Table 2. Total sector expenditure and finance gaps to meet the Millennium Development Goal target on water in five African countries

Expenditure ($ millions/year)	Ethiopia	Kenya	Uganda	South Africa	Zambia
Capital expenses (%)	61	48		21	43
Recurrent expenses (%)	39	52		79	57
Total sector spending (% of gross domestic product)	1.2	1.0	1.7	1.9	1.9
Finance gap (% of gross domestic product)	1.9	0.2	0.1	−1.7	−1.1

Sources: Ethiopia (WSP-AF, 2004a); Kenya (WSP-AF, 2004b); Uganda (Government of Uganda, 2004); South Africa (Palmer, 2003); Zambia (Chiwele, 2004).

requirement of about US$150 million/year to meet the water MDGs—about 25% more than estimates in this analysis.[4] But there is also a need to strengthen the efforts to explore sector expenditure requirements under different scenarios. Water and Sanitation Program-Africa (WSP-AF) is currently developing a tool for this that is being tested in consultation with the government of Kenya.[5]

Finance requirements generally put more stress on poorer countries. The finance requirements to meet the water and sanitation MDGs in African countries vary considerably. One way to assess affordability is to review these in relation to the country's total income. On average, the requirement for water sector finance is 1.3% of GDP and 1.4% for sanitation. Figure 2 shows the variation in total sector expenditure requirements for meeting the water MDGs across African countries. Ethiopia, Burundi, the Democratic Republic of Congo, Guinea-Bissau, Sierra Leone and Liberia all require over 2.5% of GDP, double the continent's average, to finance the attainment of the water MDGs in their

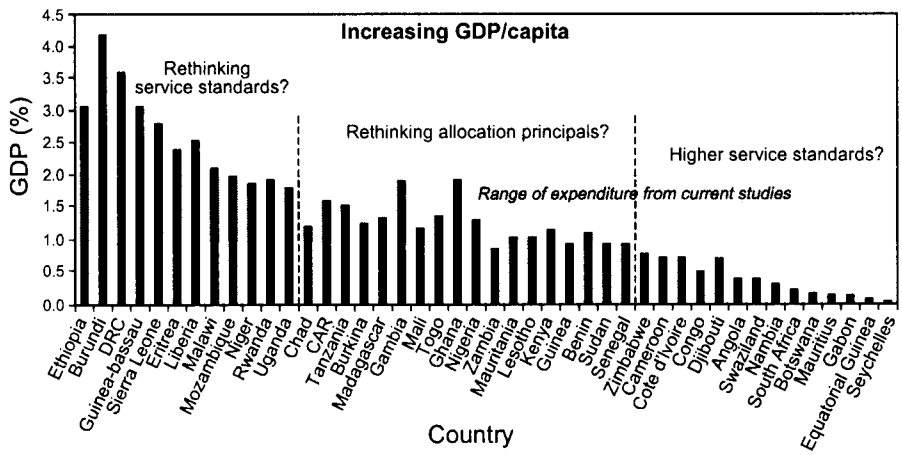

Figure 2. Total expenditure required to meet the Millennium Development Goal water target as a per cent of gross domestic product, 2002. *Source:* Based on WSP-AF analysis as explained in the text and in note 3.

countries. Wealthier countries, such as Botswana or South Africa, however, require only 0.2–0.3% of GDP. Expenditure for meeting MDGs on water, relative to GDP, decreases with increasing GDP/capita. Poorer countries, therefore, are required to spend more in achieving targets as a percentage of GDP. The same is true for sanitation.

Potential expenditure shortfalls in the sector are apparent in some countries when requirements are compared with current sector expenditures. Unlike the health sector, detailed studies and estimates of total sector spending are unavailable for different countries. However, based on studies in five countries in the region, current expenditures in the water sector range from about 1.0 to 1.9% of GDP, suggesting an average of 1.4% of GDP (Table 2).[6] Three of the five countries in the analysis may not be spending enough towards meeting the MDGs. Although this sample is not representative for the region, it suggests that in some countries, current expenditure levels fall short of what is required, especially in the poorer countries.

The shortfall may be moderate with regard to capital investment. Expenditure as a percentage of GDP on capital investments in the sector varies from country to country: Ethiopia (0.76), Kenya (0.44) and Zambia (0.80).[7] Only in Ethiopia is there a shortfall in finances according to this analysis of annual capital expenditure requirements to meet the MDGs. These findings indicate that although capital requirements are significant, the countries may already be allocating adequate resources to capital investments. It is important to acknowledge, however, that this analysis assumes a low level of service and excludes any costs associated with rehabilitation of existing infrastructure.

