

# Paying the Piper

An overview of community financing  
of water and sanitation

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## 1. Introduction

***"He who pays the piper calls the tune"***

***- proverb***

Failure to adequately cover the costs of improved water and sanitation services in developing countries has been identified as a major constraint to achieving the goal of safe water and adequate sanitation for all on a sustainable basis. In recent years increased community financing, through user payment for services, has been strongly promoted as a solution.

The call for new approaches to the financing of water and sanitation services, as reflected for example in the New Delhi Statement (see Box 1), presents a major challenge for the 1990s. Programme managers, planners, and policy makers are faced with the need to question old assumptions and adopt new perspectives in opening the way to more sustainable development. This document provides an overview of a number of key issues relating to community financing, cost recovery, and sustainability, which may help in responding to this challenge.

It is now widely recognized that the problems of the water and sanitation sector cannot be solved in isolation from one another. Major shifts in emphasis and policy towards greater cost recovery through user financing may mean radical restructuring within the sector itself. Asking users to make a larger contribution to the costs of improved services involves far more than simply adding new financing mechanisms onto existing programmes.

Cost recovery is often seen as a problem for agencies, who must cover the costs of providing improved services. Showing why agencies must recover their costs is one thing; ensuring that it is in the interest of communities to pay is quite another. When users are being asked to provide the solution, questions must also be raised about the implications for them of increased calls for community financing, and the likely demands they may make on agencies in return. In many cases, fundamental changes may be required in the relationship between communities on the one hand, and government and other development agencies on the other. The need for these changes brings into sharper focus a number of issues which have always been present within the sector, but which now assume even greater importance. This document presents an overview of a number of these.

### Box 1

#### THE NEW DELHI STATEMENT

The end-of-Decade Global Consultation on Safe Water and Sanitation for the 1990s, held at New Delhi, India, in September 1990, gave prominence to financing as a central concern. The New Delhi Statement placed important emphasis on the need for increased contributions from users, as the extract below shows:

"Given the number of people unserved and the growing demand, more effective financial strategies must be adopted in the 1990s for the long-term sustainability of the sector.

Current levels of investment in the sector are about US\$ 10 billion per year. It is estimated that approximately US\$ 50 billion a year would be needed to reach full coverage by the year 2000, using conventional approaches. Such a five-fold increase is not immediately feasible.

New strategies should aim towards two key objectives:

Increased efficiency in the use of available funds;  
Mobilization of additional funds from existing and new sources, including governments, donors and consumers.

Substantially increased effectiveness in the use of financial resources can yield major gains in sustained coverage" (UNDP, 1990a).

The review begins by summarizing the principle arguments put forward by advocates of greater cost recovery from users, and contrasting these with the practical problems of achieving this goal. The issue of obtaining benefits from improved services is then reviewed, followed by a discussion of the costs involved. Creating demand for better water and sanitation systems is examined in a discussion of the willingness of people in developing countries to pay for them. The discussion then moves to practical methods of revenue raising, including some consideration of the possible roles which could be played by communities themselves and by the private sector in managing cost recovery. A final section summarizes the current state of knowledge and points to directions for further investigation and development.

The literature reviewed in this document points to a number of important lessons. An important theme which emerges is that making increased community payment a major goal means that communities can no longer be viewed as beneficiaries but must be seen instead as partners in the development process. Water and sanitation programmes will need to be far more responsive to community needs and demands, and provide services which people really want and can make good use of. Although community payment may solve many problems for agencies, it also means that they will have to provide improved standards of service and develop higher levels of efficiency and effectiveness. A closer and much more equal relationship between agencies and communities will be needed if this is to be achieved.

Solutions to the challenge of sustainable development cannot be imposed from above but need to be worked out in practice, in accordance with local conditions, and within a framework of partnership. This document does not provide any easy answers, but highlights key issue areas which need to be closely considered in working out solutions in the field. It is hoped that presenting the issues in this way will assist professionals confronting the question of community financing at a practical level by providing a framework for considering new approaches and working out appropriate solutions.

## 2. *Why Should Users Pay for Water and Sanitation Services?*

The issue of community financing of water and sanitation services is complex and controversial. The most basic question to ask is why an increased share of responsibility should be taken by communities in paying for services. A variety of points of view are to be found in the literature, with some seeing no realistic alternative to user payment and others presenting a more cautious view. A number of the major arguments are presented in the following pages. Some of the most forceful arguments for maximum cost recovery from users are outlined first. These are then put alongside some of the constraints and dilemmas which have led others to adopt a softer line. In the process, it should become clear that user payment is an issue with many facets and very broad implications.

The evidence in the literature suggests that although the case for user payment is strong, adopting community financing as a universal policy may prove to be extremely difficult. At the same time, there is clearly scope to widen the net and mobilize a broader range of resources (including those within communities) than are being used at present. Viewing the issue of cost recovery within a broader "resources coverage" perspective may help to support this process, as a review of the findings of an international working group on cost recovery indicates. The findings of this group are outlined towards the end of this chapter.

### **The case for user payment**

The principal arguments put forward to justify greater user payment are summarized in Box 2. These range from very practical justifications, pointing to basic problems of resource availability, to more complex developmental arguments which see a broad range of advantages, beyond cost recovery alone, for adopting user payment.

#### Box 2

##### WHY USERS SHOULD PAY FOR WATER AND SANITATION SERVICES

Available capital funds are inadequate to achieve full coverage

Available public funds are inadequate to meet recurrent costs

State intervention and control has proven to be inefficient and ineffective

Social and economic benefits of improved water and sanitation are too indirect to justify free services

Subsidies disempower users by denying them choice

Subsidies discourage cost-effectiveness and the development of low-cost solutions

Evidence of demand and willingness to pay is strong with many poor people already paying high rates for services

Properly regulated user charges would mean the poor would pay less and get better service

Payments increase sense of value and commitment among users

User payments maximize the use of available resources

User payments improve quality and standards of service

(Adapted from Briscoe and de Ferranti, 1988; Katko, 1990).

An analysis of the achievements of the International Drinking Water Supply and Sanitation Decade (1981-1990) suggests that, with current approaches, continued heavy reliance on donor and government funding to sustain improved services means that the goal of safe water and improved sanitation for all may never be achieved. Official United Nations figures (see Table 1) show that net increases in service coverage have been modest. Although global coverage in rural water supply slightly more than doubled during the Decade, other increases in most cases resulted in a less than 10% net improvement, even after intensive efforts over a 10-year period. At current rates of implementation, population growth alone will absorb a large proportion of further progress. According to UN projections, net gains in percentage coverage by the year 2000 are likely to be negligible, in spite of substantial gains in the actual numbers of people served.

Not only have investment levels been too low, but meeting recurrent costs for operation and maintenance has also proven to be a major problem. An unacceptably high level of investment continues to be wasted as many systems fall into disrepair almost as quickly as they are built. Estimates suggest that 30-40% of water systems in developing countries may be broken down at any one time. For individual countries and systems percentages as high as 60-70% have been reported (WHO, 1990a). Inadequate levels of funding have often been seen as a root cause.

The UN Secretary General's end-of-Decade report to the General Assembly stated:

"Since financial resources for the sector are extremely limited in most countries, and because radical shifts in sector allocations are unlikely in the foreseeable future, the conclusion is increasingly being reached that project beneficiaries should participate in cost recovery if service coverage in developing countries is to be extended" (UN General Assembly, 1990).

Not only are allocations to the sector unlikely to increase, but the impact of structural adjustment programmes in a number of the world's poorest countries will actually mean a decline in available public resources, limiting even further their capacity to maintain basic services. Since resources in developing countries are by definition scarce, it has been argued that use of all available resources must be maximized, including those at the disposal of users themselves. Five years before the water decade began, an influential study argued that high levels of subsidy could not be justified if optimum use is not being made of what is already available. To ensure this, first priority in service provision should be given to those who are prepared to pay (Saunders and Warford, 1976).

Evidence from case studies published just before the start of the Decade, and a review published soon after, have been used to support the view that user payment leads to more efficiency and greater sustainability. Studies in Tanzania, Thailand, and elsewhere, suggested that the water supply systems which provided the most reliable service were those where communities not only contributed to operation and maintenance costs, but met them in full (Dworkin, 1980a, 1980b, and 1982). User payment is seen by advocates as a means of protecting systems from the uncertainties of government financing and making sustainability more likely. It may also increase the commitment of users to the sound management and use of systems. Although water is acknowledged to be a basic need, "...the fact that a service is vital is not sufficient grounds for that service to be free" (Okun, 1982).

