THE INTERNATIONAL WATER ACADEMY

AID FOR WATER SUPPLY AND SANITATION

FINANCING STRATEGIES TO MEET THE MILLENNIUM DEVELOPMENT GOALS FOR WATER AND SANITATION IN LOW INCOME COUNTRIES

DRAFT FOR DISCUSSION AT THE SEMINAR ON "WATER FOR THE POOREST" ORGANISED BY THE INTERNATIONAL WATER ACADEMY

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1. INTRODUCTION

1.1 Background and Purpose

This brief paper analyses the financial strategies that – along with institutional and technological innovation – will be needed to meet the Millennium Development Goals for domestic water supply and sanitation for the people living in absolute poverty in low-income countries, those most off-track in terms of reaching the goals. It is informed by and is a contribution to the work of both the overall Millennium Project and the Task Force on Water Supply and Sanitation, with which its authors are associated.

The UN Millennium Project[2] was commissioned in early 2002 by the UN Secretary-General to put forward the best strategies for achieving the MDGs. It is a time-bound initiative that will end in the summer of 2005 with the submission of its final recommendations to the Secretary-General. The Millennium Project's Task Force on Water and Sanitation focuses on how the world can join together to meet MDG Target 10 and to manage water resources in a way that furthers the MDGs as a whole. The Task Force Interim Report, "*Achieving the Millennium Development Goals for Water and Sanitation: What Will It Take?*" addresses the national and international dimensions of following questions: why water supply and sanitation as well as water resources development and management require urgent action; where the needs are greatest; what's holding us back; what are the essential components of action; and who needs to act.

Financing is a thread running through each of these questions. Given the centrality of the financing issue – not to mention the passion that stakeholders on different sides of the debate bring to the table – this paper aims to clarify several critical and often contentious issues related to what it would take in terms of financing strategies to achieve the dramatic expansion of water supply and sanitation coverage in the poorest countries of the developing world, including who would foot the bill and how. This paper and the discussion that it stimulates will help the Task Force reach the conclusions that will appear in its Final Report, due out in early 2005.

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[2] More information on the Millennium Project can be found at www.unmillenniumproject.org.

1.2 Focus and Approach

This paper has two distinct characteristics that differentiate it from other papers and reports on financing for water and sanitation:

First, it focuses on the people living in absolute poverty in low-income countries, those most off-track in terms of reaching the goals. This focus on the poorest needs to be highlighted at the outset because much of the debate around financing for water and sanitation revolves around a lack of clarity regarding the target group and countries' income levels. Very little of the literature, in fact, distinguishes among the fundamentally different approaches needed to finance access to water and sanitation by different target groups and countries. A key contribution of the paper, therefore, is to make such a distinction and formulate proposals accordingly. Of course, the target group on which this paper focuses represents only a subset of the one billion people without access to domestic water supply and the roughly two-and-a-half billion without access to sanitation. Those global figures include significant numbers of poor people in countries like India, China, South Africa, Brazil and Indonesia – countries that have relatively sizable domestic resources for financing water and sanitation. And the category of the unserved, particularly in the area of sanitation, also includes significant numbers of people who are not absolutely poor, both in the low-income and the middle-income countries of the developing world.

Second, the paper addresses financing needs for meeting the MDG target on water and sanitation within the context of a comprehensive financing analysis across all MDGs, for three reasons:

- The larger goal is to meet the full set of MDGs rather than only the water and sanitation target;
- Although the fact that poor people spend a lot of money on water is taken to show that the poor can afford to pay for water charges, in practice they may be compromising on essential expenditures for other basic needs such as food, transport, energy, health or education;
- This broader approach enables parallels to be drawn with approaches that work in other areas (especially in other service-related MDGs – e.g., health, education).

Despite this MDG-wide analysis, this paper focuses only on financing water infrastructure and services to meet the MDG targets for domestic water supply and sanitation. It does not address financing for other kinds of water infrastructure and services – e.g., financing for irrigation infrastructure projects to help address the MDG targets on hunger. An important document that addresses the wider spectrum of water financing issues is the Camdessus Panel report on Financing Water Infrastructure[3].

[3] Report of the World Panel on Financing Water Infrastructure, "*Financing Water For All.*" Panel chaired by Michel Camdessus, report written by James Winpenny. March 2003

2. ACHIEVING THE MILLENNIUM DEVELOPMENT GOALS

2.1 What are the MDGs and why do they matter?

The MDGs are a shared commitment between rich and poor countries to cut in half extreme poverty by 2015. They derive from the Millennium Declaration, which was adopted at the Millennium Summit in September 2000 by 147 heads of state and representatives from 42 other governments. What sets the MDGs apart from previous development goals is that they consist of quantified and time-bound objectives across a broad range of development priorities, including income poverty, hunger, education, gender equality, health, environmental sustainability, water supply and sanitation, slum upgrading, and science and technology. In addition, rich countries have committed themselves to improve access to their markets for products and services from developing countries and to increase official development assistance to 0.7 percent of their gross national income.