Operations and maintenance expenditure will rise over time; countries need to spend sufficiently on maintenance while ensuring value-for-money in the operation and delivery of service. This analysis suggests a shortfall in O&M expenditure. In the water sector, average O&M requirements will increase between 2002 and 2015 from 47 to 54% of total finance requirements. The requirement for O&M spending varies by country, however, with low coverage countries such as Ethiopia requiring as little as 32% of total sector financial demands to fund operations and maintenance. This expenditure needs to be met through user charges so that public funds can be focused on expanding coverage, in line with policies of cost recovery adapted by most African countries. It is critical to choose appropriate service levels to maximize the cost recovery potential though. For example, a study in Morocco (McPhail, 1993) showed that users in shantytowns were willing to pay a significant share of their income if their service levels were upgraded from standpipes or community taps to house connections.

All sources of funds need to be maximized and used appropriately to reach the targets. The second aspect of country-level affordability is linked to the level of public expenditure requirements. Even if public money is only spent on sector management and limited to 90% of annual capital investment outlays in rural and 30% in urban to expand coverage (with O&M costs recovered fully through user charges), on average the public finance requirements will amount to about 3% of total national public expenditure, which is quite high compared with current levels varying from about 1.3 to 2% in Kenya and Ethiopia, but low compared with a level of 6% in South Africa.[8] Also, the sector has 'hit the medium-term expenditure framework (MTEF) prescribed ceiling' in Uganda, and projected level of public expenditure may not be forthcoming. This points to a number of policy implications. Only those countries with relatively higher income and a solid tax base can afford the relatively high subsidies/grants in the sector. For most countries, it is

Table 3. Illustrative water sector funding scenario: share of public funds

	Share of public funds in expenditure for:			Public expenditure required as a share of total public expenditure (%)
	Capital investment (%)	O&M (%)	Sector management (%)	
Rural	90	0	100	2.3
Urban	30	0	100	0.7
Total	–	–	–	3.0

Source: Based on WSP-AF analysis. Information on public expenditure is available only for 15 countries.

necessary to identify fiscally sustainable subsidy/grant levels, as well as providing appropriate incentives for cost-effective technology and service level choices.

Capacity to absorb funds into the sector needs to be improved, especially at the local level. While increased funds will be needed to meet sector expenditure requirements in some counties, the capacity to use the funds effectively in the sector may be a constraint, especially where the expenditure levels need to more than double. Often, sector expertise is clustered in major cities where incentives are greater. Ethiopia, for example, faces human resource constraints, especially in rural areas. Appropriate incentive structures must be developed to strengthen local capacity for additional responsibilities under decentralization, and local institutional responsibilities and capacities for service responsibilities must also be matched with availability of finance to benefit from greater efficiency and accountability resulting from decentralization and increased sector funding.

What Actions Are Needed to Improve Priority for and the Use of Public Resources?

Sustained priority of the sector in public budgets is crucial because public finance is likely to remain important for financing water and sanitation in most developing countries. Nevertheless, priority given to water and sanitation in public resource allocations is often low, as is especially apparent in the Poverty Reduction Strategy Papers (PRSPs), which are increasingly becoming the mechanisms for setting national policy agendas and mobilizing resources, especially in Sub-Saharan Africa (Mehta & Fugelsnes, 2003). Because of the relative importance of public funds and the potential benefits associated with its appropriate use, it is necessary to improve the efficiency and effectiveness of public funds in the sector. Some key areas of action to increase (and sustain) allocations to water and sanitation in budgetary processes and to improve the use of public funds in the sector are as follows.

There is a need to develop government-led medium-term sector programmes; improve coordination of donor interventions to increase the efficiency and effectiveness of public expenditure; and for the sector to align itself better with the PRSP and budget process. The water and sanitation sector in most countries is characterized by broad national policy development and by implementation through fragmented, often isolated, projects—with the two efforts not effectively linked. A countrywide medium-term sector programme is emerging as a necessary tool to link policy and implementation—a sector programme (within a sector-wide approach, SWAp) requires that all major funding of the sector supports one coordinated policy and expenditure framework under government leadership.