Providing free or heavily subsidized services may limit the number of improved systems which can be built, with the effect that those who are most in need may be the very ones who miss out. Furthermore, assuming that poor people have no resources is, according to one study, "the worst possible approach" and:

**Table 1: Water Supply and Sanitation Coverage by Region, 1980-1990, and Coverage for 2000 at Current Rates of Progress (Population in Millions)**

<i>Region/sector</i>	<i>1980</i>				<i>1990</i>				<i>2000</i>			
	<i>Population</i>	<i>% coverage</i>	<i>No. served</i>	<i>No. unserved</i>	<i>Population</i>	<i>% coverage</i>	<i>No. served</i>	<i>No. unserved</i>	<i>Population</i>	<i>% coverage</i>	<i>No. served</i>	<i>No. unserved</i>
<i>Africa</i>												
Urban water	119.77	83	99.41	20.36	202.54	87	176.21	26.33	332.49	76	253.01	79.48
Rural water	332.83	33	109.83	223.00	409.64	42	172.05	237.59	496.59	47	234.27	262.32
Urban sanitation	119.77	65	77.85	41.92	202.54	79	160.01	42.53	332.49	73	242.17	90.32
Rural sanitation	332.83	18	59.91	272.92	409.64	26	106.51	303.13	496.59	31	153.11	343.48
<i>Latin America and the Caribbean</i>												
Urban water	236.72	82	194.11	42.61	324.08	87	281.95	42.13	416.79	89	369.79	47.00
Rural water	124.91	47	58.71	66.20	123.87	62	76.80	47.07	122.84	77	94.89	27.95
Urban sanitation	236.72	78	184.64	52.08	324.08	79	256.02	68.06	416.79	79	327.40	89.39
Rural sanitation	124.91	22	27.48	97.43	123.87	37	45.83	78.04	122.84	52	64.18	58.66
<i>Asia and the Pacific</i>												
Urban water	549.44	73	401.09	148.35	761.18	77	586.11	175.07	1 085.56	71	771.71	314.43
Rural water	1 823.30	28	510.52	1 312.78	2 099.40	67	1 406.60	692.80	2 320.79	99	2 302.68	10.11
Urban sanitation	549.44	65	357.14	192.30	761.18	65	494.77	266.41	1 085.56	58	632.40	453.16
Rural sanitation	1 823.30	42	765.79	1 057.51	2 099.40	54	1 133.68	965.72	2 320.79	65	1 501.57	819.22
<i>Western Asia</i>												
Urban water	27.54	95	26.16	1.38	44.42	100	44.25	0.17	67.26	100	67.26	0.00
Rural water	21.95	51	11.19	10.76	25.60	56	14.34	11.26	30.66	57	17.48	13.18
Urban sanitation	27.54	79	21.76	5.78	44.42	100	44.42	0.00	67.26	100	67.26	0.00
Rural sanitation	21.95	34	7.46	14.49	25.60	34	8.70	16.90	30.66	32	9.94	20.72
<i>Global totals</i>												
Urban water	933.47	77	720.77	212.70	1 332.22	82	1 088.52	243.70	1 902.10	77	1 456.27	445.83
Rural water	2 302.99	30	690.25	1 612.74	2 658.51	63	1 669.79	988.72	2 970.88	89	2 649.33	321.55
Urban sanitation	933.47	69	641.39	292.08	1 332.22	72	955.22	377.00	1 902.10	67	1 269.05	633.05
Rural sanitation	2 302.99	37	860.64	1 442.35	2 658.51	49	1 294.72	1 363.79	2 970.88	58	1 728.80	1 242.88

(Source: UN General Assembly (1990). Achievements of the International Drinking Water Supply and Sanitation Decade 1981-1990. Report of the Secretary-General).

"..inevitably leads to unsustainable subsidies, which reach primarily those of greater influence and least need, and to malfunctioning and restricted services which leave the lot of the poor unchanged. Promises of free service for all too often result, in practice, in some service for a few and little or none for most" (Briscoe and de Ferranti, 1988).

The argument that subsidies and free services are justified by the health and other benefits produced has been questioned on the grounds that the supposed benefits have not been proven clearly enough to justify public investment on the scale required. Apart from being both inefficient and ineffective, subsidies also discourage the development of more efficient and lower cost options for service delivery, and deny the opportunity to users to exercise their power as consumers to demand a better service (Churchill, 1987).

Worries that people simply cannot afford to pay have been countered by arguments that in spite of disturbing recent statistics on global poverty (World Bank, 1990; UNDP, 1991), millions of people in developing countries are already paying a high price for often sub-standard water and sanitation services. Improved services would mean that in many cases people would pay less than they are now, and receive a more effective service (Okun, 1982; Churchill, 1987; Kalbermatten and McGarry, 1987; Okun, 1988; Briscoe and de Ferranti, 1988; Whittington et al, 1988; Whittington et al, 1989; UNDP/World Bank, 1990; Briscoe et al, 1990; UNICEF, 1991a).

## **Prospects and dilemmas**

Despite these arguments, "..low levels of cost-recovery .. remain the rule" in the water and sanitation sector, and financial self-sufficiency remains a "distant goal" (Baum and Tolbert, 1985). In 1987 a global consultation on progress during the Decade concluded that cost recovery in the sector "is generally ineffective" (WHO, 1987a). A year later, UNICEF reported that an average of 30% of its assistance to water and sanitation programmes was devoted to recurrent costs, and would probably continue to be so "well into the future in many countries" (UNICEF, 1988). Rural areas are particularly problematic, due to "..low incomes, the absence of industrial and commercial users, and the attachment of villagers to their traditional, free sources of supply.." (Baum and Tolbert, 1985).

Prospects for cost recovery are thought to be particularly difficult in rural sub-Saharan Africa, where poverty is most acute. Participants at the 1987 Interlaken consultation on progress in the Decade supported the view that full cost recovery should be the long-term goal, but recognized limitations in the immediate term which may make a transition period necessary (WHO, 1987a). Some contribution from users is seen as necessary, however. The reality of free social services in Africa "..is that it means inadequate provision or no provision at all to many people and particularly the poorest and most vulnerable" and, on the more positive side, that it is a means of "..empowering the beneficiaries to demand improved services and of fostering a sense of individual and community responsibility for their delivery" (World Bank, 1989).

If cost recovery is to be based on ability to pay, it has been argued that greater equity can be achieved by asking the better off to pay more, effectively providing a subsidy to poorer consumers. As Laugeri has suggested: "Everyone should contribute to the cost, but not necessarily in the same proportion, in the same way or at the same time." (Laugeri, 1987). Where mixed service levels can be provided, for example through a combination of house connections and public standposts drawing from the same piped system, cross-subsidies can be introduced by varying the rates charged to consumers in relation to the level of service they enjoy. This idea has been supported by White (1981), and methods for implementation

described by van Wijk-Sijbesma (1989). In Malawi, and other places, this method is used with success (IRC, 1991).

Subsidies can also be provided by linking payment to the economic benefits obtained from improved services, with those who gain more being asked to pay a proportionately higher charge. This approach recognizes that needs and demand will often vary within a community itself, and that some users will consume more water and obtain greater benefits than others. This point is discussed further in a later chapter in a review of options for community financing systems and the management of cost recovery.

Though people may appreciate the benefits of subsidized services, there may be a hidden cost to enjoying them. If paying for supplies gives users more power, those who are not paying full costs are likely to have less influence than those who do. Having advocated cross-subsidies to support public standpost supplies for the poor, White acknowledged in a later publication that subsidies can serve to disempower communities by limiting, or denying them, choices. If users are not meeting the full cost, they have less power in demanding the level and quality of service which meets their own felt needs (White, 1983).

## **Theory and practice**

The issue of cost recovery produces many dilemmas and is one of a "new generation of challenges" confronting the sector (Black, 1990). Although the arguments for higher levels of contribution from users are strong, applying this principle in practice is far from easy. The supposed benefits of user contributions are not easily achieved, as a case study from Lesotho has shown (see Box 3). This experience suggests that the assumptions that community payment will provide evidence of demand, reduce costs to government and support agencies, improve commitment from users, and generally encourage further development activities, may not always be valid.

Many of the problems noted in the Lesotho study can be attributed to shortcomings in general strategy and approach, and certainly do not provide conclusive evidence in themselves that the supposed advantages of user charges cannot be obtained. They do, however, provide a note of caution and a useful reminder that introducing user charges is by no means a simple and straightforward task, and has costs of its own.

## **Cost recovery or resources coverage?**

Many more factors than financing alone come into play in achieving the long-term sustainability of improved services. In many cases, failure to appreciate this basic point lies at the root of many failed attempts to introduce user payment for services. This broader perspective has been interestingly developed by the WHO Working Group on Cost Recovery, and through a series of informal consultations on institutional development hosted by the same agency. The work of these groups, composed of representatives from both donor agencies and developing countries, has led to the development of the "resources coverage" approach to sustainability.

According to this perspective, recovery of costs does not always have to be in the form of cash (WHO, 1987b). A very large number of water supply and sanitation projects recover at least part of their costs through user contributions of labour and local materials, a feature frequently found in programmes based on community participation. Such contributions may account for as much as 20-30% of capital costs, and an equally significant proportion of the costs of operation and maintenance.



### **COST RECOVERY: PRACTICAL PROBLEMS IN LESOTHO**

An influential study in the 1970s, based on an in-depth evaluation of rural water supply systems in Lesotho, questioned four basic assumptions about the merits of user contributions and self-help approaches, all of which are still currently advanced in support of user payments. These were stated as follows:

- "(1) The villagers' contribution will reflect a desire for the project in question so that aid will be given in response to a genuinely felt need.
- (2) A cash and labour contribution from the villagers should reduce the cost to Government and donors of installing the supplies.
- (3) The fact that they have contributed should encourage villagers to accept the project as theirs to look after and maintain.
- (4) Their successful experience with water supplies will lead villagers on to undertaking other development tasks."

The evidence from Lesotho casts doubt on all of these assumptions. The level of cash contribution collected from villages was so modest that it effectively invalidated the first two assumed advantages. On average, village cash contributions only amounted to 7% of the total materials costs. First, villagers really had no idea of the true cost of their water supplies and their contributions were often nominal. Second, the amounts collected were often so small, and the administrative costs so high, that there were no net cost savings to government.

Rather than instilling in villagers a sense of ownership and responsibility, the raising of cash contributions, and provision of labour and local materials for the construction of the schemes, convinced them that they had already paid a fair share of the cost. The government should therefore be willing to take on the longer term responsibilities for operation and maintenance. This same point of view was found among villagers in Zimbabwe, in a study conducted more than a decade later (Clever, 1991).