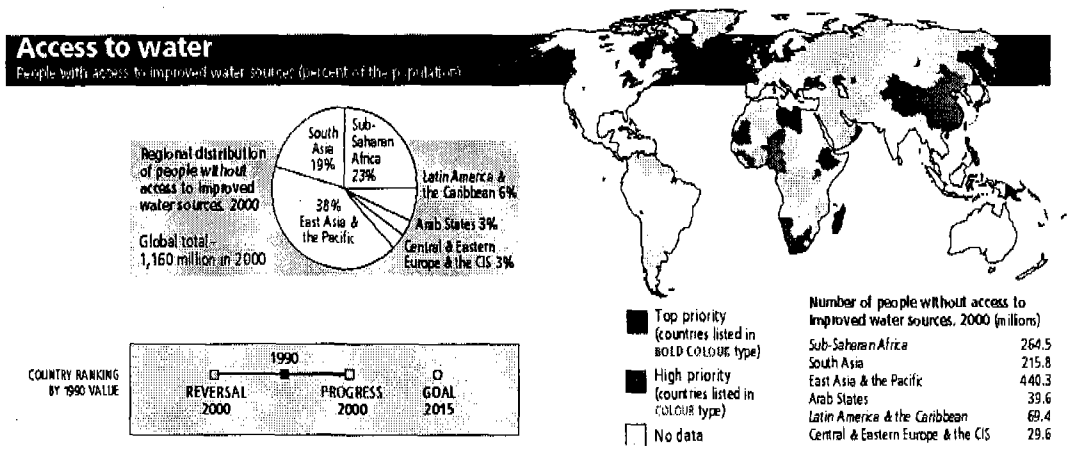
Since 2000, the MDGs have been reaffirmed at many international summits, including the Conference on Financing for Development in Monterrey and the World Summit on Sustainable Development in Johannesburg. The MDGs have become the organizing framework of the international development cooperation system, which includes UN agencies, the World Bank, the IMF, regional development banks, and bilateral donors.

2.2 How can the MDGs be achieved?

Meeting the Goals will require countries and the international system to ask a new question: "Given the urgency of achieving the MDGs and the repeated international commitments to achieve them, what policies and resources, including increased development assistance, are needed to meet the Goals?" This is a very different question than the one that is being asked today: "How close can a country come to achieving the MDGs under current constraints?"

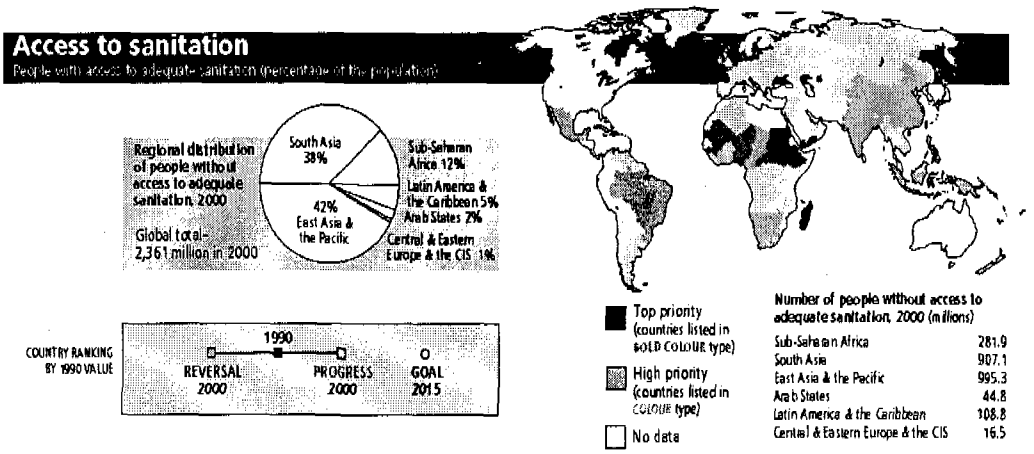
Figures 1 and 2 summarize the challenge of meeting the MDG on water supply and sanitation. The data show that unmet need is greatest in South Asia and sub-Saharan Africa. In South Asia, two-thirds of the population does not have the use of even a simple latrine; in sub-Saharan Africa, more than four out of ten people use unsafe water sources and close to half have no access to sanitation facilities.

Figure 1. Access to domestic water supply



Source: Human Development Report 2003

Figure 2 Access to sanitation



Source: Human Development Report 2003

Any goal-oriented strategy for achieving the water supply and sanitation target needs to take into account the interdependence among the goals and address several sets of questions, which include:

1. **MDG needs assessment.** What and how much is needed in terms of "software" (e.g. awareness-building programs, community sensitization and mobilization, hygiene education, operation and maintenance services) and "hardware" (e.g. water supply and sanitation technologies and infrastructure) to achieve the MDGs by 2015?

2. **Implementation strategy.** How can these interventions be delivered in a way that is cost effective, incentive compatible (e.g. by avoiding an unnecessary reliance on subsidies or fostering an attitude of entitlement), affordable to the poorest users in each country, and compatible with sustainable access?

3. **Financing strategy.** How can the capital as well as operating and maintenance costs be financed as part of an overall strategy for meeting the MDGs?

As emphasized by Millennium Project Task Force 7 on Water and Sanitation, responses to each set of questions will need to be developed as part of countries' poverty reduction strategies (PRS). They must be tailored to the specific needs of countries and socioeconomic groups within countries.

2.3 What is the target group addressed in this paper?

While the Water and Sanitation Task Force's mandate is to propose an integrated operational framework for achieving the MDGs in all developing countries (taking into account of differing national contexts and the resulting need for local specificity), as noted earlier this paper focuses more narrowly on the financing strategy for MDG Target 10 *in the poorest countries*. Appropriate financing strategies for water and sanitation objectives in middle-income countries, which have larger government budgets and can apply higher user fees, *will differ substantially from the strategy outlined in this paper.* We emphasize that costing and financing are necessary, but of course not sufficient, for meeting MDG Target 10.

A simple typology, represented below in table 2, can usefully illustrate the target group we have in mind as we write this paper: the population in Quadrant I, the unserved people living in absolute poverty in low-income countries.

Table 1. Unserved people: where are they?

