highlights some of the key health and non-health related impacts of improved sanitation.

(2) UNICEF-WHO JMP, 2004. "Meeting the MDG Drinking Water and Sanitation Target - A Mid-Term Assessment of Progress."

(3) Hutton, G. and Haller, L. 2004. "Evaluation of the Costs and Benefits of Water and Sanitation Improvements at the Global Level." World Health Organisation.

<sup>(1)</sup> Hutton, G. and Haller, L. 2004. "Evaluation of the costs and benefits of water and sanitation services." World Health Organisation.

# 3.3.1 Health impacts of improved sanitation

The primary impact of improved sanitation is a reduction in health impacts. The benefits resulting from improved health can be categorised as follows:

- (i) Market benefits at the household level;
- (ii) Non market benefits at the household level; and
- (iii) Wider economic benefits beyond the household.

# Market benefits at the household level

Market benefits can be quantified using monetary prices.

- Reduced expenditure on diarrhoeal medication and travel and subsistence costs to receive treatment increases household disposable income.
- Improved sanitation facilities can also potentially increase property values.

# Non-market benefits at the household level

Non-market benefits cannot be quantified using monetary prices, although they are often valued highly by individuals (and alternative methods for valuing them exist).

- Time savings, for both leisure and work, can benefit both the individuals who were prone to infectious diarrhoea, as well as those who are involved in caring and treating the afflicted. If sanitation allows the main provider in a family to work without the hindrance of illness, then the family that the provider supports will also benefit. As with time lost to illness, time lost through travelling for treatment carries an opportunity cost of a reduction in the productivity of the workforce.
- The risk of individuals dying/becoming seriously debilitated through poor sanitation is reduced. Lives lost through illness are valued at individuals' lost future income stream. <sup>(1)</sup>

# Wider benefits beyond household level

Other benefits can accrue beyond the household to the wider economy.

• Reduced incidence of childhood illness can increase school attendance. Even if diarrhoeal incidences do not prevent attendance there is evidence that such illness impacts on the learning ability of a child.<sup>(2)</sup> A lack of sanitation and hygiene facilities in schools has a stronger negative impact on girls than on boys. Safe, clean, and private sanitation in schools contributes to increased attendance and a reduced drop out rate by girls.<sup>(3)</sup>

(1) Boardman, A., D. Greenberg, A. Vining and D. Weimer. 1996. "Cost benefit analysis: concepts and practice." Upper Saddle River, NJ: Prentice-Hall.

(2) Nokes *et al.*, 1992. "Parasitic helminth infection and cognitive function in school children."(3) http://www.unicef.org/wes/index\_schools.html

- Reduction in treatment of disease decreases expenditure and time costs for health facilities.
- A reduced frequency of morbidity and mortality translates into a more productive workforce. WHO Commission on Macro Economics and Health links low infant mortality rates with strong subsequent economic growth. Overall, WHO estimates that a 10-year increase in average life expectancy at birth translates into an increase in economic growth of between 0.3% and 0.4% per annum.<sup>(1)</sup>
- Disease affecting employees in vital services (for example health workers, those working in law enforcement, or government officials) is reduced, benefiting the greater economy.
- Incentives for foreign and domestic investment are increased. In many countries, availability of sanitation and wastewater treatment is seen as a pre-requisite for investment.

#### 3.3.2 Non-health related impacts of improved sanitation

In addition to health-related benefits, improved sanitation can have nonhealth related benefits. Broadly, these include convenience, privacy, dignity, and safety. These non-health benefits are particularly relevant for women and girls. Without sanitation, individuals spend a considerable amount of time searching for a safe place to defecate.

An additional component of improving sanitation is the expansion of wastewater treatment facilities from sewerage networks. Properly installed sanitation systems and wastewater treatment facilities should reduce the possibility of bacterial contamination of surface and groundwater.

This study does not consider the important beneficial and negative impacts of sanitation on the environment. While these externalities should be considered part of the costs in a cost benefit analysis, they could not be not included in this analysis due to lack of available data. However, a related study by ERM for the United Nations Environment Programme considered the options for meeting the finance gap between current spending on wastewater collection and treatment and the level needed to meet the MDG. The study concluded that, although expensive, the environmental benefits would be substantial. Instead of financing a few very expensive wastewater initiatives, aid could be targeted to help mobilise domestic (user) and private sector sources of finance to fund more domestic wastewater treatment investments.<sup>(2)</sup>

#### 3.3.3 Limitations

To date, an economic analysis of improvements in sanitation alone has not previously been attempted. This study is an initial effort to undertake such an analysis building on the STI/WHO work. The analysis presented has used a conservative approach throughout, and all findings are presented in a

(1)Hutton, G., Haller, L. and Evans, B. 2004. "Closing the Sanitation Gap - the Case for Better Public Funding of Sanitation and Hygiene." OECD Round Table on Sustainable Development, Paris.