Finally, the incentive that the experience of undertaking a self-help approach to water supply improvement should provide in encouraging villagers to undertake other development tasks was undermined in many cases by the factionalism and hostility which attempts to manage community contributions gave rise to. The Lesotho study demonstrated very clearly the error of assuming that rural communities can generally be expected to be homogeneous and highly cohesive. More often than not, the opposite is the case.

In view of these findings, the authors of the Lesotho study concluded that "...In the long-term, voluntary contributions for the upkeep of a public service do not work."

(Source: Feachem et al, 1978).

The working group noted that water should not be free to users. Costs should be met within a framework of partnership between user communities and support agencies, with the crucial principle being that all costs must be met from in-country resources. This approach

provides an interesting departure from most other discussions of cost recovery, which tend to put governments and ESAs together as providers of services and communities as receivers, with the problem seen as one of shifting responsibility from one to the other. The WHO working group frames the problem as one of shifting the balance from external to in-country funding. The balance of contributions between the agency and community is not necessarily fixed, but can change with time, with communities progressively taking an increasing share of the burden.

Identifying the problem as that of covering resources rather than just recovering costs has many merits. As well as noting that costs need not always be covered through financial contributions, the approach also recognizes that resource requirements go way beyond financing alone and include wider human and institutional factors. The group identified ten key elements, all of which must be adequately covered if sustainability is to be achieved (see Box 4).

## THE TEN KEY ELEMENTS OF SUSTAINABILITY

*	<b>Enabling environment</b>	* <b>Expertise and skills</b>
*	<b>Health awareness</b>	* <b>Appropriate service level</b>
*	<b>Strong institutions</b>	Community* <b>Appropriate technology</b>
	.	Agency
	.	Interest groups
	.	* <b>Materials and equipment</b>
*	<b>Felt need</b>	* <b>Support services</b>
*	<b>Supportive attitudes</b>	.Customer relations
		.Community support
		.O&M support

(Source: WHO, 1990b).

The ten key elements of sustainability are broadly based, covering technical, non-technical, quantitative and qualitative, factors. All but the first element, which is seen as almost entirely a responsibility of government, need to be resourced by both agencies and communities.

Cost recovery is not explicitly referred to in the WHO document as a key element of sustainability. At the same time, the need for user contributions is frequently referred to. The model developed by the working group reflects the dilemmas which the debate over cost recovery has underlined, and the tension between the need to provide everyone with clean water and adequate sanitation and the need to do this in a sustainable way. A brief description of each of the elements is given below (all quotes from WHO, 1990b).

**Enabling environment:** An enabling environment is created by establishing a legal and policy framework which explicitly supports the development of sustainable water supply and sanitation services. The creation and development of this environment is largely the responsibility of government. An appropriate enabling environment " ..is not consistent with a 'Free Water' policy, for it emphatically requires a commitment to a partnership approach...in the provision and meeting of costs of water and sanitation services."

**Health awareness:** This is required in both the agency and the community. Both should recognize the importance for health of water supply and sanitation improvements, and the benefits which can be obtained from supporting and sustaining these. Health awareness implies on the part of the community/user " ..an acceptance of personal responsibility, and willingness to pay or contribute otherwise towards efforts and activities to improve personal and community health."

**Strong institutions:** At the agency level, institutions are required with: clearly defined responsibilities; a sound legal basis; and autonomous control of finances and human resources. In the community, with: formal, legitimate and permanent status; strong leadership and solid backing, especially from women; capacity to represent all groups, including women and poor households; and ability to organize and carry out planned and

agreed programmes of activities.

**Felt need:** Water and sanitation improvements must be perceived by communities as a high priority, manifested as an awareness and expressed need for the health, economic, and social advantages of improved services. "Felt need also implies a willingness to contribute to the development, operation and maintenance of water supply and sanitation facilities". Agencies must be conscious of the felt needs of users and be willing to take account of them and, where necessary, stimulate them through "..health promotion, literacy programmes and general economic activities."

**Supportive attitudes:** The agency must be fully committed to the partnership process, have a genuine desire to work with communities, and work within a policy and institutional framework which motivates staff. At the same time, the community must accept its responsibilities and be willing to assume ownership of water supply and sanitation systems, pay for services, and otherwise contribute towards water supply and sanitation provision.

**Expertise and skills:** All necessary skills are required at both agency and community level, with training inputs being provided as required. The community should have or develop: technical skills for minor repairs and routine maintenance; skills for organizing cash-raising and managing financial resources; organizational skills for mobilizing community inputs and preferences, and consulting with agency staff. The agency requires not only the necessary technical, administrative, and managerial skills, but should also have access to resource persons with appropriate skills in: social organization, extension work, communications, training, monitoring, follow-up, review and evaluation, and involving women.

**Appropriate service levels:** The level of service should be jointly agreed between the agency and users, and should be appropriate in both technical and socio-economic terms. The appropriate service level for a particular situation "..ideally allows the community to upgrade later to a higher service level, thus encouraging maintenance of the facility until it can be improved." Identifying the appropriate service level for any particular situation implies making a comprehensive analysis of alternatives, consulting communities on their preferences and clearly communicating the implications of each alternative, and, for communities, "..paying the extra cost of service levels appropriate to specific situations which require more than the type of water supply system adopted in national policies and plans."

**Appropriate technology:** This element is closely linked to service level. Technology choice should be a joint responsibility of agency and community, and "..the chosen service level should reflect technology that is practical, economically viable, satisfies the needs of users and is socially acceptable." Affordability, ease of maintenance, technical efficiency, and availability of spares and materials are all important factors in technology selection.

**Materials and equipment:** All necessary inputs should be available in a timely manner. Materials and equipment, including in-kind contributions from users, should be available as required for scheme development, rehabilitation, and operation and maintenance.

**Support services:** This element relates to operation and maintenance, extension services, and customer relations. "Although this element is primarily provided by the agency during the development phase, some inputs should be identified and jointly agreed to come from the community and should increasingly shift towards the community/user at the operational phase." Operation and maintenance support requires the regular availability of funds, equipment, spares, and staff, with responsibilities clearly agreed between the agency and community. Back-up support through extension services and the maintenance of good lines of communication play important roles in ensuring that this element is adequately resourced.

The resources coverage approach is essentially a compromise, reflecting the broad range of views represented in the working group. Whatever its shortcomings, however, it serves to underline the vital point that cost recovery is only one part of a very broad process by which required resource needs for sustainable water and sanitation improvements are met. Not all resource needs can be met with cash payments, and not all costs have to be recovered in monetary form. Covering costs is in itself no guarantee that sustainability will be achieved, though it is clearly a necessary condition. Whatever financing option is chosen in a particular country or programme, the need to cover all required resources cannot be avoided. If the full range of resource needs is not met, improved services are unlikely to be attractive enough to persuade users to pay for them.

### **Partnership and resources coverage**

The case for greater user payment is strong and it is clear that there is plenty of scope for improving efficiency in resources coverage, and increasing users' contributions as a means of achieving this. Although there are clear dangers in advocating user payment on a universal basis, particularly in view of the evidence from sub-Saharan Africa, much can be done to more effectively mobilize resources and make better use of those that are available. Only by making full resources coverage a major goal will the true extent of resource availability become apparent. At the same time, it should also be possible to identify more clearly which sections of the population really do need financial assistance to ensure that basic service needs are met, and that support is therefore directed to the people most in need. Doing this has important implications, and these must be recognized. The greater the contribution from users, the less they can be treated as beneficiaries and the more they must be seen as partners.

As partners, communities are entitled to ask a number of basic questions of agencies who are encouraging them to invest in improved water and sanitation services. Among these, the most obvious include: what benefits will be obtained and what costs are entailed in making improvements; to what extent improvements will meet their own felt needs; and how financing can best be organized and under whose control. These issues are reviewed in the chapters which follow.

### 3. *Benefits of Improved Water and Sanitation*

The more benefits which can be obtained from water and sanitation improvements, the greater the prospects for resources coverage and sustainability will be. Obtaining benefits is important to supporting agencies, who must justify public investment in the sector, and to users, who will only be interested in improvements if they have something to gain. In the case of users, this is of decisive importance if they are being asked to pay.

Few people involved in water and sanitation development programmes doubt that providing improved services is beneficial. Having a clean water supply and adequate sanitation facilities are necessary conditions for any meaningful improvements in quality of life. Simply providing these services, however, has often not proven sufficient to ensure that the full range of possible benefits is obtained. Even where benefits are obtained, it has often been difficult to provide clear proof of this. The demands for increased user contributions make this more than just an academic argument.

Properly implemented water and sanitation improvements should always lead to advantages, and possibly to significant benefits and desirable long-term effects (see Box 5). The advantages should be direct and immediate. These include: the delivery of water in greater quantity and closer to home on a more reliable basis; better water quality; and generally improved environmental health conditions, through the protection of water sources and the hygienic disposal of human waste. Although these advantages may be seen as benefits in themselves, they often create a situation where greater benefits can be achieved, and are not always enough in themselves to justify investment or motivate people to pay.