	Low-income countries	**Middle-income countries**
Below poverty line	Quadrant I: Unserved people living in absolute poverty in low-income countries	Quadrant II: Unserved people living in absolute poverty in middle-income countries
Above poverty line	Quadrant III: Unserved people living above the poverty line in low-income countries	Quadrant IV: Unserved people living above the poverty line in middle-income countries

Two examples help to illustrate the approach:

- Indonesia, a middle-income country, has roughly 62 million people without access to sanitation, 44 million without access to water, and 14 million below the

poverty line[4]. If we assume that all people in Indonesia below the poverty line also do not have access to improved sanitation, then the figures that would go into the boxes for Quadrants II and IV for sanitation would be:

- Quadrant II: Unserved people living in absolute poverty: 14 million
- Quadrant IV: Unserved people living above the poverty line: 62-14=48 million

♦Mali, a low-income country, has roughly 1 million people without access to sanitation, 4 million without access to water, and 8 million below the poverty line[5]. If we assume once again that all people in Mali below the poverty line do not have access to improved water/sanitation, then the figures that would go into the boxes for Quadrants I and III for sanitation would be:

- Quadrant I: Unserved people living in absolute poverty: 1 million
- Quadrant III: Unserved people living above the poverty line: 0

This paper discusses strategies for countries like Mali, where the lion's share of the unserved are living in absolute poverty. It does not address strategies for countries like Indonesia, where the numbers of unserved people living above the poverty line is significant.

Tables 3 and 4 below provide a rough initial analysis of the distribution of the global population of unserved people for which data were available across the four quadrants for both water and sanitation[6].

Table 2. Distribution of global population across the four quadrants for water (in millions)

	Low-income	Middle-income	Total
Below poverty line	320	96	416
Above poverty line	30	259	289
Total	350	355	705

[4] Data from the 2003 Human Development Report

[5] Data from the 2003 Human Development Report

[6] Numbers of extreme poor calculated by multiplying the national poverty headcount ratio by the population. National poverty headcount ratios are taken from the World Development Indicator database. Countries for which no poverty and/or water and sanitation data are available are not included in the calculations, which is why the totals are less than the total number of unserved people, for both water and sanitation. We are grateful to Michael Krouse and Alice Wiemers of the Millennium Project Secretariat, who carried out this analysis.

Table 3. Distribution of global population across the four quadrants for sanitation (in millions)

	Low-income	Middle-income	Total
Below poverty line	540	93	633
Above poverty line	565	730	1295
Total	1,105	823	1,928

As these tables show, the target group of this paper by no means represents the majority of the unserved, especially for sanitation. However, it is the target group most likely to be left behind if appropriate financial strategies are not urgently developed to reach them.

3. FINANCING THE ACHIEVEMENT OF THE WATER AND SANITATION TARGET IN LOW INCOME COUNTRIES

3.1 Financial constraints to reaching the domestic water supply and sanitation targets in low-income countries

Globally, expanding water supply and sanitation coverage requires many things, and one of them is money — whether from national and sub-national government tax revenues; user charges; cross-subsidies from users who can afford to pay; private-sector investment; official development assistance (ODA); or a combination of some or all of these sources.

For deeply impoverished countries, none of those sources – not even all of them combined – currently provides sufficient resources to expand services as dramatically as meeting MDG Target 10 would require. Here the challenges are to mobilize the necessary resources from the international community, while also working to ensure that budgetary processes, policies, and institutional arrangements within countries give priority to investment in basic water and sanitation services for the poor. Governments and donors alike often direct their resources not to poor communities where the needs for access are the greatest, but rather to areas where there is political capture by politicians or where the criteria for donor success, such as reforms, are in place.

Funds must be available not simply to construct new water and sanitation facilities, but also to support their operation and maintenance over the long term. The many defunct piped networks, handpumps, and latrines throughout the developing world ended up that way at least in part because of inadequate resources for proper maintenance, aggravated by a culture of maintenance neglect. Experience suggests that the payoff of effective preventive maintenance in terms of lower operating costs, reduced adverse external impacts, extended life of the infrastructure, and lower levels of unaccounted-for water are substantial. Realizing these benefits, however, requires both the capacity and willingness to plan, manage, and implement effective maintenance and also a commitment to ensuring the reliable flow of funds for financing regular maintenance.

Specific factors that inhibit the flow of resources required for the construction and O&M of water and sanitation infrastructure and the delivery of services are discussed below.

Many towns and municipalities in developing countries, particularly in low-income countries, are constrained by a lack of access to loan financing facilities. Because of their limited tax revenues, these communities often rely on transfers from central government to finance construction of improved water and sanitation networks. These transfers, however, tend to be woefully insufficient and are also subject to fluctuations in the national economic and political climate, thus undermining cities' ability to undertake long-term water and sanitation planning.

Water and sanitation utilities in the poorest countries often have weak managerial and financial capacities. In many cases, political pressures prevent them from charging service prices that would cover recurrent costs, even in communities with the collective financial capacity to cross-subsidize service for the poorest. This, together with poor demand management and high levels of unaccounted-for water, often make it impossible for utilities to generate sufficient cash flows for recurrent expenditures. As a result, their credit worthiness is weak, and they are unable to attract investment for expansion. Indeed, many water and sanitation agencies have difficulty funding proper operation and maintenance (O&M) of the systems they currently manage, much less expanding services to keep pace with the rapid growth in their communities.

Regular funding from state or national governments to water agencies for O&M is even more scarce than funding for construction. Thus, instead of moving toward universal coverage and financial self-sufficiency, agencies deliver subsidized service largely to their communities' wealthiest households, which have more political or social clout. In other cases, financial regulations require that the revenues agencies generate from providing water supply are sent to national coffers rather than being used by the agencies themselves for water supply operations and maintenance. Where such revenues have been "ring-fenced" for the exclusive use of the water supply agencies that collect them, the result has been significant improvements in performance.