(2) UNEP/GPA Coordination Office, 2003. "Financing Domestic Wastewater Collection and Treatment."

transparent manner to show both the strengths and weaknesses of such an analysis.

The following factors limited the analysis:

- Because economic analyses of improved sanitation have not previously been conducted, it was difficult to benchmark the findings of this study against other similar analyses.
- The STI/WHO study, while very comprehensive and robust, attempts to analyse improved sanitation at an aggregate level. Hence, detailed country level data may be based on some fairly broad assumptions. More in depth research on an individual country level is required.

# 3.4 Cost Benefit Analysis

To calculate the economic value of investment in sanitation, the model was run for a variety of scenarios using cost and benefit data for improved sanitation. This section presents the findings of the CBA and is structured as follows:

- *Section 3.4.1* presents the calculated costs of improved sanitation used in the model;
- *Section 3.4.2* presents the estimated benefits of improved sanitation used in the model;
- *Section 3.4.3* presents the baseline CBA, combining these costs and benefits, discounted over time, to calculate both net present values and the return on every US\$1 invested in sanitation;
- *Section 3.4.4* considers the baseline CBA under a range of scenarios, to test how sensitive the data is to fluctuation and thus error; and
- *Section 3.4.5* combines the findings from the sensitivity analyses to calculate a worst case and best case scenario.

# 3.4.1 Costs of improved sanitation

Improved sanitation requires financial investment to install new infrastructure, improve existing infrastructure, and maintain and operate facilities over their lifetime. Sanitation costs can broadly be distinguished as either investment (initial capital costs) or recurrent costs (regular costs, such as operation and maintenance). *Figure 3.2* details the investment and recurrent costs included in the analysis.

The investment cost per capita of meeting MDG Target 10 for sanitation was taken from the Global Water Supply and Sanitation Assessment 2000 report. <sup>(1)</sup> Recurrent costs were estimated based on indications from the global literature of the likely scale of recurrent cost per technology. As part of WHO's analysis an incremental cost analysis was carried out, with an estimate of the costs of extending sustainable access to sanitation for half of the population predicted

(1) WHO, UNICEF and WSSCC, 2000. "Global Water Supply and Sanitation Assessment 2000 Report."

not to have sustainable access in 2015, taking into account population growth between 2002 and 2015.

*Figure 3.2* Investment and Recurrent Costs for Achieving the Sanitation MDG Target



Improvements in sanitation can be achieved using a variety of technologies. Therefore, four possible technologies were included in the model, each of which has a different cost profile. Given that there was uncertainty over the annual cost per capita of sanitation improvements, low, average, and high cost estimates for these technologies were used (see *Table 3.1*). It was assumed that the probability of using any given technology is equal, and hence they are weighted evenly in the model.

# Table 3.1Estimated Recurrent Costs (base case assumption presented with low to high<br/>ranges in brackets)

Sanitation Improvement	Annual	Recurrent	
	Asset life Base Case in Years (Low-High)	Operation, Maintenance, Surveillance as % annual investment cost	Education as a percentage of annual investment cost
Sewer connection	40 (30-50)	30 (15-45)	5 (0-10)
Septic tank	30 (20-40)	10 (0-10)	5 (0-10)
Ventilated Improved	20 (10-30)	5 (0-10)	5 (0-10)
Latrine			
Simple pit latrine	20 (10-30)	5 (0-10)	5 (0-10)

*Table 3.2* presents the estimated costs associated with implementing the MDG for sanitation in each of the countries included in this analysis, for the low, mid and high ranges.