#### Box 5

##### POTENTIAL BENEFITS FROM IMPROVED WATER AND SANITATION SERVICES

###### ***Intervention***

Improved water and sanitation services

###### ***Advantages***

Improved water quality  
Increased water quantity  
More convenient and reliable service  
Improved environmental health conditions

###### ***Potential benefits***

Improved safeguards against water and sanitation-related diseases  
Reduction of workload for women and children  
Improved health knowledge  
Improved hygiene behaviour  
More water for production  
More time for production  
Improved technical skills in community  
Improved management skills in community  
Improved social status  
Increased food production  
Increased general production  
Improved community management capacity

###### ***Long-term effects***

Reduced mortality and morbidity from water and sanitation-related diseases

Higher nutritional status  
Increased income  
Increased demand for development  
Improved health  
Improved standard of living  
Improved quality of life

Exploiting these advantages and achieving concrete and highly valued long-term benefits to health and standards of living is complex. Pathways must be created from the direct advantages to real benefits and long-term effects. The development of any of these will depend on a host of variables, including the types of service provided, the implementation approach adopted, users' recognition of potential advantages, how systems are used, general resource availability, and changes in behaviour. At no point will one step in such a pathway automatically lead to another. Lasting benefits will only be obtained if they are actively and systematically pursued. The benefits of improved water and sanitation services are usually treated in two broad categories:

1. Benefits to health.
2. Savings in time and effort, leading to economic and social benefits.

### **Health benefits**

In 1842, the campaigner Edwin Chadwick argued that public investment in improved water and sanitation in Britain would be justified through the growth of a more healthy and productive population (Chadwick, 1842). Chadwick's argument was supported by improvements in knowledge about the links between water and health, and in particular the discovery of the role of water in the spread of cholera (Aziz et al, 1990).

More than a century later, at the beginning of the International Drinking Water Supply and Sanitation Decade (1981-1990), an United Nations report expressed much the same hope (Falkenmark, 1982). At the same time, it was recognized that both achieving this aim, and proving it, were going to be extremely difficult. The fanfare accompanying the launch of the Decade inevitably oversimplified the complex problems involved. As the financial crisis in the sector has deepened, the need to seek concrete proof that benefits are being obtained has become a stronger felt need. In the process, the assumed benefits have been called into question, and the confidence expressed by Chadwick is no longer so clearly echoed in current discussions.

The difficulties in showing health benefits as a direct result of water and sanitation improvements have been interpreted in different ways. Some have argued that the links are so hard to prove that improved health cannot effectively be counted as a benefit (Churchill, 1987). Others have been more optimistic. In a review of almost 40 years of experience, Esrey and Habicht acknowledge that flaws are to be found in virtually all attempts to measure health benefits related to water supply and sanitation interventions, and that "improved studies are needed". They nevertheless conclude that "...one can infer from the current literature beneficial health impacts following improvements in water and sanitation." (Esrey and Habicht, 1986). An earlier review of 67 studies from 28 countries showed median reductions of between 16-37% in diarrhoea morbidity among young children as a result of improved water supplies and sanitation. The studies were reviewed on the basis of the individual and combined effects of improvements in water quality, water availability, and excreta disposal (Esrey et al, 1985).

Health benefits do not flow directly and automatically from improvements in water and sanitation services. To be achieved, they need to be explicitly defined as a goal, and equally explicitly pursued by support agencies and, most crucially of all, by users themselves. The



key to attaining better health as a benefit is linked to patterns of behaviour, as much as to technical interventions. Improving services creates possibilities for health improvement but further action is required, including the development of appropriate and carefully planned hygiene education programmes (cf. Boot, 1991), if positive effects are to be achieved.

## **Benefits from time savings**

While governments and aid agencies justify investment in the water and sanitation sector on the basis of health, users are often more aware of other benefits such as the added convenience of improved services and the time savings which can be obtained (Cairncross, 1988).

Saving time means that collecting water may be less burdensome, particularly for women, and that more effort can be directed towards productive activities. Economic and financial benefits can also be obtained by increasing water availability and making it more readily accessible for productive uses (eg. livestock watering, garden irrigation, etc.). Improved services can also lead to cash savings, for example when a new system replaces water vending and delivers water at lower cost. The linking of water and sanitation improvements with increased levels of income appears to be more attractive than trying to pin down health benefits, which are often less easy to recognize. Furthermore, if improved services lead directly to monetary gain, ability to pay by definition will increase, and the argument that people should pay for services is easier to support.

The value of time gains may be understood differently, depending on your point of view. Men and women, for example, may have quite different perceptions of the value of women's time. Some evidence points to this as an important factor, though more research is still needed (Kamminga, 1992). Even if women do value time savings more than men, this does not mean that they will be free to exploit them or that this will lead to increased willingness to pay. The agency view of the value of time may also differ significantly from that of the users.

"Saving time has a greater or lesser value to a household, depending on what its members can do with the extra time. Regardless of what the members actually would do with the time, a valid measure of its value to them can be inferred from how much they *could* earn if they used it in income-producing work" (Churchill, 1987).

This analysis relates to the opportunity cost of time, or what can best be done with available time to obtain the optimum advantage from it. In practice, however, the economic value of time may have less meaning than other factors. As Feachem and his co-authors noted in their study of rural water supplies in Lesotho (Feachem et al, 1978), people in subsistence economies do not always think primarily in monetary terms. The idea that "time is money" can be baffling in contexts where other benefits, such as increased leisure and status, have more meaning.

Like health improvements, the benefits of time savings are rarely automatic. In a literature review of the potential benefits for women of improved rural water supply, Kamminga notes a range of possibilities but cautions that none can be presupposed. The possibility of deriving economic and financial benefits from improved water and sanitation services is no guarantee that they will be realized or that any benefits gained will be equitably distributed. It is clear, however, that benefits are often there for the taking, if they are actively pursued (Kamminga, 1992).

## **Negative effects of water and sanitation programmes**

As well as creating potential benefits, attempts to improve water supply and sanitation services can also lead to serious negative effects. In assessing the actual and potential costs of programmes, possible negative effects also need to be considered. While benefits must be actively pursued, negative consequences must be equally actively avoided.

The list of possible negative consequences is extensive (van Wijk-Sijbesma 1981), and underlines the importance of taking as much note of the possible damaging effects of improvement programmes as the potential benefits. Rather than creating better health conditions, for example, attempts to improve services may increase health risks due to unintended environmental and ecological effects. These may even threaten the security of water resources themselves. Unintended consequences for economic conditions can include a widening rather than narrowing of the gap between rich and poor. In respect of social conditions, negative impacts can be felt by the poor and by women, and projects may create division rather than solidarity in communities, and greater rather than lesser dependence on external agencies.

### **The pursuit of benefits**

Moving to an approach to water and sanitation improvement based on user demand, with a strong emphasis on resources coverage, means that new ways must be found to actively pursue and optimise the benefits to be obtained. Improved systems must be seen as vehicles for the delivery of benefits, rather than as ends in themselves. From this point of view, the installation of new water and sanitation systems is the beginning rather than the end of the development process.

Benefits must be pursued as strongly by users as by support agencies. This means that a shared perception is needed both of the benefits to be pursued and the means of pursuing them. Partnership is vital to ensure that common goals are identified and agreements made as to how they are to be reached. Joint monitoring is also crucial to both ensure that goals are being reached, and that all benefits obtained are clearly recognized. Complaints that users are not making the best use of service improvements make no sense if common goals have not been set, potential benefits are unrecognized, and clear actions are not undertaken to achieve them.

## 4. *Costs and Cost Effectiveness*

### **Measuring the costs of water and sanitation**

While water and sanitation improvements can bring benefits, they also have costs. The value of benefits can only be known if they are set against the costs involved. Too often the real costs of water and sanitation improvements are unknown or inadequately recorded (Bastemeyer and Visscher, 1987). A document prepared in the late 1980s for a major international development agency noted that the work it contained was the organization's first serious attempt to get a coherent picture of "what different types of water supply and sanitation interventions cost and why" (Wilson, 1988). Although much of the available data is patchy and inconsistent (particularly in respect of what should be included in the definition of costs), it is clear that basic water and sanitation services can be delivered at a relatively modest cost. According to one estimate, point source water supplies and public standpost systems can cost as little as US\$5-US\$10 per person per year (Okun, 1988). When users are being asked to pay, however, rough estimates are no longer sufficient. Clear and accurate costings are required.

Where cost estimates are made, they are often limited to materials, labour and transport inputs, or based on rule-of-thumb budgeting criteria. Where improvement projects are implemented by government agencies, as is often the case, calculating costs is complicated by the difficulty in taking account of overhead and general support costs. Costing is also difficult for software inputs such as hygiene education and community training programmes, which are intended to have long-term effects.

Very often costs are not known simply because inadequate efforts are made to monitor them, as a recent guideline document on how to calculate operation and maintenance costs points out:

"If the estimate is too high, the planner and the users may conclude that the community cannot afford the system; if the estimate is low and the water system is constructed, the system is likely to fall into disuse or disrepair due to lack of funds for its operation and maintenance. Though the need for accurate cost estimates is clear, a methodology for making such estimates had not been developed" (Jordan and Wyatt, 1989).

Generally speaking, cost estimates seek to establish the financial costs of running a system (ie. the level of resources required to ensure that liquidity is maintained: in other words, that enough money is always available to pay the bills). The full cost of a service, however, is its economic cost, which is the total cost to society of providing it. Calculating economic cost means that the cost of devoting resources to a particular purpose must be set against the other possible purposes to which they could be put. In some cases the economic cost of improved water and sanitation services may be higher than the financial cost, and under such circumstances sound economics suggests that either the investment should not be made, or prices should be set at a rate higher than the level required to meet financial needs alone. This approach is based on the idea of shadow price, which is "the opportunity cost to a society of engaging in some economic activity. It is a concept applied to situations where actual prices cannot be charged, or where actual prices do not reflect the real sacrifice made when some activity is pursued" (Bannock et al, 1987).