The alignment of donor approaches with country procedures is important for developing successful sector programmes, especially in the absence of credible PRSP and budget processes (Mehta & Fugelsnes, 2003; Williamson, 2004). Off-budget donor interventions (through non-governmental organizations, NGOs) also need to be aligned with government policy to avoid duplication and overlap.[9] Appropriate self-coordination mechanisms among NGOs, such as those by UWASNET in Uganda, may provide good practice examples.

Sector performance monitoring systems need to be strengthened. For the sector to compete in the PRSP and medium-term budget process, it needs to show results through performance-based monitoring. Although there are many initiatives (such as PRSP monitoring, budget tracking at ministries of finance, water point mapping, management information system projects), these are fragmented, isolated and often project based. Improved frameworks are needed for input–output–outcome–impact monitoring and evaluation that are also integrated with the overall planning and budgeting systems by imposing a detailed and explicit presentation of expected results and allowing fine-tuning future activities on the basis of past experience. Monitoring and evaluation also promote accountability of those implementing policies and sector programmes. Recently initiated efforts in performance monitoring in the Uganda water sector will provide local experience to draw on in the future. WSP-AF also intends to support this through performance monitoring linked to its support for MDG Road Maps.

Continuing advocacy efforts at global, regional, national and local levels are needed. Engagement in the political process is critical as politics determines budget priorities and many sectors compete for allocations in national and local government budgets. Tailored advocacy strategies are important for the sector to argue its case in the budget process, and to retain gained priority at national and local levels. The case for water and sanitation needs to be made in terms of its contribution to poverty reduction and to various MDGs.[10] Such efforts need to be complemented by more rigorous research on fiscal and economic returns of investment in water and sanitation.

Allocation principles in the sector need to be improved. Rules for allocation and access to public finance need to be developed in response to sub-sector priorities while developing a financing strategy. One key area is to understand and balance better rural and urban demands. As the unit cost of service in rural areas is less than in urban, it may be argued that targeted rural interventions are the least-cost approach to reaching the MDGs. This, however, ignores the economic costs associated with poor access in concentrated urban areas, and the contribution of urbanization to economic growth. Assuming, therefore, that for a country to meet the MDGs it must meet them in both rural and urban areas, rural spending requirements will constitute, on average, 36% of the total requirements in the water sector, despite current higher population levels in rural areas in Africa. In the sanitation sub-sector, however, rural costs will occupy over half the total spending, due to the assumed reliance, even in urban areas, on on-site sanitation.

Figure 3 illustrates the issues in allocation across rural and urban sub-sectors in Ethiopia and Zambia. Between 16 and 73 times as much money is spent on targeting under-served populations in urban areas in Ethiopia and Zambia, respectively (using Joint Monitoring Program coverage figures). Despite several assumptions, this analysis does give a picture of the spending patterns in some of the Sub-Saharan African countries. In Ethiopia, according to the analysis, capital investments on water fall short in both rural and urban areas. On the other hand, interestingly, in Zambia, the issue may not only be of balancing

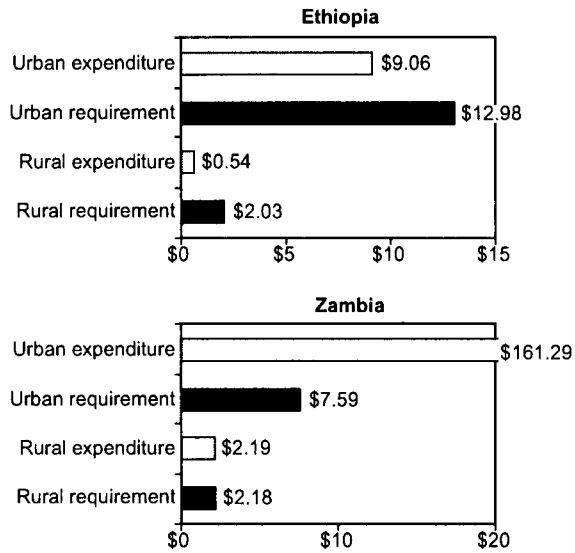

Figure 3. Capital expenditure (per unserved capita) required and investment in water: rural versus urban. *Source:* Ethiopia (WSP-AF, 2004a); Zambia (Chiwele, 2004); and WSP-AF calculations for requirements.

rural and urban allocation per se. It appears that the level of sector expenditures in Zambia may be adequate, and the question is more of efficiency and effectiveness in the use of resources. Note that the high urban expenditure in Zambia may also reflect the rehabilitation of infrastructure taken up under sector reform, which has not been possible to capture in this analysis.