Country	Total cost of achieving MDG Target 10 for sanitation (annua million US\$)		
	Low	Mid	High
Asia			
Bangladesh	109.8	266.8	553.0
Cambodia	19.7	47.8	99.0
China	1,120.3	2,722.8	5,643.6
India	1,093.5	2,657.6	5,508.4
Sri Lanka	4.8	11.7	24.2
Africa			
Ethiopia	108.5	264.5	559.2
Ghana	13.8	33.7	71.2
Nigeria	88.1	214.8	454.1
South Africa	8.9	21.6	45.7
Tanzania	7.1	17.2	36.4
Uganda	13.6	33.1	70.0
Zambia	4.7	11.4	24.1

## Table 3.2Costs of Implementing the MDG for Sanitation (annual US\$)

## 3.4.2 Benefits of sanitation

For this study, the benefits of investment in sanitation were calculated in accordance with methods and data inputs outlined in the WHO report. As discussed previously, market benefits tend to be easier to value than non-market benefits. As a reduction in the prevalence of infectious diarrhoea is the most significant benefit from improved sanitation, the economic analysis presented in this paper focuses on market benefits from reduced incidence of illness. *Table 3.3* lists the benefits resulting from improved sanitation included in the model and a brief description of the data used to value them.

Benefit	Data used for Valuation
Reduced health sector costs	Avoided health care related costs associated
	with illness.
Reduced patient expenses	Avoided travel costs to the health facility and
	subsistence while travelling or being treated.
Increased time savings	A generic per person time saving of 30 minutes
	was used for this analysis, reflecting the time
	saved due to less distant facilities/open
	defecation. This time was valued at the
	minimum wage for each country. This time
	saving figure was used by the WHO following
	expert consultation. <sup>(1)</sup>
Productive days gained	Avoided workdays lost were valued at the
	country specific minimum wage.
Days of school attendance gained	Avoided educational time lost was valued at
	the country specific minimum wage.
Child days gained	Avoided cost of caring for a sick child was
	valued at 50 percent of each country's
	minimum wage.
Deaths avoided	Deaths avoided have been valued using a
	discounted income stream, based on the
	country specific minimum wage.

## 3.4.3 Baseline CBA

Using these costs and benefits, the case without any intervention, often termed the "do nothing" scenario, is compared with the case for improved sanitation.

## The do nothing scenario

The "do nothing" scenario presents the case where no intervention to improve sanitation occurs. The benefits of intervention are effectively the costs avoided to society. Therefore, the 'do nothing' case would see the proportion of people without sustainable access to sanitation remaining at present levels. The following populations in each country would lack sanitation and thus would continue to experience the associated health and time impacts.

(1) Although a generic time saving per person was used, inconvenience of inadequate sanitation typically affects women to a much greater extent. This analysis accepts the theory that the opportunity cost of lost time caused by the inconvenience of inadequate sanitation should be valued at a monetary unit which reflects potential foregone earnings. Such an opportunity cost applies whether the time would otherwise be spent in income generating activities, household production or leisure time.

# Table 3.4The Number of People without Sanitation in the 'Doing Nothing' Case

Country	Number of People in 2015
	Lacking Sustainable
	Access to Sanitation
Bangladesh	85,504,859
Cambodia	15,305,880
China	872,649,711
India	851,747,774
Sri Lanka	3,734,421
Ethiopia	76,140,928
Ghana	9,698,555
Nigeria	61,834,688
South Africa	6,205,557
Tanzania	4,961,066
Uganda	9,530,807
Zambia	3,275,303

Source: Hutton, 2005

## Mid-scenario assessment

The mid-scenario assessment uses the average assumptions on costs and benefits to calculate net returns from sanitation investment. This scenario is important because it provides the baseline for the scenario.

The "do nothing" scenario was compared with the WHO's mid-assessment of costs and, where applicable, benefits, under improved sanitation. The following net present values could theoretically be achieved through investment to halve the proportion of people without sustainable access to improved sanitation.

# Table 3.5Baseline CBA of Improved Sanitation in 12 Countries

Country	Net Present Value	Return from every US\$ 1
	(millions US \$)	invested in sanitation
Bangladesh	1,879	8.04
Cambodia	1,074	23.48
China	12,119	5.45
India	15,282	6.75
Sri Lanka	45	4.89
Ethiopia	2,965	12.21
Ghana	388	12.51
Nigeria	990	5.61
South Africa	248	12.44
Tanzania	197	12.44
Uganda	379	12.44
Zambia	130	12.44

Source: Hutton, 2005.

*Table 3.5* presents a strong economic argument for investing in sanitation infrastructure: net economic benefits to society over the appraisal period range from US\$45 million in Sri Lanka through to almost US\$15.3 billion in India. Considered another way, for every US\$1 that is invested in providing

improved sanitation, a resulting societal economic benefit of between US\$5 and \$23 will be realised, depending on the country.

The largest contributor to these benefits is the time saved from improved sanitation, through reduced travel time to locations used for sanitary purposes (see *Table 3.6*). Because time savings contribute such a high percentage to the overall benefits, the assumptions regarding these benefits are tested in the sensitivity analyses in *Section 3.4.4* below.