## **Costs and cost effectiveness**

The costs of water and sanitation improvements are influenced by a broad range of factors, from technology choice and service level, to less tangible factors such as project strategy, and management and administrative procedures. If user payment is an explicit goal, cost effectiveness is of great importance to ensure that the best possible value for money is obtained from both the community and agency points of view.

Improvements in efficiency can make a major contribution to cost effectiveness. As long as the cost issue is not a high priority, incentives to operate more efficiently will remain low. Many programmes are wasteful, leading to excessively high costs in relation to the benefits obtained. This does not mean that the benefits themselves are not worth having, but unless changes are made it can mean that the opportunity cost of obtaining them may be much too high. In a recent estimate, UNICEF calculated that investments in water and sanitation development of US\$36 billion per year will be required if global coverage is to be achieved by the year 2000. At the same time, an emphasis on low-cost technologies could mean that as much as 80% of current needs could be met with only 30% of this level of investment (UNICEF, 1991b).

## **Cost effectiveness and benefits**

The question of the cost effectiveness of water and sanitation improvements in producing benefits is controversial, particularly in relation to health. Water and sanitation were firmly placed in the framework of the primary health care (PHC) approach at the landmark Alma Ata conference in 1978, which gave birth to the slogan of "Health for All by the Year 2000". A year or so later their effectiveness was called into question. Two medical doctors, J.A.Walsh and K.S.Warren, argued that the approach to PHC laid down at Alma Ata was too expensive for most developing countries and that each element should therefore be individually scrutinized for cost and effectiveness. On this basis, they recommended a slimmed-down programme, which they called "selective primary health care" (SPHC). This package was made up of five interventions: breastfeeding, anti-tetanus for women, child immunization, chloroquine treatment for malaria, and oral rehydration therapy (ORT) for the management of diarrhoea. The calculation was based on the criterion of "cost per death averted". On this basis, investment requirements for water and sanitation improvements were seen to be very high in comparison with the other interventions, amounting to between US\$3600 and US\$4300 per death averted compared with US\$200-250 for the whole SPHC package.

The influence of this argument was widely felt and provoked strong reactions from opponents (see Yacoob et al, 1989). Despite this, Walsh continued to use cost per death averted as a criterion for assessing cost-effectiveness almost ten years after first advocating the SPHC approach. At the same time, however, she acknowledged that such figures do not give a true picture of the potential benefits of water and sanitation improvements:

"A cost-effectiveness calculation for deaths averted..does not examine the many other non-health benefits of water and sanitation in decreasing the time needed for water drawing on the part of women, releasing this time for other activities (such as mother care, income generation, or family gardening), and improvements in agriculture and animal husbandry from readily available water"(Walsh, 1988).

Although criticisms of the cost effectiveness of water and sanitation improvements may have flaws, the challenge still remains to make major efforts to improve efficiency and seek

the maximum benefits from every dollar of investment. Seeking a broad range of benefits rather than concentrating on health alone will help in improving the return on investment. Equally, efforts must continue to develop methodologies to obtain a true measure of the benefits gained so that their value can be fully represented in calculations of benefit-cost and cost efficiency.

### **Costs to users**

In discussing costs it is easy to forget that these are incurred by users as well as by support agencies (cf. Yacoob and Walker, 1991). In this respect, the term cost recovery is itself misleading since it implies a false directional flow in which the agency incurs costs which it must then recover from the users, or elsewhere. Unimproved and traditional water sources and sanitation facilities, as well as improved services, carry costs for users even if these are primarily in expenditures of time and effort.

Users effectively recover costs through the benefits (or, in economic terms, the utility) of the service provided. The analysis they make, on the basis of weighing costs and benefits from their own point of view, largely determines their demand (expressed as willingness to pay) for a service or product. Utility is "the pleasure or satisfaction derived by an individual from being in a particular situation or from consuming goods or services...As no single measure of utility exists, it is by their choices of combinations of available commodities that consumers reveal what it is that generates utility for them" (Bannock et al, 1987). Where incomes are low and money is scarce the issue of opportunity cost is highly pertinent from the users' point of view.

"..villagers may have very high water needs and still object to cash payments; cash income is scarce in many rural areas and there is no evidence that rural dwellers will not continue to drink water at no expense from traditional sources in order to save their cash income for the acquisition of those goods which cannot be purchased without money" (WHO, 1987b).

Costs to users within a single community may also vary significantly. This is particularly true when economic benefits are gained. If these are unevenly distributed, the net costs to those who gain the most will be lower than for others.

Mutual failure by users and agencies to recognize the costs to each of improved services may underlie some of the problems associated with estimating costs and setting prices, and the broader issue of creating demand. Just as agencies may not recognize the real costs to users of both traditional and improved water supplies, users may have an equally limited knowledge of what the provision of an improved supply actually costs the agency.

"Village financial contributions for supplies amount, on average, to 7 per cent of their total materials cost. Many villagers nevertheless believe that their contributions amount to roughly half the cost of the supply and so grossly undervalue the government's contribution. One committee responsible for a water supply which had cost R.1300 estimated its value at 'about R.180' " (Feachem et al, 1978).

The inability of many support agencies to provide communities with accurate estimates of the likely running costs of water and sanitation systems may also be an underlying cause of reluctance by users to take on operation and maintenance responsibilities (cf. Evans et al, 1991). A further complicating factor is the variance in maintenance costs of water systems

over time. A study of maintenance of rural water supplies in Zimbabwe found that the relationship between the age of handpumps and breakdown rates was complex. New pumps were breaking down more frequently than slightly older ones, while, as would be expected, old pumps broke down most often (Cleaver, 1991). Rather than progressively rising, or staying at a steady level, the costs of maintaining handpumps rose at the beginning, decreased in the middle, and rose again at the end. Effective financial and technical planning and management can only be achieved if such patterns are recognized.

### **Cost effectiveness and poverty**

The level of annual per capita income below which people are defined as poor has recently been set at US\$ 370 per annum. At this level, it is estimated that more than one billion people fall below the poverty line: almost one-third of the population of the developing world (World Bank, 1990). At the same time, 1.5 billion people are without safe water supplies and 2 billion have inadequate sanitation.

The burden of poverty is not shared equally in the developing world, though it is a common feature almost everywhere. Some progress has been made in Asia and the Pacific region, but in Latin America and Africa income per head declined in the 1980s (UNDP, 1991). Sub-Saharan Africa is currently facing the most acute crisis, and the number of poor people in the sub-continent is expected to rise, rather than decline, before the end of the century. By the year 2000 a projected 250 million people will live in poverty in Africa, representing more than 30% of the world's poor (World Bank, 1990).

As a general rule of thumb, it has been said that people should not have to pay more than about 3-5% of income for water and sanitation services. At an annual income level of US\$ 370 per person, the most which an individual could afford to pay according to this criterion would be US\$11-\$18 per year. For the more than one billion people below this level of income, an annual contribution of even US\$10 per person per year is likely to be beyond ability to pay. While it is possible to use low cost technologies which are within the reach of the poor and conform with the 3-5% standard, cases have been found of impoverished people paying far more than this, sometimes as much as 20-30% of meagre annual incomes (Brand and Bradford, 1991). The full costs of devoting this proportion of income to securing water supplies has not been explicitly documented, though it is clear that other vital needs must be foregone, with damaging consequences for health and well-being. Increased cost effectiveness is of crucial importance if greater demands for contributions from users are not to make a bad situation even worse.

### **Costs and sustainability**

The current limits of knowledge in relation to the cost of water and sanitation improvements are a serious handicap to the further development of effective resources coverage. Getting a tighter grip on costs, reaching a consensus on how they should be defined, recognizing that costs are always incurred by users as well as providers, and making every effort to keep costs as low as possible, must all be given higher priority if sustainable development is to be achieved.

## 5. *Demand and Willingness to Pay*

Providing services which people can afford is an obvious pre-condition for cost recovery. Being able to pay for something and being willing to do so, however, do not always go hand in hand. From an economist's point of view, demand is only real (or "effective") when it is accompanied by willingness to pay, in cash or kind, for the goods or services offered. From this point of view, "willingness to pay" and "demand" essentially mean the same thing. Both, however, need to be distinguished from the idea of "felt need". Acceptance of free or heavily subsidized services, which meet people's felt needs, does not prove that there is effective demand for them. Felt need only turns into demand when people are prepared to use their own resources to obtain what is offered. The relationship between demand and felt need is thus a complicated one, since there can be no demand without felt need, but felt need alone is not necessarily enough to create demand. In reviewing the discussion below, it is important to keep this distinction in mind.

### **Factors influencing willingness to pay**

Creating demand for improved services is much more complicated than just getting the price right, though this has an essential part to play. Resources are always limited, and choices have to be made as to how they are used. In recent years increasing attention has been paid to finding out how much people are actually willing to pay for better water and sanitation services, and for what types of improvements. In investigating demand and willingness to pay, it is important that a broad-based approach is taken. Research has indicated that the range of influencing factors is wide. A list of those which have been identified as among the most important is discussed in Box 6 below.

Box 6

<b>FACTORS INFLUENCING WILLINGNESS TO PAY</b>
* Service level
* Service standard
* Perceived benefits
* Relationship to production
* Level of income
* Price
* Relative cost
* Opportunity cost of time
* Characteristics of existing sources
* Reputation of service agency
* Community cohesion
* Policy environment
* Socio-cultural factors
* Perception of ownership and responsibility
* Transparency of financial management
* Institutional framework

(Adapted from Briscoe and de Ferranti, 1988; Katko, 1990).