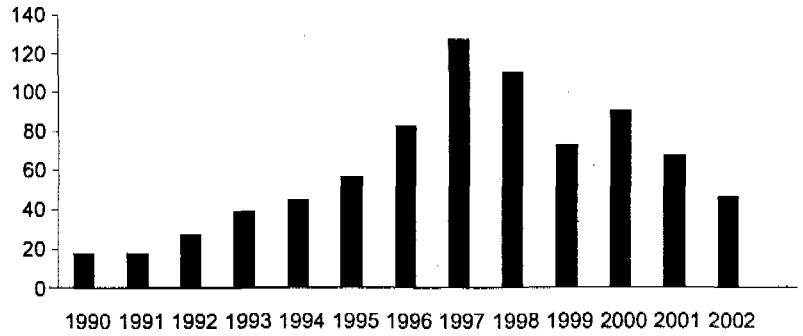
Over-optimistic expectations about the likelihood of private sector investments are another constraint. Some developing-country governments are reducing national expenditures for water supply and sanitation with the expectation that the investment gap will be filled by the private sector. Recent evidence suggests that this is unlikely to occur, particularly in sub-Saharan Africa. It has been estimated that between 1990-1997 less than 0.2% of all private sector investments in the water and sanitation sector of developing countries went to this region.[7] Moreover, after peaking in 1997, overall financial flows have decreased steadily during the past several years[8] (see figure 1). Financing water and sanitation facilities is unappealing to private investors for many reasons, including the 'lumpiness" of necessary investments, payback periods of twenty

[7] Calculated based on Silva et al. (1998) as quoted in Annamraju et al. (2001)

[8] In nominal terms, ODA for water and sanitation have declined since 1995 , fluctuating between $18Bn in 1996 and a lowest point of $13.5 Bn in 1999. These commitments were about US16 billion in 2002.

years or more, and the political difficulties inherent in charging cost-recovering tariffs. The frequency with which water and sanitation concessions in both developing and industrialized countries have been postponed or cancelled over the past several years is evidence of how difficult it is to design and implement successful private-sector financial involvement in this sector.

Figure 3. Annual private investment in infrastructure, 1990-2002 (US$ billion)



Weak local financial markets constitute another constraint to the financing of improved access to water and sanitation services. There is a tendency to rely on financing that is denominated in foreign currencies, yet revenues on which utilities and government depend to repay such loans are denominated in local currencies. This mismatch is problematic for several reasons, including devaluation and liquidity risks associated with the low cash flows from utilities. The Camdessus Panel on the Financing of Water Infrastructure provides a number of remedial measures, like special forms of international guarantees that can be used to address such financing problems. However, a lot depends upon action by governments and utilities to increase their cash flows and strengthen their financial and managerial capacities.

Finally, trends in ODA suggest that support for water and sanitation infrastructure is very modest – both in relation to support provided to other infrastructure sectors and in terms of what is necessary to meet MDG Target 10. For the water and sanitation sectors, ODA is estimated to account for about between 7% and 11 % of total investments, and these investments focus heavily on the provision of urban infrastructure to middle-income countries and not on increasing access to water and sanitation for people living in absolute poverty in low-income countries. Understanding the reasons for these trends is an important element of mobilizing the resources necessary to meet the MDGs. More generally, there is a need to review the inter-related processes of national budgeting and priority-setting, poverty alleviation initiatives such as PRSPs, and the MDGs. Countries prepared to act boldly in pursuit of Target 10 should be encouraged, not stifled, by their partners in the international community.

The prerequisite condition normally prescribed for ODA – i.e., that certain reforms are in place before investments in water and sanitation are made – has been a severe constraint

to the countries most in need of help to meet Target 10. Such national-level reforms are indeed critical. Nonetheless, there is increasing recognition that pursuing reform and capacity development simultaneously with investment, using the "learning-by-doing" approach, is more likely to advance progress toward Target 10 than is the sequential, "first-reform-then-aid" approach. This is one of the principles informing the drive to establish regional water facilities such as the Africa Water Facility hosted by the African Development Bank. They are intended, in part, to help countries with poor capacity meet the conditions for external financial support while, at the same time, channeling funds to these countries to undertake the infrastructure and service expansion necessary for meeting Target 10.

3.2 Some basic principles

A sound financing strategy for meeting the water supply and sanitation MDG in the poorest countries is to compare total financing needs with the potential for domestic resource mobilization by households and governments and then, based on the gap between the two, identify external finance requirements. The financing needs for Target 10 can be quantified through a needs assessment covering all capital as well as operating costs for "software" and "hardware".

The financing strategy needs to ensure that the poorest of the poor are not excluded on financial grounds from enjoying access to improved water supply and sanitation. Many households are too poor to afford even minimal amounts of clean water and therefore resort to consuming water from unimproved sources. The fact that many urban households spend high shares of their disposable incomes on water supply is often cited as evidence that they can "afford" high water prices. While an exclusive focus on water supply and sanitation might justify this conclusion, it becomes untenable in the context of the broader MDGs. Since water is necessary for human survival, poor households are often forced to compromise on essential expenditures – food, clothing, healthcare, clean sources of energy, transport – to finance their minimal consumption of water. As a result, these households may be malnourished or sick. For them water is not "affordable" even though they are currently paying more for it than the rich do.

Similar constraints operate at the level of national budgets, where countries may be able to finance the water and sanitation objective alone, but lack the resources required to meet the other MDGs at the same time. This is part of the reason why water is often absent from poverty reduction strategies (PRSs). Any sectoral financing strategy needs to be embedded in a financing strategy for *all MDGs* to ensure that sufficient resources are available to meet the full range of goals.