Benefit	Percentage Contribution to Total Benefits
Convenience time savings	82.29
Health sector costs avoided	7.92
Value of saved lives	5.50
Baby days gained	2.50
School days gained	0.82
Work days gained	0.52
Patient costs avoided	0.45

# Table 3.6Contribution of Individual Benefits to Model

The time benefits of improved sanitation also account for the majority of variation in the calculation of net present values. Calculation of this benefit used data on the estimated time saved, the minimum wage and the number of people affected. Consequently, population and the minimum wage contributed significantly to the benefit variations. In some cases it was necessary to take region wide figures for minimum wage and for the cost of improved sanitation. More country specific analysis, particularly in the case of South Africa, could reveal that this analysis has underestimated benefits due to the use of a lower than average minimum wage.

# 3.4.4 Sensitivity analysis

A series of assumptions regarding costs and benefits of improved sanitation, such as capital and O&M costs, and benefits through reduced expenses, underpin the analysis. Sensitivity analyses are a common tool used to test these assumptions.

The WHO's data included low, medium and high estimates of most of the costs and benefits in its 2004 paper. This study uses those estimates as the main basis for its sensitivity analyses. Such analyses look at "optimistic" and "pessimistic" scenarios in order to produce a range of possible outcomes. In the optimistic scenario, a low cost estimate and a high benefit estimate is used. Conversely, the pessimistic scenario uses a high cost estimate and a low benefit estimate.

Two sets of sensitivity analyses were run:

• First, optimistic and pessimistic scenarios were derived using low and high cost and benefit estimates from the WHO data.

• Second, as the time-savings associated with improved access to sanitation account for the highest levels of benefit in the model, these estimates were decreased.

# Sensitivity analysis for low and high scenario assessments

To consider the most pessimistic and optimistic scenarios, low and high estimates of costs and benefits (as indicated in *Sections 3.4.1* and *3.4.2*) were assessed. *Table 3.7* presents the assumptions used.

 Table 3.7
 Assumptions Used for Optimistic and Pessimistic Scenarios

Optimistic		Pessimistic	
•	Low cost estimates for capital, operational and maintenance costs of meeting the	•	High cost estimates for capital, operational and maintenance costs of meeting the
	sanitation target.		sanitation target.
•	High estimates of benefits through health sector expenses saved	•	Low estimates of benefits through health sector expenses saved
•	High estimates of benefits through patient expenses saved	•	Low estimates of benefits through patient expenses saved
•	Other factors not distinguished between high and low	•	Other factors not distinguished between high and low

*Table 3.8* presents the net present value and return on investment under the optimistic and pessimistic cost and benefit scenarios.

	Pessimist	ic Scenario	Optimistic Scenario		
Country	Net Present	<b>Return from</b>	Net Present	<b>Return from</b>	
	Value (millions	every US\$ 1	Value (millions	every US\$ 1	
	US\$)	invested in	US\$)	invested in	
		sanitation		sanitation	
Bangladesh	1,533	3.77	2,121	20.32	
Cambodia	999	11.09	1,135	58.75	
China	8,248	2.46	15,055	14.44	
India	11,818	3.15	17,719	17.20	
Sri Lanka	27	2.11	61	13.67	
Ethiopia	2,525	5.51	3,329	31.69	
Ghana	331	5.65	435	32.51	
Nigeria	626	2.38	1,294	15.69	
South Africa	210	5.60	279	32.45	
Tanzania	168	5.60	222	32.45	
Uganda	322	5.60	427	32.45	
Zambia	111	5.60	147	32.45	

 Table 3.8
 CBA Using Pessimistic and Optimistic Scenarios

Source: ERM analysis of Hutton data, 2005.

The findings demonstrate that even under a pessimistic scenario of high costs and low benefits, all of the countries display positive net present values; these results further strengthen the argument that there is a strong societal economic benefit that could be gained from investing in sanitation, even under pessimistic assumptions.

# Sensitivity analysis for time savings

As demonstrated in *Table 3.6,* the main contributor to the benefit calculation in the model is the time saved through more convenient access to sanitation (time savings accounted for an average 82 percent of the total benefits identified as being attributable to 'improved sanitation', ranging from 71 percent in Nigeria to 92 percent in Cambodia).