**Service level:** The level of service provided by a water supply or sanitation system has an important influence on whether or not people will pay for it, sometimes in surprising ways. The lowest (and cheapest) level of service cannot always be assumed to be the most marketable. In some cases, consumers who are not willing to pay a modest rate for a simple point-source supply, such as a handpump, will gladly pay much more for a higher level of service such as a yard tap or house connection.

**Service standard:** Standard of service is closely linked to level of service. If a system does not perform consistently, and does not continue to provide an acceptable level of service, willingness to pay is likely to diminish.

**Perceived benefits:** Paying for a service is effectively a decision to invest. Continuing willingness to repeat this expenditure is dependent on the benefits to be gained. Since some benefits can be easily seen and others cannot, the extent to which possible benefits are perceived and recognized by consumers is important. For example, health benefits are often indirect and many consumers may not perceive them as a benefit at all. Other factors, such as the taste, smell and colour of water from an improved supply, may be perceived as being more important.

Economic and financial benefits, insofar as they are more obvious and direct, may also have a greater influence on people's willingness to pay. If an improved service does not provide perceivable benefits in comparison to an existing source of supply, users are unlikely to be willing to pay for it. Agencies and communities may not share the same perception of the benefits to be gained from service improvements. Within communities there can be important variations too. Different sections of a community may have different levels of interest in improved services, particularly where some stand to gain more than others. An awareness of consumer perceptions, and possible variations within communities, is therefore crucial in developing a sustainable programme.

**Relationship to production:** Where water can be used for productive purposes, such as gardening or livestock watering, willingness to pay is likely to be higher than where it cannot. Again, however, an improved supply must be able to deliver this advantage to a greater extent than an existing source if this factor is to be of importance.

**Level of income:** This relates directly to ability to pay. If the cost of a water supply is beyond the means of the consumers, the question of willingness to pay clearly does not arise.

**Price:** Finding the right price level is important. In rural areas in particular alternative sources of water are usually available, even if of poor quality. The level at which water charges are set is likely to influence people's decisions as to whether to pay for a better service or stick with the old one. A balance needs to be drawn between establishing a price which will meet costs, on the one hand, and which people will be prepared to pay, on the other.

**Relative cost:** In deciding whether the cost of a service is acceptable or not, people will often compare it to the costs of other services which they value equally, or which they consider to be of a higher or lower priority. The costs, for example, of electricity supply, schooling, or health care, may be used as benchmarks against which the relative costs of water and sanitation services are measured. If the costs are considered to be too high in relation to others, willingness to pay may be affected.

**Opportunity cost of time:** Where water is free, the basic cost to users, apart from the energy consumed in carrying it, is the time it takes to collect. The extent to which this time is valued may influence whether people are willing to pay for a service which will save time in meeting water needs. In most cases, the time in question is that of women. Men, however, may have a different perception about the value of women's time than women themselves.

**Characteristics of existing sources:** Where users consider their traditional water sources to be acceptable, it is unlikely that they will be willing to pay for an improved service. Relative factors such as the quantity of water available, perceived quality, distance from home, potential economic uses, and the reliability of the supply, are all likely to influence whether people will continue using existing sources, or pay for an improved supply.

**Reputation of service agency:** The credibility of an agency providing a service will have an important influence on willingness to pay. In many developing countries, people have had experiences of development efforts which have promised much but, in the end, delivered little. The service agency - whether it is a government department, public enterprise, private company, or community management body - must be able to deliver the goods, and be seen to be doing so by the consumers.

**Community cohesion:** In rural areas in particular, cost recovery may be managed through voluntary contributions to a common fund. Good cohesion within a community is essential for this, but cannot be taken for granted. Factional conflicts, or lack of trust in the village leadership or office holders, may mean that consumers are unwilling to cooperate in a joint venture of this kind, irrespective of felt needs. This factor is likely to be linked to others, such as the method devised for collecting and managing contributions, the distribution of water points in the community, and so on.

**Policy environment:** The policy of seeking to provide basic services free of charge in many developing countries has made the covering of costs for water supply and sanitation a difficult proposition. People are unlikely to be prepared to pay for services while they believe that others will get them free, or that the government or some other agency will meet the costs. Many developing countries are now revising such policies, but politicians remain reluctant to make such changes clear. Where a free water policy is abandoned, it is important that new policies are clearly communicated and are implemented consistently.

**Socio-cultural factors:** Socio-cultural factors may influence willingness to pay in a broad range of ways, and with considerable variation from place to place. In some societies attitudes and beliefs in relation to the natural world and basic resources such as water or land may make people reluctant to pay for something they consider should be free to all. In others, people may object to water being captured (through spring protection, for example), or to wells being sited in certain places. Perceptions about water quality, and what constitutes good water will also vary from place to place in accordance with local beliefs.

**Perception of ownership and responsibility:** The degree to which people feel responsible for their own water and sanitation services may affect their willingness to pay. If they believe that a water supply system belongs to the government, for example, they may feel that it is the government's responsibility to take care of it. Even when systems have been formally handed over to communities, studies have found that many people still do not accept ownership and responsibility. This factor may often be symptomatic of other problems, such as an inappropriate approach to implementation, inadequate consultation, or dissatisfaction with the type or level of service. A system which is imposed from the outside is unlikely to be fully accepted by a community, and willingness to pay is likely to be adversely affected as a consequence.

**Transparency of financial management:** This factor may be closely linked to the reputation of the service agency or local management organization and is basically a matter of trust. If people can not see clearly what is happening to the contributions they make towards the upkeep of their water supply or sanitation system they are unlikely to be motivated to pay for it. An acceptable and clear financial management system, with high levels of accountability, should help to instill trust and reassure people that their contributions are being used for the intended purpose.

***Institutional framework:*** The way in which a water or sanitation programme is organized, and the institutional framework developed to support it, can affect willingness to pay. The establishment of water committees which bypass existing authority or local management structures, for example, may limit the effectiveness of such bodies and make people reluctant to support them. A framework which is insufficiently open to users as a whole may also diminish willingness to pay if people feel that their views will not be accounted for in the development and management of systems.

## **Measuring willingness to pay**

In recent years there has been renewed interest in developing practical methods to find out what services people really want and how much they are prepared to pay for them. Income levels in the poorer parts of the world are hard to measure. In marginal urban areas most economic activity takes place in the informal sector and earnings are largely undocumented. In rural areas cash earnings are highly sensitive to seasonal and annual fluctuations and are very difficult to accurately predict. It is easier to find out what people spend, than to find out what they earn. Recent research has concentrated more on investigating what people *will* pay, rather than asking what they *can* pay.

Two basic methods have been developed for finding this out. The first, the *indirect method*, involves analyzing what others in similar circumstances to the target population are already paying for services. The second, the *direct method*, involves asking people to say what they would be prepared to pay in the future for improved services. The relative merits of these two approaches have been discussed by Briscoe and de Ferranti:

*"The indirect method has one big advantage in that data are drawn from actual practices. It also has several disadvantages: the service to be offered (say, a yardtap) may often not exist in the community, there are often large discrepancies between the apparent value of a service and the amount that individuals are actually prepared to pay, and this is a top-down approach, which designs for rather than with the community.*

*The major, obvious difficulty with willingness to pay questions [the direct method] is that the answers may be misleading, either because a hypothetical question does not elicit sufficiently serious consideration or because there are perceived advantages to giving false answers" (Briscoe and de Ferranti, 1988).*

The authors note that in 1976 the World Bank concluded that using the direct method for rural water supply was "virtually useless". But, they say, "recent experiences in industrialized countries...have led to major theoretical and methodological advances in understanding the biases in such direct surveys. It now appears that the method has substantial potential for assessing the demand for public services in developing countries" (Briscoe and de Ferranti, 1988).

The direct method of measuring willingness to pay is sometimes referred to as the "contingent valuation" method. The method is vulnerable to bias in three basic areas:

1. ***Hypothetical bias:*** individuals may not understand or perceive correctly the characteristics of the good or service being described by the interviewer.
2. ***Strategic bias:*** the respondent may think he can influence the provision of services in his favor by not answering the questions truthfully.
3. ***Compliance bias:*** the respondent may give answers which are influenced by his desire to please the interviewer (Briscoe et al, 1990).

Researchers have tried to develop techniques to avoid these areas of bias, or at least to minimize their impact on study results. Hypothetical bias, for example, can be minimized by providing adequate information to respondents (eg. by showing pictures or films of proposed services). Strategic and compliance bias can also be minimized, by introducing control mechanisms into the methodology, and taking extra care in the selection and training of interviewers (Briscoe et al, 1990).

In practice, the direct method is much more subtle than bluntly asking people to name a price for future water and sanitation services. A technique which has become popular in recent years is the so-called "bidding game", which has been tried in various forms in a number of recent studies. There are a number of variants of this method, but all involve a process of negotiation between the interviewer and respondent. The game involves moving up and down a range of possible prices for particular types and standards of service until a level is reached at which the respondent expresses willingness to pay a particular amount and no more. In the process, it is possible to get an indication of the level of basic demand for improved services in general, and also an insight into relative demand for different levels of service. This method requires skilful use if valid results are to be obtained.

The bidding game was used as part of a costs and tariffs study for the rural water supply sector in Botswana in 1988, in an effort to determine whether the introduction of house connections would increase willingness to pay. One of the authors of this study noted that the method was used with some reluctance, but "...somewhat to our surprise...we found that for each village there was an agreement within (plus or minus) 2 Pula of what would be an acceptable price." (Widstrand, 1991).