Use of justified access subsidies needs to be strengthened through improved design and innovations such as output-based aid. Traditional systems of subsidies in the water and sanitation sector often lack transparency and are not well targeted (Walker *et al.*, 2000). The recent literature recognizes that 'access subsidies' are often necessary to ensure that the poor are not excluded due to affordability concerns, but emphasizes that subsidies need to be carefully designed to provide the right incentives and reach the 'right' target groups. Although there are successful examples of the use of access subsidies in rural water supply, publicly funded demand promotion for sanitation and sustainable use of subsidized social connections in urban settings, there is limited innovation and use of output-based aid in the sector.[11]

Leveraging Additional Non-public Resources into the Sector

The use of non-public resources (from communities and users, domestic financial markets and the private sector) in the water and sanitation sector is important for two reasons. First, the use of non-public resources will necessitate demand-responsiveness and consumer orientation in service delivery and market rigor in financial management, which will result in more efficient, effective and sustainable use of resources, and improved service delivery. Second, and as more commonly argued, levered additional resources will enable

the sector to attain economically feasible levels of expenditure (say 2–3% of GDP) within the ceiling for allocations in public expenditure under the MTEF framework.

There are three important ways to leverage resources for the sector—and all require institutional reforms that ensure autonomy to water service providers: (1) from communities and households, through capital cost contributions and user charges, (2) by market borrowing for capital investments by creditworthy service providers—utilities and small private or community-based providers, and (3) participation of private sector to improve efficiency or as direct service providers themselves. Some key areas of action to support sustainable leveraging of non-public resources—actual sequencing of these measures will depend on the specific country situation—are as follows.

Institutional and financial reforms need to be implemented to provide incentives for service providers to respond to consumer demand. Poor coverage and level of service are often caused by a mismatch between users' demands and the services delivered due to supply-driven planning for water services with national or regional targets forming the basis for investments. In response, public transfers/subsidies are often used to remedy the lack of service, but without appropriate mechanisms for the targeting of resource, resulting in perverse incentives that make accountability and demand-orientation redundant. To make water service providers respond to users' demand and incorporating those into investment planning, financially autonomous service providers are critical as well as the use of performance-linked partial capital grants. In rural water supply, the emphasis needs to be on linking capital subsidies to demand-responsive approaches that require informed local choices backed by partial capital cost sharing.[12]

Efficiency and creditworthiness of utilities need to be improved to ensure internal cash generation—as a first step to mobilizing resources from the domestic credit markets. Local credit markets are increasingly seen as an important source for leveraging non-public resources. This, however, requires creditworthy borrowers. Key steps for building creditworthiness include: ring-fencing of water revenues and maintaining a steady income stream through scrupulous revenue collection; implementing adequate accounting, disclosure and reporting standards; using transparent and predictable intergovernmental transfers to ensure predictability; and building staff capacity to manage and operate water and sewer systems. In addition, a strong and transparent legal framework must be in place.[13] It is also critical that user (tariff) and community contributions are maximized since they constitute a potentially large source of non-public finance to the sector. In many cases, poor management systems, often supported through de facto government guarantees, do not allow their full potential to be realized. Where tariff levels are below cost recovery levels, increases to allow for the recovery of all major costs are needed. Such tariff revisions, if done gradually, as was done in Guinea (Brook & Locussol, 2001), can reduce the political cost of such actions.

Appropriate policy and regulatory frameworks need to be implemented. To mitigate undue risks in lending for the water and sanitation sector as well as to provide incentives for maximizing user charges, appropriate regulatory frameworks are essential. The regulator should be transparent and independent of the government with participation of sector stakeholders in the regulatory process. Policy frameworks should clearly separate the roles of sector actors to provide for accountability and a legal basis of different water service providers. For instance, unless the law recognizes the legal basis/franchise of service providers, their access to private capital will be constrained. Financing and cost sharing rules should be carefully designed to reflect the possibility of crowding in private and market-based resources.