In addition to being affordable, a financing strategy needs to ensure that basic household needs for water are met without unduly wasting scarce water resources or depriving water utilities of revenues from households that can afford to pay. Several countries have used lifeline tariffs to reconcile affordability with the need to limit per capita water consumption and to generate water revenues. These tariffs charge no or minimal fees up

to the minimum need of 20-50 liters per person per day and apply the full marginal cost for any water consumption beyond this minimum need.

Where MDG financing needs exceed the potential for domestic resource mobilization by households and governments, external finance will be required to fill the financing gap. Needs assessments for the full range of MDGs suggest that many low-income countries, particularly in sub-Saharan Africa, face large MDG financing gaps in the order of 20 percent -30 percent of their gross domestic product (GDP). Given the magnitude of the investments required, the extreme poverty of the countries, and the fact that the investments are unlikely to yield a financial return in the near future, external finance for the poorest countries will need to be grant-based. These countries are too poor to afford loans as they would not be able to service the repayments.

Donors often insist on "financial sustainability" for investments in infrastructure and social services, requiring that the users bear all operating costs. Ample experience across all sectors has shown that many poor countries are unable to finance operating costs on their own. For example, the 46 percent of Ethiopians living below the national poverty line[9] are unlikely to be able to finance the operation of rural water supplies or urban sanitation infrastructure. In addition, the country is too poor to either cross-subsidize nearly half its population or attract private investors, particularly in this sector. Clearly, if the MDGs are to be achieved, bilateral and multilateral donors will need to fund substantial shares of operating costs.

3.3 An estimate of the resource needs for meeting the MDGs in low income countries

Since unit costs, service standards, delivery mechanisms, and types of appropriate technologies are highly specific to each country, needs assessments have to be carried out at the national level. The Millennium Project has carried out initial needs assessments for a number of low-income countries[10] and is currently working closely with a number of governments to revise the preliminary estimates. Our analysis focuses on *financial* costs and therefore excludes labor and other "sweat equity" provided free-of-charge by communities. These in-kind contributions would need to be added to obtain an estimate of the *economic* cost of meeting the Target.

The key components included so far in the MDG needs assessments for water supply and sanitation are[11]:

- Construction of water supply & sanitation infrastructure for households and social service providers, including schools and health facilities;
- Community mobilization and awareness-building accompanying all infrastructure provision;
- Rehabilitation of all defective existing infrastructure by 2015;

[9] The Ethiopian national poverty line is substantially below the $1 a day standard used by the World Bank.
[10] Full details on the Millennium Project's MDG needs assessments are available at www.unmillenniumproject.org.
[11] So far the needs assessments do not include infrastructure for wastewater flow management and treatment in some rural areas.

- Operation and maintenance of all infrastructure;
- Hygiene education in primary schools & through mass media campaigns;
- Wastewater treatment for sewered sanitation in some urban areas.

Table 5 presents preliminary results of a needs assessment for Ghana. It quotes total investment volumes for the years 2005, 2010, and 2015, underlining the gradual scaling-up of investments. The right-hand columns provide total investment needs and averages over the period from 2005 to 2015. The lower table divides investments by the *total* population (not the population served) to obtain per capita estimates of the resource needs.

Ghana	Water and sanitation					
Total cost estimates in 2000 US$ million	2005	2010	2015	Total 2005-15	Average 2005-15	% of total over period
Water provision						0%
Capital cost - rural	8,103,777	7,133,575	6,751,768	77,656,831	7,059,712	3%
Operating cost - rural	8,512,150	10,907,124	13,162,742	119,605,359	10,873,214	5%
Subtotal rural	***16,615,928***	***18,040,700***	***19,914,510***	***197,262,190***	***17,932,926***	***8%***
Capital cost - urban	23,488,257	32,137,492	39,084,903	356,467,323	32,406,120	15%
Operating cost - urban	24,206,454	40,711,163	60,542,006	455,497,353	41,408,850	20%
Subtotal urban	***47,694,711***	***72,848,655***	***99,626,908***	***811,964,676***	***73,814,971***	***35%***
Total	**64,310,639**	**90,889,354**	**119,541,419**	**1,009,226,866**	**91,747,897**	**43%**
Sanitation						
Capital cost - rural	9,303,810	9,396,045	9,662,325	102,540,014	9,321,819	4%
Operating cost - rural	3,067,217	5,781,716	8,567,062	63,719,584	5,792,689	3%
Subtotal rural	***12,371,027***	***15,177,760***	***18,229,387***	***166,259,598***	***15,114,509***	***7%***
Capital cost - urban	30,311,920	39,429,597	48,616,225	438,244,608	39,840,419	19%
Operating cost - urban	3,067,217	31,871,293	52,305,511	358,565,492	32,596,863	15%
Subtotal urban	***33,379,137***	***71,300,891***	***100,921,735***	***796,810,100***	***72,437,282***	***34%***
Total	**45,750,165**	**86,478,651**	**119,151,123**	**963,069,699**	**87,551,791**	**41%**
Waste Water Treatment						
Rural	6,157	2,988	1,422	31,234	2,839	0%
Urban	13,695,462	24,864,075	38,472,147	280,315,212	25,483,201	12%
Total	***13,701,619***	***24,867,063***	***38,473,569***	***280,346,446***	***25,486,041***	***12%***
Hygiene Education	**5,174,589**	**6,918,423**	**8,681,208**	**76,137,770**	**6,921,615**	**3%**
Total cost ($m)	**128,937,011**	**209,153,491**	**285,847,318**	**2,328,780,781**	**211,707,344**	**100%**