The bidding game has proven useful for sanitation programmes as well as for water supply. A study supported by UNDP and the World Bank in Kumasi, Ghana, produced unexpected results in consumer choice of urban sanitation technologies. It is often assumed that, given the choice, most people would opt for relatively high levels of service and only accept lower technologies at a much lower price:

*"Somewhat surprisingly, on average, households in Kumasi are willing to pay roughly the same amount per month for a ventilated improved pit latrine as for a water closet and a sewer connection. Many people surveyed felt that factors such as increased water bills and the undependable nature of Kumasi's water system lowered their willingness to pay for a water closet" (UNDP/World Bank, 1990).*

Supporters of both the indirect and direct methods have been quick to note their limitations. A field test using both methods in Haiti (Whittington et al, 1987) found that they produced different results, pointing to the need for further refinement. In spite of a number of reservations, however, the bidding game in particular was found to be very useful.

The authors of the Haiti study recommended that further field tests should be conducted of both direct and indirect methods, and additional checks introduced to test the validity of results. Issues to be investigated include whether people would modify their responses if given more time to consider the questions, or were permitted to consult with family and friends. They also suggest that anthropological studies should be conducted to get deeper background information on responses. The ultimate test is the behaviour of respondents once they are actually required to pay for services (Whittington et al, 1987).

## **Water vending as evidence of willingness to pay**

A third approach to the study of demand is the use of proxy measures. A good example is the use of case studies of water vending to provide indicators of willingness to pay.

Although the service investigated does not usually correspond to proposed service levels in improvement schemes, it is a way of investigating resource availability and payment practices at a general level, may provide an indicator of the value which people actually give to water, and may show what the upper limits of willingness to pay are likely to be.

The unregulated sale of water by vendors is widespread in low-income urban areas throughout the developing world (eg. Okun, 1982; Zaroff and Okun, 1984), and, to a lesser extent, in rural areas too. Evidence that people pay high rates to vendors has been presented to show that they are both able and willing to pay for water services. Furthermore, it has also been shown that "...the cost to the user who buys from vendors is substantially greater not only on a charge per liter but also a monthly basis than the cost to householders who have piped water to a home with several bathrooms, a kitchen and an extensive yard that requires irrigation" (Okun, 1982). In such cases, it can be assumed that people would be more than happy to pay a lower rate for a better level of service.

Studies of water vending practices in Haiti, Indonesia, Kenya, and Honduras (Whittington et al, 1988), and Nigeria (Whittington et al, 1989) have added weight to this argument. Improved services, without subsidies, would enable people in the study areas to obtain water in both more quantity and of higher quality at a lower price than they are paying for supplies from vendors. In Tegucigalpa, Honduras, people in marginal urban areas pay vendors an average of US\$14 per month during the rainy season (about 8% of income) to US\$21 per month (12% of income) during the dry season (Whittington et al, 1988). By contrast, higher income households connected to the municipal water system pay only US\$3.10 to US\$4.10 per month for a much higher level of service and a much larger quantity of water (UNICEF, 1991a).

In many places, water vending generates very high levels of revenue, which could be put to far more efficient use. In Tegucigalpa it is estimated that water vending produces an annual revenue in the range of US\$11-13 million.

*"If government agencies could attract even 15 or 20 per cent of the outlay that now goes to water vendors, they could provide a lower-cost, permanent or interim service to the **barrios marginales** through independent, non-conventional water supply systems, that would pay for themselves within the course of a few short years"*  
(UNICEF, 1991a).

Studies of water vending often show that available resources are not being put to the most productive use. They provide only limited evidence, however, of what people can really afford to pay.

In crowded urban areas access to water supplies can be extremely limited and, unlike almost all rural areas, alternative free sources of supply are difficult to find. People who buy from vendors often have few other choices. Water must be bought at the expense of other things, which are likely to be basic needs in themselves (UNICEF, 1991a). Even at a much lower level of cost, people may still have to forego vital needs. Many studies of water vending fail to take this into account. It can be assumed that wherever people are already paying for water supplies they will always be happy to pay less. Studies of water vending, however, rarely tell us how to persuade people who do not yet pay that they should do so.

## **Women and willingness to pay**

Whatever method is used to investigate demand and willingness to pay, the questions must be directed at the right people. In spite of many years of the promotion of their role in the sector, the implications for women of paying for water have received very little attention.

The implicit assumption made in most discussions of cost recovery is that the "household" will pay, with men being assumed to be the principle providers. In many places this may not be true and men and women may have separate access to and control over resources. They may also be responsible for taking care of different categories of expenditure within the household, rather than meeting all needs in a collective way.

If users are expected to pay for water and sanitation, it is necessary to find out who will actually pay the bill. In a project in Western Kenya it was assumed for a long time that male household heads were responsible for the payment of household expenses and could easily afford to pay for water supplies. The fact that cost recovery rates were disappointing was something of a mystery. It was later found that it was often women, with much lower income levels, who took a large part of this responsibility, and many simply could not afford to pay. Affordability studies had been targeted at the wrong group, and had produced quite misleading results (FINNIDA, 1991).

### **Partnership and action research**

In spite of the difficulty in finding flawless methods, water and sanitation programmes can derive considerable benefit from investigating demand and willingness to pay. Flaws in methodology become more damaging the greater the distance between the researcher and the subjects of research. Imperfections in methodologies become less important as the level of partnership increases. Research which is strongly action-oriented, and brings together communities and agencies in not only providing answers, but also in posing questions, analyzing the information produced and agreeing on practical solutions, is much more likely to produce the right results.

Many of the factors influencing willingness to pay are qualitative, rather than quantitative. Conventional research methods may fail to get to the heart of many of them. More collaborative approaches, with full community involvement, are likely to be more fruitful. People often have much clearer ideas about their service needs than outsiders may think. Allowing them the freedom to define their own needs, identify service requirements for themselves, and negotiate resources coverage agreements on their own behalf, should strengthen the prospects for sustainable development.

## 6. *Managing Cost Recovery and Community Financing*

### **Options and methods for cost recovery**

There are many options for the practical management of user payments. All have strengths and weaknesses. Which is most appropriate depends on local circumstances. In all cases, however, management efficiency is vital for success. Failures may have just as much to do with problems at this level as with limitations in the willingness of consumers to pay, or the degree of appropriateness of the financing mechanism itself. Systems need to be developed which not only ensure that user financing is well-managed, but also that all those who should pay do pay. Governments, industries and institutional users are often as delinquent in this respect as the public.

In the same way that technologies, service levels, and project implementation strategies need to be appropriate to the context in which they are being implemented, user financing mechanisms must be adapted to the characteristics and needs of the local situation. Community financing is unlikely to succeed "...when the system does not meet the needs, interests and payment capacity of the various user categories" (van Wijk-Sijbesma, 1989).

Taking sufficient time to undertake joint planning in partnership with communities is a need which is often overlooked, particularly in relatively short-term projects where the pressure to install new facilities as quickly as possible is often intense. Joint planning with communities, however, should pay dividends in the long-term, and need not be as time-consuming as might be thought.

*"It is sometimes argued that this kind of decision-making is very time-consuming and thus costly. Although it cannot be denied that more time is needed to decide things **with** others than **for** others, the inputs need not be excessive. Good planning is essential in this respect" (van Wijk-Sijbesma, 1989).*

In some circumstances, such as in large urban programmes, close coordination with users may be more difficult than in smaller rural environments, but in all circumstances the financing mechanism selected must be carefully chosen to ensure that it meets basic goals (eg. in maintaining continuity of service, matching willingness to pay, allowing sufficient consumption to meet health and welfare goals, ensuring equity, and so on). Evidence suggests that "...the administration of levies and charges has proven to be most effective when decentralized and tailored to local conditions" (Kia, 1981).

The range of options is broad. Though developed with particular reference for piped water supply systems, many of the options listed in Table 2 are equally appropriate for point-source systems. This is particularly true of voluntary funds, general community revenue, cooperative funds, flat rates, and direct or indirect taxation. The options listed can be placed under four general headings: community options; rating options; commercial options; indirect options. These have all been described in detail by van Wijk-Sijbesma (1989). In the following sections, attention is focused on the strengths and weaknesses of the methods listed. Readers who want more detail on the methods themselves should consult the source document.

**Table 2 Summary of Financing Options**

<i>What?</i>	<i>When?</i>	<i>What for?</i>
<i>Voluntary funds</i>	In communities with a tradition of fund-raising, seasonal income, and a good knowledge and control of payments according to household capacity and benefits.	Financial contributions to construction; occasional larger contributions to maintenance and repair of simple systems with public water points.
<i>General community revenue</i>	In communities with own sources of income and a water supply with public facilities.	Annual maintenance and repair, financial contributions to construction; depreciation and expansion where possible.
<i>Cooperative funds</i>	Water supply initiated and financed through production cooperative or village revolving fund; no direct payments for water used.	Annual maintenance and repairs; repayment of construction loan; depreciation and expansion where possible.
<i>Flat rates</i>	Families have private taps, or share taps with well-defined social group, have fairly reliable incomes, and benefit more or less equally.	Repayment of community loan for construction annual maintenance and repairs; depreciation and expansion where possible.
<i>Graded rates</i>	In communities with appreciable differences in water use and benefits and sufficient community spirit to divide user households into different payment categories.	Repayment of community loans for construction annual maintenance and repairs; depreciation and expansion where possible.
<i>Mixed rates</i>	In communities with large differences in payment capacity and water use, with high- and low-income households living in separate sections.	Repayment of community loan for construction; annual maintenance and repairs; depreciation and expansion where possible.
<i>Water metering</i>	In large communities with limited water resources and an efficient administration.	Repayment of community loan for construction; annual maintenance and repairs; depreciation and expansion where possible.
<i>Vending instead of a piped distribution network</i>	In communities where a socially valuable vending system can be improved, where other solutions are technically, economically or politically impossible.	Contribution towards financing of the recurrent costs of the agency, and financing of vendor service costs, including upkeep of hygiene and simple repair.
<i>Vending as part of a piped distribution network</i>	In communities where group connections or cross subsidies between private and public taps have not worked.	Contribution towards financing of the recurrent costs of public taps and the service of the vendors, including upkeep of hygiene and simple repairs.
<i>Coin-operated taps</i>	Not recommended because of their great sensitivity to breakdown and interference.	
<i>Direct or indirect water taxes</i>	In communities where the transfer of sufficient funds to the water organization is assured and taxation can be related to water use and costs.	Annual maintenance and repair; repayment of construction loan; depreciation and expansion where possible.