For sustainable mobilization of resources from domestic markets and the private sector, support is required in meeting the initial transaction costs and capacity building of all stakeholders. It is critical to support the development of initial precedents for commercial borrowing. This is critical to create a greater interest among potential domestic lenders and private firms in the sector, and to develop local understanding of key issues in project development and risk assessment and mitigation. High initial transaction costs will need to be supported by either the government or donors. The nature of support will depend on the specific country situation in terms of the level of financial and private sector development, but may include measures such as project support facilities, specialized financial intermediaries, partial guarantees to cover policy risks, and specific capacity building support to lenders, small private firms and communities. This support infrastructure will enable a conversion of creditworthiness to bankable opportunities.

A good information system is needed to enhance transparency and reduce risk perceptions among potential lenders and private service providers. Because of the past reliance on public resources, the sector is often inadequately understood by financial and private players. Independent and credible information is needed to create an interest in the sector and help reduce the risk perception. This could be done through regional comparative performance reviews (supported) by regional entities such as the New Partnership for Africa's Development (NEPAD) or the Water Utility Partnership as well as credit assessments of utilities by private credit rating agencies.

The Way Forward: Towards a Financing Strategy Model

The key financing challenge in meeting the MDG targets is to arrive at consensus-based, viable and sustainable country-level financing strategies that are integrated into the overall national planning and expenditure process. This requires an assessment of various policy scenarios taking into account economic capacity (as defined by GDP) as well as a (plausible) level of public expenditures and affordability at a household level, in addition to variations in the cost of service in relation to demographic factors, natural condition, coverage level and level of service. The financing strategy needs to be sector-wide but allow for sub-sector specificity—and take into account the financing aspects as well as investment/requirement needs—to focus on analysis of financial gaps arising from different policy scenarios to provide decision-makers with the necessary information. The financing strategy also needs to be developed within on-going frameworks for budget and sector review to create ownership and allow for adjustments in the strategy as the sector moves forward. Some key elements that are useful to facilitate a more dynamic process for developing financing strategies are as follows.[14]

Assessment of sector finance requirements is needed. Three main expenditure types are useful to consider while developing a financing strategy: capital and recurrent expenditure and sector management expenditure. But it is also important to assess this across regions with different costs and cost recovery potentials:

- Rural across different regions: low levels of service/technology mix serving small dispersed populations.
- Urban across different regions: higher levels of service/technology mix and some economies of scale.

- Large urban centres: highest level of service/technology mix and significant economies of scale.

Financial requirements in the sector depend on sector management and the delivery of service cost. The costs of managing the sector will be determined by sector targets and service levels—the rate at which coverage will change affects the need for management functions such as capacity building and the levels of service affect regulatory costs; and unit costs and institutional efficiency—sectoral features such as salaries, which affect the cost of providing sector management.

The costs of service delivery are affected by sector targets and inherent sector cost structures. Sector targets and service levels affect the cost of service by determining the required capital and O&M expenditure to attain targets; and unit costs and technical efficiency are the technical costs associated with new infrastructure development and sufficient operations and maintenance that underpin the cost requirements for service expansion. The efficiency of running facilities impacts the base unit costs.

Ideally, this information should be available within the sector, and the sector requirement information would be generated from below (water service provider–district/regional level) and be synthesized at a central–regional/national level to develop regional and national financing strategies. But this is not possible in most countries. Sector requirement information gaps can, however, be closed (temporarily) by conducting water service provider surveys to map uses of different technology, associated cost recovery levels and efficiencies of different service providers. Unit cost studies can complement this information by mapping the unit cost of technologies and associated sector management services costs. This information will not only feed into the investment planning process, but also the exercise will serve to point to information gaps and possible responsibility structures.

Assessment of sector finance availability is needed. Information about the total availability of finance is important to develop and assess the flow and gaps of resources in investment planning. The availability of sector finance is dependent broadly on two sources: budget and service-linked resources. Budget-linked resource flows are determined by sectoral budgetary ceilings, which in turn is a political decision. Three aspects of public finance are important to assess and review.

- Allocation principles: define the transfer of public finance vertically between regions and water service providers, and horizontally across activities such as management activities and the provision of services.
- Decentralization and inter-governmental transfers: affect availability of resources and incentives at local levels.
- Utilization of public finance: affected by the capacity in the sector to use the funds budgeted.

Service-linked resource flows are dependent on the delivery of service, through instruments such as tariff and connection fee. Sector policies and efficiencies affect the availability of service-linked resources within the sector:

- Cost recovery policies: determine user finance in the sector. Such policies might include minimum capital contribution levels in rural areas and tariff levels in different 'regions'.
- Sector targets and service levels: the level of service and rate at which changes in coverage occur affect the willingness-to-pay of users of the expanded service.