Per capita total cost estimates in 2000 US$	2005	2010	2015	Average 2005-15	% of total over period
Water provision					
Capital cost - rural	0.4	0.3	0.3	0.3	3%
Operating cost - rural	0.4	0.5	0.5	0.5	5%
Subtotal rural	***0.8***	***0.7***	***0.8***	***0.7***	8%
Capital cost - urban	1.1	1.3	1.5	1.3	15%
Operating cost - urban	1.1	1.7	2.3	1.7	20%
Subtotal urban	***2.2***	***3.0***	***3.8***	***3.1***	***35%***
Total	**2.9**	**3.8**	**4.5**	**3.8**	**43%**
Sanitation					
Capital cost - rural	0.4	0.4	0.4	0.4	4%
Operating cost - rural	0.1	0.2	0.3	0.2	3%
Subtotal rural	***0.6***	***0.6***	***0.7***	***0.6***	7%
Capital cost - urban	1.4	1.6	1.8	1.7	19%
Operating cost - urban	0.1	1.3	2.0	1.4	15%
Subtotal urban	***1.5***	***3.0***	***3.8***	***3.0***	***34%***
Total	**2.1**	**3.6**	**4.5**	**3.6**	**41%**
Waste Water Treatment					
Rural	0.0	0.0	0.0	0.0	0%
Urban	0.6	1.0	1.5	1.1	12%
Total	***0.6***	***1.0***	***1.5***	***1.1***	***12%***
Hygiene Education	**0.2**	**0.3**	**0.3**	**0.3**	**3%**
Total cost per capita ($)	**5.9**	**8.7**	**10.8**	**8.8**	**100%**

TABLE 5 - Resource requirements for meeting MDG Target 10 in Ghana

The analysis assumes that investments in water and sanitation are gradually scaled up over time to meet Target 10 by 2015. Over time operating costs, including maintenance, are generally higher than the initial capital costs; the magnitude of resources required for O&M are often grossly underestimated.

Results for other countries summarized in Table 6 exhibit a substantial degree of variation, which results in differences in unit costs, services standards, and the contribution of O&M expenditures.

	Year 2005		Year 2010		Year 2015		Over the full period 2005-2015			
Estimated total financing needs for MDG Target 10	Annual total ($m)	Per capita ($)	Annual total ($m)	Per capita ($)	Annual total ($m)	Per capita ($)	Overall total ($m)	Average per year ($m)	Average per capita ($)	Average % GDP
Bangladesh	652	4.3	934	5.6	1,203	6.6	10,329	939.0	5.6	1.2%
Cambodia	45	3.1	78	4.7	114	6.2	875	79.5	4.8	1.4%
Ghana	141	6.4	209	8.7	286	10.8	2,329	211.7	8.8	2.8%
Tanzania	170	4.4	249	5.9	329	7.2	2,746	249.7	5.9	1.6%
Uganda	80	2.9	127	3.9	184	4.7	1,427	129.7	3.9	1.1%

TABLE 6. Comparison of financing needs for five low-income countries estimated by the Millennium Project

We emphasize that these cost estimates are likely to understate the true investment needs for the water and sanitation sector that are required to meet the MDGs. Given the high degree of variation of per capita investment needs across the five countries listed in Table 6, it is of course tricky to estimate the global cost of meeting the water and sanitation MDG. So far, we have not attempted to produce such an estimate. Meanwhile, the Millennium Project has carried out similar needs assessments for the other MDG sectors, which suggest that average per capita investments needs for meeting all the Goals may amount to at least $100 per year – over 30 percent of GDP in a typical country in sub-Saharan Africa.

3.4 Ability of low-income countries to finance the water and sanitation MDG

In low-income countries, the financing for meeting the MDGs needs to come from government revenues, household income, and external finance in the form of grants. The private sector can play an important intermediary role in financing infrastructure, but any loans need to be recouped from the users or the government. In countries that cannot service loan repayments on investments in basic infrastructure and social services, the private sector does not, therefore, provide a new source of financing. This is confirmed by recent experience in low-income countries, which suggests that the private sector can at best play a marginal role in *financing* the water and sanitation target in urban areas. Of course, the private sector can, and often does, assume a critical role in the *provision* and *operation* of water and sanitation infrastructure. Meanwhile, the private sector can help finance the water supply and sanitation goals in many middle-income countries where loans are a viable financing option .

As argued above, a country's ability to finance the investments and operating costs of meeting a particular target needs to be assessed in the light of *total* financing needs for meeting all MDGs, which may amount to roughly $100 per capita per year for the

poorest countries. It is impossible for low-income countries to finance investments of this order of magnitude – even if tax revenues are maximized and all opportunities for cross-subsidization within the country are exhausted. These countries need increased ODA to meet the MDGs.

As a general rule, poorer countries are able to spend lower shares of their income on the MDGs, as compared to middle- or high-income countries, since a larger share of income needs to be devoted to meeting subsistence needs for food, clothing, shelter, and the like. Today, a typical low-income country is able to devote between five percent and seven percent of GDP to government expenditures on the MDGs, in addition to perhaps three percent of GDP in household user fees. We project that government expenditures can be raised by four percentage points of GDP between 2005 and 2015, which represents a substantial reallocation and increase in government expenditures over a relatively short period of time. On the basis of this ambitious increase in domestic resource mobilization, a typical African low-income country may be able to afford between 12 percent and 14 percent of GDP by 2015. Averaged over this ten-year period, this corresponds to approximately $35-$50 per capita per year. It leaves an annual funding gap of approximately $50-$65 per capita, which cannot be closed using domestic resources.