As discussed previously, time saved was valued using the minimum wage for each country. This assumption could be challenged; an individual may not reallocate saved time towards economically beneficial activities (e.g. is not employed full time or is unemployed) or may command a wage level that is less than the reported national minimum wage. Such a scenario would mean that the resulting NPVs listed in the pessimistic scenario of *Table 3.8* are overstated. Therefore, to test the sensitivity of the analysis to time savings, a scenario is considered where time saved through more convenient access to sanitation is valued at 50 percent of the minimum wage.

The minimum wage rates originally used in the analysis for each of the 12 countries is indicated in *Table 3.9* below, along with a downward revision of the time value based on time saving per person per day. Value of time per hour has been calculated assuming 40 hours of work per week for 48 weeks a year.

Country	Annual wage rate	Value of time per	<b>Revised time values</b>
	(US\$)	hour	per hour
Bangladesh	492	0.26	0.13
Cambodia	1,454	0.76	0.38
China	325	0.17	0.085
India	408	0.21	0.105
Sri Lanka	264	0.14	0.7
Ethiopia	742	0.39	0.195
Ghana	742	0.39	0.195
Nigeria	300	0.16	0.8
South Africa	742	0.39	0.195
Tanzania	742	0.39	0.195
Uganda	742	0.39	0.195
Zambia	742	0.39	0.195

# Table 3.9Time values (US\$)

*Table 3.10* below presents the results of applying these revised time benefits to each of the three scenarios previously considered in this analysis (low, mid and high scenario assessments). The results show that, even under a more stringent valuation of the principal benefit, positive net benefits are still realised in all of the twelve countries considered.

Country	Net Present Value under pessimistic scenario (US\$ millions)	Net Present Value under mid case scenario (US\$ millions)	Net Present Value under optimistic scenario (US\$ million)
Bangladesh	561.5	907.4	1,149.3
Cambodia	485.0	559.8	620.9
China	1,699.9	5,571.0	8,506.1
India	3,794.2	7,258.4	9,695.2
Sri Lanka	4.1	22.6	38.0
Ethiopia	1,220.3	1,660.9	2,024.3
Ghana	164.7	221.7	269.2
Nigeria	197.4	561.3	865.4
South Africa	103.7	140.9	172.3
Tanzania	82.6	112.2	137.3
Uganda	158.7	215.6	263.7
Zambia	54.5	74.1	90.6

# Table 3.10 Net Present Values Using Revised Time-Savings

# 3.4.5 Worst/best case scenarios

All of the scenarios considered have yielded positive net present values. *Table 3.11* combines both sets of sensitivities for each of the countries to determine the upper and lower limits to the analysis.

In the worst case scenario, a high cost/low benefit scenario is combined with convenience time benefits valued at 50 percent of the assumed minimum wage. In the best case scenario, a low cost/high benefit scenario is combined with the full estimate of convenience time savings.

# Table 3.11Worst/Best Case Scenarios

Country	Net Present Values under the	Net Present Values under the 'optimistic' scenario	
	'pessimistic' scenario		
	combined with reduction in		
	minimum wage values		
Bangladesh	561.5	2,120.6	
Cambodia	485.0	1,134.7	
China	1,699.9	15,054.5	
India	3,794.2	17,719.1	
Sri Lanka	4.1	60.7	
Ethiopia	1,220.3	3,328.8	
Ghana	164.7	435.3	
Nigeria	197.4	1,293.7	
South Africa	103.7	279.0	
Tanzania	82.6	222.3	
Uganda	158.7	427.0	
Zambia	54.5	146.7	

Although not perfectly correlated, the net benefits accruing to each country are inevitably a function of each country's population. Sri Lanka, with the lowest population, yields the lowest net benefits according to the model. Conversely, China and India with significantly larger populations than the other countries both indicate the greatest benefits.

# 3.4.6 Summary

This cost benefit analysis presents a strong case for prioritising sanitation investment at a national level. While the costs and benefit figures used as estimates in this analysis provide a rough approximation of values, the following can be concluded:

- The presented economic appraisal of improved sanitation draws from the best available figures at the country level, using WHO data from their recent global evaluation of water supply and sanitation interventions.
- The scenarios investigated include a wide range of scenarios with both optimistic and, most importantly, pessimistic assumptions of costs and benefits. Even with the most pessimistic sensitivities in place, the net benefits were positive.
- It must be stressed, however, that these estimates only signal potential benefits. The analysis merely shows the potential possibilities over a range of optimistic and pessimistic scenarios. It provides a sound basis for a much greater focus on sanitation, but it does not provide a prescription for achieving this.