If service levels are set too low, few resources will be leveraged from users as the willingness-to-pay for new investments will be depressed.
- Management efficiency: will affect the ability realize potential service-linked resources. For example, low billing and collection efficiency reduce service-linked resources.

As for information on sector requirements, little information is available with regard to the availability of finance in the sector, especially considering the amount of off-budget resources and self-supply in the sector. This shortcoming can be overcome by conducting resource flows studies as used to assess the availability of finance in Ethiopia, Kenya, South Africa and Zambia in this paper. A study on the flow of resources not only will show the amount of total availability of finance in the sector, but also match resources to institutional responsibilities.

Policy scenarios for reducing the finance gaps are needed. The critical element in this exercise is to develop different policy scenarios for policy-makers to consider while developing a financing strategy based on the available information on demand and the supply of finance. Useful policy variables for organizing different policy scenarios are as follows:

- Allocation of public resources to regions, sub-sectors and activities: allocation principles in the sector need to be improved. Rules for allocation and access to public finance need to be developed in response to sub-sector priorities, and to ensure efficient and effective use of scarce public resources while developing a financing strategy.
- Cost recovery policies: most sector policies in Africa countries are aimed at making end users pay for delivered service in the sector. Nevertheless, most subsidize the sector heavily. It is important, therefore, to model implications of increased cost recovery to assess the burden brought upon end users, especially the poor, and the benefits in terms of extended service and willingness to pay.
- Sector targets for coverage and service levels: various coverage targets and service levels have huge cost implications, and it is necessary to arrive at appropriate targets and service levels that are affordable and endorsed by sector stakeholders.
- Institutional and technical efficiency: structural reform in most countries gives the opportunity to reassess modes of service delivery within the sector. It is therefore necessary to capture (in)efficiencies of different actors in the sector to optimize resource allocations and service delivery.
- Costs of sector management and service delivery: expansion of service will have cost implications at the level of service delivery, but also for managing the sector. For instance, it is important to show what a given expansion in service requires in terms of capacity development, regulation and monitoring.

Notes

1. The paper draws on a presentation by Piers Cross, Regional Manager at Water and Sanitation Program-Africa (WSP-AF) made on behalf of the WSP-AF's finance team at the Berlin Forum. An earlier version of the paper was also circulated at the finance stream of the Global WASH Forum 2004 in Dakar, Senegal.
2. These are estimates of first round requirements; more work is needed to especially understand sanitation costs, i.e. hygiene promotion, etc.

3. Unit costs for operation and maintenance and for sector development are difficult to arrive at, given wide variations dependent upon a number of variables. These estimates assumed, conservatively, that the total costs of O&M and sector development were similar to the costs assumed in Joint Monitoring Program (2000), but applied these costs to both new and existing infrastructure, rather than new infrastructure alone.
4. For Zambia, see Chiwele (2004); for Uganda, see Government of Uganda (2004); for Ethiopia, see DHV Consultants (2003).
5. This tool (SWIFT—Sector-wide Investment and Financing Tool) aims to provide an easy computer-aided analysis for testing various policy scenarios in consultation with country sector institutions and different stakeholders.
6. A word of caution is necessary. These are best-judgement estimates given the difficulty in assessing off-budget resources (NGO expenditure) and at times even public spending in the sector. The studies did not manage to capture self-financing at household level. This is even truer for sanitation given the fragmented nature of public finance and the significant degree of self-supply.
7. See the sources for Table 2.
8. This analysis uses the average spending figures for Sub-Saharan Africa for illustrative purposes, and is based on data for only 12 countries. The sources for Ethiopia and Kenya are WSP-AF (2004a, b), respectively.
9. NGO resources are significant as shown in the Kenya and Ethiopia finance studies where the off-budget resources amounted to about 20% of total sector expenditure.
10. See Brocklehurst (2004) as an illustration.
11. For several examples and a discussion of the issues in the use of such subsidies, see Mehta (2003).
12. For a discussion of the use of access subsidies in demand-responsive approaches in rural water supply, see Mehta (2003).
13. Based on Mehta (2003).
14. This section is based on SWIFT currently developed by WSP-AF to help national or sub-national sector planning bodies developing financing strategies for the water sector by analysis financial gaps arising from different policy scenarios.

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