In comparison, middle-income countries not only have higher per capita incomes, but are also able to devote larger shares of their GDP to meeting the MDGs. As a result, their total domestic resource mobilization exceeds annual financing needs for the Goals. Table 7 compares the potential for domestic resource mobilization across some representative countries. It shows that middle-income countries that right now may be able to devote as much as 15 percent of GDP to meeting the MDGs do not require any external finance. However, even if low-income countries were to spend an unrealistically high 15 percent of their GDP on the MDGs, they would still require substantial external finance to meet the roughly $100 per capita needed each year to meet the MDGs. Moreover, since middle-income countries generally have better infrastructure as well as health and education outcomes, they are likely to require fewer public investments to meet the MDGs –even after accounting for the unit costs relative to low-income countries.

			Potential domestic resource mobilization		Potential domestic resource mobilization	
	Country	2001 GDP p.c. ($)	Share of GDP	Per capita ($)	Share of GDP	Per capita ($)
Middle-income countries	Brazil	2915	12%	350	15%	437
	China	911	12%	109	15%	137
	Indonesia	695	12%	83	15%	104
	South Africa	2620	12%	314	15%	393
Low-income countries	Bangladesh	350	12%	42	15%	53
	Cambodia	278	12%	33	15%	42
	Ethiopia	95	12%	11	15%	14
	Ghana	269	12%	32	15%	40
	Tanzania	271	12%	33	15%	41
	Uganda	249	12%	30	15%	37

TABLE 7- Potential domestic resource mobilization potential for the MDGs

What does this assessment of aggregate financing needs imply for poor households in each country? An MDG-compatible financing strategy needs to ensure that the poor are not excluded from access to improved water supply and sanitation based on their low incomes. In practice, subsidies for capital and sometimes operating costs may therefore be required to ensure equitable access to basic infrastructure services. In particular, the capital cost for water supply schemes in rural areas as well as infrastructure investments in urban agglomerations may need to be partially or wholly subsidized. We tentatively assume that populations living below the national poverty line[12] are unable to contribute substantially to the capital costs of new water supply and sanitation infrastructure beyond providing labor or "sweat equity" and will require lifeline tariffs along the lines of the South African rural water supply model. In the poorest countries, this would affect between 35 percent and 50 percent of the population who earn less than the national poverty line.

In contrast to middle-income countries, where the share of population that is unable to meet basic nutritional needs is of course lower, low-income countries do not have sufficient resources available to cross-subsidize capital and operating costs. While there may be potential for cross-subsidization at the margin, the balance of aggregate domestic resource mobilization and financing needs indicates clearly that countries like Bangladesh, Ghana, and Tanzania will require substantial external finance if they are to meet the MDGs. Improved mechanisms for domestic resource mobilization and financing, such as improved tariff schemes or public-private partnerships, are of course important, but alone they cannot raise sufficient financing to meet the MDGs.

3.5 Elements of a financing strategy for water supply and sanitation in low-income countries

What might a viable financing strategy for meeting MDG Target 10 in low-income countries look like? Clearly, it would need to maximize domestic resource mobilization while ensuring that capital and operating costs are adequately funded without excluding the poor. Our outline of what such a strategy might look like focuses once more on the needs of low-income countries that require external finance to be able to meet the MDGs. We underline that appropriate financing strategies for middle-income countries are likely to be very different.

We are fully aware that a viable financing strategy for water supply and sanitation requires a high degree of specificity for each country to ensure maximum compatibility with existing institutional arrangements, the degree of community involvement in decision making, available economic and financial resources, prevailing social and cultural preferences, and so forth. For this reason we restrict ourselves to outlining key elements that we believe may help guide the development of MDG-compatible financing

[12] National poverty lines are typically defined as the income equivalent required to meet minimum caloric food requirements as well as basic essential expenditures. In most countries, households living below the national poverty line have insufficient resources to provide sufficient food for all household members.

strategies by individual countries. We further emphasize that our proposals are preliminary and therefore welcome comments on how to improve them.

In addition to the principles of affordability and incentive compatibility outlined above, a financing strategy for Target 10 in low-income countries needs to satisfy the following five requirements:

1. **Maximum "scalability":** Meeting Target 10 in the poorest countries, while still possible, requires progress at an unprecedented pace. For this reason, the MDG financing strategy needs to be one that can be scaled up quickly and straightforwardly to allow for rapid increases in the population served.

2. **Minimal transaction costs:** Low-income countries often have very limited institutional capacity and technical resources, which reduces their ability to implement complex financing schemes. For example, there will be institutional limits to countries' ability to institute cross-subsidization across households and communities, even where it may be financially feasible.

3. **Full financial accountability:** Governments and local authorities need to ensure that domestic and external resources are used effectively and not diverted away from meeting the MDG. Financing mechanisms for the water supply and sanitation target will therefore need to be transparent, which reinforces once more the importance of simple financing arrangements.

4. **Closed revenue cycle:** Financing mechanisms need to be economically viable in the sense that all capital and operating costs are fully covered – as necessary through a combination of user fees, government subsidies or external finance.

5. **Technical feasibility:** Finally, available technologies for water supply and sanitation may impose technical constraints on the range of feasible financing mechanisms. For example, public standposts can make it difficult to levy user fees or to ensure that richer households contribute more to the operating costs.

The greatest need for subsidies may be to cover capital costs of new infrastructure. While some rural sanitation technologies, such as improved pit latrines, may not require any financial resources except for labor and locally available materials provided by the communities themselves, capital costs for most water supply and sanitation infrastructure typically need to be subsidized for the poorer segments of the population. A common approach is to invite communities to choose among a range of different technology options to identify the solution that is best adapted to local needs. To ensure that subsidies are targeted to the population most in need, the level of subsidies should decrease as service standards increase. For instance, standpipes providing water supply to several previously unserved households might be subsidized, whereas individual household connections, the highest and most expensive level of service, would not. In this way, wealthier households with a preference for higher levels of service will pay a higher share of the total cost.