# 3.5 IMPACT OF ALTERNATIVE APPROACHES IN SANITATION POLICY

The previous section considered the economic impact of investing in sanitation based on a more traditional, supply-side approach to sanitation policy. However, recent thinking on sanitation has shifted towards more of a demand led approach, which could impact the costs and benefit data used in the CBA model. Hence this section considers the impact that this different approach to sanitation could have on the economic argument for investment. This section is structured as follows:

- *Section 3.5.1* describes the shift towards demand responsive sanitation policy;
- *Section 3.5.2* discusses the drivers of demand for improved sanitation; and
- *Section 3.5.3* examines the implications of a demand responsive approach for the economic appraisal undertaken in this study.

# 3.5.1 Trends in sanitation policy

During the 1980s, the International Drinking Water Supply and Sanitation Decade saw a focus on 'supply-driven' approaches leading to the installation of infrastructure that communities often did not want or could not afford. <sup>(1)</sup> As a result, governments and donors often invested heavily in large infrastructure projects, with low take up by communities.

(1) UN Millennium Project Task Force on Water and Sanitation, 2005. "Health, dignity and development: what will it take?"

The WSP's 1997 paper, "Towards a Strategic Sanitation Approach" <sup>(1)</sup> marked a shift in approach to sanitation delivery. The paper underlined the need for greater stakeholder participation in sanitation services, to ensure demand responsive, rather than prescriptive, solutions. This revised approach to sanitation aims to ensure that, by responding to expressed demand, interventions will have greater buy-in from the communities they benefit.

In practice, unlocking demand for sanitation is still in its experimental stages. To date, this approach has generally had a rural focus (where sanitation is not networked). The remainder of this section outlines some of the current, demand focused initiatives underway.

## Social marketing

WSP is currently piloting a Social Marketing Program for sanitation awareness in Africa, which focuses on marketing techniques based on voluntary exchanges with the aim of promoting social objectives. Techniques used include:

- Advertising through mass media;
- Word of mouth;
- Demonstration latrines;
- Time-limited special offers;
- Credit sponsored by local traders; and
- Mutual help schemes.

Social marketing covers both demand and supply and aims to encourage the commercial selling of products that match individuals' preferences. Before commencing marketing activities, research is conducted to determine the factors that drive a community's attitudes and preferences. Specific signals are then sent out to the community, manufacturers and sellers to take advantage of these drivers for demand. At the household level, the driver for change in sanitation has been found to relate more to social status, dignity and security benefits than to health reasons. <sup>(2)</sup>

The London School of Hygiene and Tropical Medicine is also adopting marketing approaches based on promoting and selling latrine products and services. This includes developing better products, better supply services, improved emptying services as well as promotion, regulation and policy development. The overall goal is to develop a sustainable sanitation industry, rather than aim to build an arbitrary number of latrines. <sup>(3)</sup>

(1) Wright, A. 1997. "Towards a Strategic Sanitation Approach: Improving the Sustainability of Urban Sanitation in Developing Countries." WSP.

(2) Obika *et al.*, 2002, "Social Marketing for Urban Sanitation - Review of evidence and inception report,".http://wedc.lboro.ac.uk/wedc/projects

(3) Correspondence with London School of Hygiene and Tropical Medicine, February 2005.

# Box 3.4 Social Marketing: Programme Saniya in Burkina Faso

In Burkina Faso, a social marketing approach was used to successfully change hygiene behaviour. Programme Saniya, carried out between August 1995 and July 1998, was implemented by the Ministry of Health of Burkina Faso with technical assistance from the London School of Hygiene and Tropical Medicine and funding from UNICEF.

The project identified local motivation factors for improving hygiene practices. The research specifically focused on a small number of hygiene bad practices, namely failure to dispose of children's excreta effectively and failure to wash hands with soap after contact with excreta.

Local channels were used to communicate messages focused on the respect mothers might gain from being hygienic and the improvements gained in quality of life when children's excreta were removed and could therefore not be seen or smelt. These included local radio, face to face domestic visits and social events. Other methods of information transfer used over the three year programme included a play created by a local theatre group that was performed weekly, sending a box of soap and buckets to schools, and the training of teachers and implementation of a curriculum on good hygiene practices.

Source: Hygiene Promotion in Burkina Faso and Zimbabwe: New Approaches to Behaviour Change, WSP Africa. http://www.wsp.org/publications/af\_bg\_bf-zm.pdf

## Total sanitation

In Asia, the WSP has adopted a different strategy based on the concept of 'Total Sanitation.' WSP works in partnership with local and international organisations, and has adopted an approach that focuses on encouraging a community decision to eliminate open defecation, using community pressures and dynamics as part of the process of change at the household level. The approach minimises dependence on subsidy and focuses on behaviour change, rather than the construction of latrines.<sup>(1)</sup> Such approaches are most successful where the supply side is sufficiently established so as to not require external support.<sup>(2)</sup>

(1) http://www.wsp.org/03\_Sanitation.asp

(2) Information from WaterAid Bangladesh relayed via the London School of Hygiene and Tropical Medicine, February 2005.

# Box 3.5 Total Sanitation: An example from India

Two mandals in the Khammam District, Andhra Pradesh, India have achieved 100% coverage of Individual Household Toilets (IHHL), through a total sanitation campaign. A landmark workshop in December 2000 was key in overcoming community reservations regarding IHHL. The workshop involved 300 participants from National and District Government offices, field monitors and Mandal engineers. The workshop was conducted in a participatory manner and was influential in convincing key community members to encourage villagers to construct IHHL at village level.

This workshop was further supplemented by creatively designed community mobilisation processes, awareness raising and demand generation through education campaigns and capacity building of all the stakeholders. Low cost, creative educational campaigns were used with an emphasis on individual personal contact. For example street plays, songs, and wall paintings all contributed in making the campaign more interesting and convincing.

The construction materials for the IHHL pits were made locally and people purchased toilet pans from the three rural sanitary markets established in the mandals. UNICEF provided help in engaging facilitators and providing materials that helped in clearing the doubts of the community. Technical and financial support as well as regular monitoring efforts was provided from the State Government.

Source: Dept. of Drinking Water Supply, Ministry of Rural Development, Government of India

# Sani-centres

UNICEF has championed market creation by encouraging demand through the stimulation of rural sanitation markets. The market is initiated through support to a local individual in starting a store that sells toilet parts. Concurrently, masons are trained and a toilet promotion campaign is launched.

This approach uses a supply side focus to create demand through community outreach. The success of a rural sanitation market relies on the employment of community 'motivators' or 'animators' who receive remuneration for their efforts selling sanitary products. These individuals help foster demand levels in their communities.

Rural sanitation markets have been particularly successful in West Bengal in India and Inago in Nigeria. By 2000 in Nigeria, five years after the concept was initiated, there were 3,000 such sanitation markets.

# Box 3.6 The Sani-centre Market in India

The first experimental sani-marts were started in Uttar Pradesh, India, in 1993. The marts were set up in strategic locations such as busy market places and were staffed by trained managers and 'motivators'. The role of the motivator includes showcasing the health benefits of sanitation and hygienic behaviour as well as advising potential customers on the choice of latrine design and mason. The motivators receive a small incentive, \$1.50 for each toilet installation they encourage. The manufacture of the toilet parts was undertaken by local manufacturers – rural industrial complexes run by groups of village councils.

Once the sani-marts were fully operational they were found to operate with a profit within 12 to 18 months. The market for sani-marts has grown such that, in India, nearly 700 marts are currently in operation in more than 10 states.

Source: India's Rural Sanitary Marts, Country Brief by Rupert Talbot, UNICEF India, http://www.unicef.org/wes/files/wf12e.pdf

## 3.5.2 Drivers of demand

The demand-based approaches previously discussed highlight that improvements in sanitation contribute not only to health benefits but also to improving individual comfort such as convenience, privacy and safety as well as individual self-esteem through the demand drivers of dignity, pride and social status. Although more challenging to quantify, these benefits are amongst the key advantages of sanitation most often reported by respondents in low-income communities and could be quite high.<sup>(1)</sup> While health related benefits are a core component of an economic analysis of improved sanitation, health benefits do not capture the high values individuals seem to consistently place on these other benefits of sanitation.

A number of studies have clearly demonstrated the importance of these nonhealth benefits. For example, a study by Jenkins (1999)<sup>(2)</sup> in Benin found that the health related benefits of a latrine were ranked much lower than other non-health related benefits. Of the 20 preferences associated with the benefits of sanitation identified in this study, the top three were stated to be avoiding discomfort, gaining prestige and safety. Health and time benefits were ranked towards the bottom of individuals' preferences.

Similarly, a WSP field study from Kenya found a positive relationship between improvements in education, health and hygiene awareness and the demand for sanitation facilities. Interestingly, education motivated men to acquire latrines more than other groups, while prestige was identified by youth and women as an important motivator. The study also found that women place more value on privacy and convenience than did other groups.<sup>(3)</sup>

(1) DFID, 1998. "Guidance Manual on Water Supply and Sanitation Programmes."