It has often been found that trunk infrastructure is too expensive to be financed by communities in poor countries. The high cost, combined with the "public goods" nature of trunk infrastructure, its positive externalities, and the difficulty in aggregating financing from a large number of households lead us to conclude that basic trunk infrastructure should be publicly financed. This applies in particular to networked sanitation systems in urban areas, as well as wastewater drainage and treatment of both sewage and septage.

Lifeline tariffs have been used successfully to co-finance the operating costs of water supply. The experience in South Africa and other countries demonstrates that lifeline tariffs help ensure that even the poorest households enjoy effective access to sufficient amounts of clean water. Hence we recommend that lifeline tariffs be applied wherever technically feasible and that new water supply systems be designed to facilitate the application of lifeline tariffs. This notwithstanding, technical and institutional constraints will likely make it difficult to introduce lifeline tariffs in many rural areas of low-income countries. In cases where the rural poor are unable to meet the full operating costs of water supply, flat subsidies may therefore be a viable option. Since their domestic consumption of water will remain low, environmental constraints on overall water availability should not be of major concern for the design of tariff schemes—except, of course, in arid regions.

As demonstrated above, many low-income countries will require substantial external finance to meet the MDGs. While the modalities under which such aid should be provided go beyond the scope of this paper and have been discussed elsewhere by the Millennium Project,[13] key principles can be summarized here. All ODA to low-income countries that are significantly off-track to meeting the MDGs must be provided in the form of grants-based budget support. We recommend that countries develop MDG-based poverty reduction strategies (PRSs) together with MDG-based medium-term expenditure frameworks or MTEFs. Grant financing should then be made available to the national government provided that the country's PRS is technically sound and consistent with achieving the MDGs. Regular progress reviews will be required to ensure that incremental funds are spent according to the government's MTEF, and to make mid-course adjustments to the PRS and MTEF as necessary.

Critically, MDG-based PRSs need to incorporate mechanisms to make sure that funding for water and sanitation reaches the implementing authorities. In many instances this will require transfer mechanisms to make available funds from the national level to lower levels of government, such as local authorities. Needless to say that setting up effective transfer mechanisms that ensure full transparency and financial accountability is extremely complex and may need to be implemented gradually.

[13] For example, the Interim Report of Task Force 1 on Poverty and Economic Development, available at www.unmillenniumproject.org, discusses aid modalities in some detail.

3.6. Impact of alternative financing mechanisms on affordability, sustainability and water conservation

As stated above, a viable financing strategy needs to be compatible not only with existing institutional arrangements and available economic and financial resources, but also with the degree of community involvement and ownership in the projects being financed. Thus deep-rooted community ownership and involvement should attract comparably strong and favorable financing mechanisms and terms. Lessons from experience suggest that such deep-rooted ownership and involvement is realized when communities recognize their own contribution to the situation in which they find themselves and resolve to assume the responsibility and a leading role in addressing the problem. It is this awakening that sparks corrective community-led actions and provides a foundation for strong community ownership and involvement.

The preceding discussion envisages that external financing becomes necessary when financial needs exceed the potential for domestic resource mobilization. Such financing is not inconsistent with local ownership and community involvement in water and sanitation projects. The use of grant-based budget support for both capital and operation and maintenance for communities that are most off the track in meeting the MDGs is the only feasible way to close the financing gap.

The main domestic sources of financing are from households (in the form of tariffs) and government (which comes from general and selective taxes). Tariff levels have an impact on affordability. Hence the strong recommendation for lifeline tariffs which help not only with affordability by the poor, but also in reconciling affordability with the need to limit per capita water consumption and generate adequate water revenues. Thus, water charges are powerful instruments for water conservation and demand management. They are also powerful instruments for making service providers responsive to user preferences and needs.

4. SOME CAVEATS

In outlining a financial model for financing access to water and sanitation to the poorest, it is important to emphasize three important caveats:

First, we are not suggesting that sustainable access to water and sanitation in the poorest countries can be achieved simply by investing in infrastructure and covering both construction and O&M costs through external development assistance. Adequate financing is but one component of a larger package of changes that are needed to achieve the MDGs for water and sanitation by the poorest and that are outlined in the Interim Report of the Millennium Project Task Force. For example, meeting the MDG targets for water and sanitation will also require a strong focus on service delivery and a willingness to combine institutional reform with investments in water infrastructure.

Second, we are not advocating that the financial model be adopted in all countries, regardless of their situation. Rather, we are advocating the need for a differential

approach for countries that are caught in a poverty trap from which they need additional external finance to escape. Financing strategies and modalities in middle-income countries will differ substantially from the elements outlined above. First these countries do not require external finance to meet the MDGs and can typically access private capital markets for incremental resources. Second, several factors facilitate the direct involvement of the private sector in financing the water supply and sanitation goals. These include the higher per capita income of households, higher rates of urbanization, better trunk infrastructure, and of course stronger capital markets. In the absence of these conditions, the private sector is unlikely to play a significant role in financing the water supply and sanitation MDG. Of course, even in middle-income countries, significant regional and community disparities exist, and the government has a critical role to play in facilitating national financial policies that ensure equal access to services even in traditionally neglected and economically depressed areas. Where necessary, they can gain access to loans from regional and international banks and financing institutions.

Third, apart from ensuring sustainable access, we are not linking the proposed financing strategy to any particular strategy for service delivery, and in fact believe that the two need to be separated. External finance does not preclude communities or local authorities from leading the implementation process. Similarly, a country may choose to privatize parts of its water and sanitation services provided that the revenue loop remains closed – if necessary through public subsidies to the utility.