(2) PhD thesis, UC Davis, Civil Engineering, Jenkins MW , 1999. "Sanitation Promotion in Developing Countries: Why the Latrines of Benin are Few and Far Between."

(3) WSP, 2004. "Sanitation and Hygiene in Kenya: Lessons on What Drives Demand for Improved Sanitation."

# 3.5.3 Implications for economic appraisal

Given these developments in policy on sanitation delivery, it is interesting to now return to the economic analysis discussed in *Section 3.4*, and assess the implications that the demand focused approach could have on the economic argument for investment in sanitation.

## Costs

The initial upfront capital investments, under both a more traditional approach and a more demand responsive approach, are likely to be similar. In the longer run, if demand focused approaches are successful in unlocking demand at the household and community level, capital costs may drop as markets for sanitation become more developed.

It could be argued that a demand focused approach would require a greater emphasis on the initial marketing of sanitation and thus would likely require a greater overall level of financial resources in the short run. A comprehensive program of supporting investments would be needed initially, for example outreach programmes and marketing initiatives to ensure that behavioural change does occur in a sustainable manner. <sup>(1)</sup> However, the intention with demand responsive approaches to sanitation is to build community ownership and accountability for improved sanitation, and therefore create incentives for households and communities to ensure their facilities continue to operate. Thus, costs of improving sanitation could decrease in the longer run.

# Benefits

A demand responsive approach can increase the benefits realised from sanitation in two ways:

- Health and other benefits should be more sustainable over the long run, given that initiatives such as social marketing are designed to ensure change in communities for continued and informed use of sanitation facilities and adoption of hygienic behaviours.
- Because these new approaches are designed to respond to community demand for services, they should capture more of the primary drivers of demand such as privacy, dignity, status and safety, all of which increase the benefit felt by communities as a result of improved sanitation.

# The economic case

Hence a demand responsive approach to sanitation may have important implications for the cost benefit model presented in *Section 3.4:* 

• It is unclear whether costs will increase or decrease as a result of a greater focus on demand-focused approaches, though the overall change in costs

(1) Conversations with WSP, February '05

should not be substantial. However, benefits arising from investment are likely to be greater due to more long run sustainability and increased capture of drivers of demand such as comfort and social status.

• Therefore, under a demand responsive approach, the economic argument for sanitation improvement could in fact be stronger than suggested in this analysis, as increased benefits strengthen the case for investment.

Importantly, with an increase in demand-responsive approaches to sanitation, the financial requirements of developing country governments and donors should in fact decrease as users and communities increase their own contributions and subsidies play an increasingly minor role over time. Hence, the demand driven approach could lead to reduced costs at the governmental level, with greater long term sustainability of benefits.

# 3.6 CONCLUSIONS AND RECOMMENDATIONS

# 3.6.1 The economic case

Our analysis suggests that the magnitude of economic benefits that can be realised by investing in improved sanitation to meet the MDG Target 10 for sanitation is strong. Even when a "worst case" scenario was considered, maximising costs and minimising benefits, the economic case for investment is still positive.

Further consideration of the recent shift in sanitation delivery to more demand responsive approaches may have implications on the economic case for sanitation investment. While it is unclear whether a demand responsive approach would require greater financial resources, the allocation of these resources and the requirements for government funding are likely to be less onerous. The economic benefits that could result from this approach, however, appear to be greater, and, importantly, will be more achievable and more sustainable over time.

Hence there is a very strong argument for further investment in sanitation to meet the MDGs. For example, according to the JMP mid-term assessment, Ethiopia has sanitation coverage of just six percent. The economic analysis conducted in this study indicates that for every US \$1 invested in sanitation in Ethiopia an economic societal benefit of over US \$20 could be realised. Even allowing for some tightening of the analysis, there is little argument for a lack of investment in sanitation. Ethiopia is not unique in this respect.

With this in mind, this paper should be viewed as a call to action for developing country governments and donors alike to revisit their approach to sanitation and to increase funding to the sector to ensure progress is made towards the MDG target for sanitation and to deliver sustainable solutions for human development outcomes.

# 3.6.2 Recommendations

The conclusions of this study would be strengthened by more and better quality data, especially in those countries that are currently off track and undergoing demand responsive initiatives such as total sanitation, sanicentres and social marketing. The cost of gathering such data would not be substantial but would generate a wealth of useful information that could be used to strengthen the hypotheses put forward in this paper.

In particular, the focus of this data collection could be targeted at those countries in which our initial economic evaluation highlights a particularly favourable net benefit from investment.

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