Source: van Wijk-Sijbesma, 1989.



<i>Who organizes?</i>	<i>How?</i>
Traditional leadership, voluntary organizations, e.g. women's groups, tap organizations.	Targets are set and funds collected periodically through meetings, house-to-house collections, bazaars, etc. Funds are collected in advance or when required.
Local government, community water committee or subcommittee.	Reservation of funds based on the estimated costs and net annual income of the community; cost-reduction or income generation where necessary.
Cooperative's executive committee, community water committee or subcommittee.	Reservation of funds based on estimated costs and income from cooperative ventures and/or member fees; cost-reduction and/or member fees; cost-reduction or income generation where necessary.
Water committee or subcommittee, board of water users cooperative, local government, tap users' committee.	Project agency advises on initial rate for approval by users; rates are collected and administered by the local water organization.
Community water organization with support from promoters or other social experts assisting the project agency.	Private tap owners are classified in high and low rate categories, using local indicators of water use and wealth; users sharing taps may pay lower or equivalent individual rate.
Water agency with community water committee or subcommittee.	Surpluses or private taps are used to finance the costs of free public taps in poorer sections.
Water agency and/or community water organization.	Meter reading, billing and rate collecting by separate workers or payment through banks, at central government offices or local branches.
Water agency with paid operators, women's groups or water sellers' cooperative.	Water is sold from metered taps at controlled prices; when buying prices are subsidized, selling prices may equal private rates, the difference forming the vendors' income.
Water agency with paid operators or socio-economically appropriate concessionaires, e.g. women heads of households.	Water is sold from metered taps at controlled prices; when buying prices are subsidized, selling prices may equal private rates, the difference forming the vendors' income.
Local government service organization for a specific area, e.g. a low-cost housing scheme.	Taxes are used exclusively for financing one or several basic services; categories of payment are based on level of service or housing conditions.

## Community options

The options listed under this category (Table 3) are primarily suited to rural settings in which community management plays an important role. Of the three, voluntary funds are likely to be the most problematic and the most difficult to sustain, except in places where community cohesion and commitment to improved services is very high. As a means of collecting one-time payments, to meet all or part of installation costs for example, this approach can be highly successful. On the other hand, it is probably the least desirable for collecting funds on a regular basis, unless operation and maintenance costs are very low and the intervals between required inputs quite long.

Lotteries and entertainments are used as fund-raising mechanisms in many countries, particularly in Latin America and parts of Asia. A village in Thailand, for example, was able to raise funds to purchase the remaining latrine slabs needed to reach 100% coverage by staging a boxing show (Kia, 1981). Examples of fund-raising activities of this kind being used for long-term financing are hard to find, however.

Using general community revenues and cooperative funds may be a viable approach, particularly in small communities. Sources of revenue and cooperative enterprises need to be well-established, however, and local management capacity high. There must also be a high degree of consensus among community members as to priorities, and a general recognition of the importance of maintaining services. Communities and user groups with the capacity to meet costs in this way are likely to be capable of assuming a very high level of management responsibility for water and sanitation schemes. Evidence of the potential of these approaches is likely to be found by looking at community activity in a multi-sectoral way. Too narrow a focus on water and sanitation issues alone may lead planners and implementors to overlook existing community experience and capacity built up in other areas, such as agriculture or local industry. The case from Bangladesh (see Box 7) of a successful cooperative devoting part of its earnings to basic services, including water and sanitation, underlines the merits of a multi-sectoral approach.

### Box 7

#### **FINANCING THROUGH COOPERATIVE VENTURES: AN EXAMPLE FROM BANGLADESH**

"The Deeder Cooperative, serving two villages (Kashinathpur and Balarampur) in Bangladesh, is a good example of how a cooperative can provide effective financial support, including for water supply facilities. Conceived in 1960 by one villager from a small peasant family, the cooperative was formed by rickshaw-pullers, landless and land-poor people who weekly contributed one anna (one-sixteenth of a rupee) towards the initial purchase of old rickshaws for two members. In less than a year, they paid back the cost of the rickshaws and a profit of 50 rupees to the cooperative.

With these funds, more rickshaws were brought and the process snow-balled. By 1963, membership had shot up to 126. Now there was enough money and confidence to invest in larger enterprises - trucking, a brick kiln factory, purchase of tractors for transportation, the renting out of rickshaws, banking and interest-free credits for members. There are also several contributing funds run on the basis of ability to pay. These include medicare, life insurance, school supplies, technical education, loss fund, tube-well purchase fund, charity fund (disaster relief) and a reserve fund.

To promote general village development, the cooperative has widened its activities: all houses are to be electrified; in 1977, 26 water-seal latrines were installed and 50 more were ordered, and a preventive health programme is being stressed."

(Source: Kia, 1981).

**Table 3: Managing Cost Recovery: Community Options**

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### **Voluntary Funds**

<i>Positive factors</i>	Responsive to seasonal fluctuations in income Allows broad range of options (ad hoc collections, bazaars, lotteries, festivals, door-to-door collections, etc.) People can contribute according to ability to pay Reduced workload for local organization
<i>Negative factors</i>	May not lead to equity Contributions may not be linked to water use Non-contribution difficult to control Social divisions may arise
<i>Pre-conditions</i>	High level of community cohesion and social control Strong community felt need and commitment to water scheme

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### **General Community Revenue**

<i>Positive factors</i>	Means of avoiding direct payment for water, which may be unacceptable Supply is funded from income generating activities, and does not deplete normal household incomes
<i>Negative factors</i>	Does not ensure equity if access to supplies is uneven Income-generating enterprises may not be reliable enough to guarantee adequate funds Disputes may arise over proportion of funds devoted to water supply in relation to other things
<i>Pre-conditions</i>	Access to service should be more or less equal Contributions to community revenue should be more or less equitable Revenue generated should be reliable and adequate to meet needs

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### **Cooperative Funds**

<i>Positive factors</i>	Payments met through profits from income-generating activities Advantage taken of existing local management capacity
<i>Negative factors</i>	More powerful members may have disproportionate influence Not all users may be involved in the cooperative enterprise
<i>Pre-conditions</i>	Successful cooperative ventures should already be established

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Adapted from van Wijk-Sijbesma, 1989.

## Rating options

Of these options (Table 4), water metering is often regarded as the most conventional means of covering costs. Metering ensures that users pay directly in proportion to the volume of water they consume, and appears to be the most equitable way of all to meet costs. The management and administrative problems of running metering systems, however, can severely undermine their effectiveness and lead to unnecessary extra costs. In some industrialized countries, such as Britain (where less than 1% of domestic consumption is metered), flat rate payments are preferred to metering systems. In the former Federal Republic of Germany only around one-third of households were metered, while in Canada 60% of users pay a flat rate tariff. The costs of introducing metering may be greater than the benefits gained (OECD, 1987).

Flat rates are the easiest of all to administer, but can be insensitive as far as equity is concerned. Mixed systems, which allow lower levels of service (eg. public standposts) to be subsidized by higher (eg. house connections) may be the most appropriate in many high-density urban areas.

Institutional capacity and management efficiency are key factors in ensuring the effectiveness of any rating system. Poor planning and inadequate consultation can create far more problems than the collection of revenue can solve, as the example of attempts to collect flat rates for handpump maintenance in northern Ghana illustrates (see Box 8).

### Box 8

#### **HANDPUMP FEES: MANAGEMENT PROBLEMS IN GHANA**

Attempts by the Ghana Water and Sewerage Corporation (GWSC) to introduce user charges for handpump water supplies after almost 30 years of free service provide a sobering example of the difficulties to be overcome in both changing policy and managing fee collection.

Since independence in the 1950s, the Government of Ghana had provided basic water supplies to rural communities free of charge. Under the conditions of an IMF/World Bank structural adjustment loan package, however, this policy had to be reversed in an attempt to make GWSC fully self-financing. In the Upper East and Upper West regions, where a major programme of sector assistance was being supported by the Canadian International Development Agency (CIDA), charges for handpump maintenance were introduced in May 1985, with fee payments being backdated to the beginning of that year. According to a report published three years later in 1988, the attempt largely failed and had potentially damaging consequences for the region's water supply programme.

Fees were set at a flat rate of 500 cedis per pump, and abruptly introduced. The response from user communities was very mixed, with a marked seasonality evident in payment patterns and high levels of delinquency. Many communities defaulted on payments and fell back on traditional, unprotected sources. Prospects for success were not helped by a series of major increases in the fee during the first two years or so of operation. In the Upper East region, fees were raised from 500 cedis to 1000 cedis in March 1986, and to 1250 cedis in September 1987. In the Upper West, the corresponding increases were to 1300 cedis and then to 1550 cedis. In spite of these increases, the fee level was still only adequate to meet 50% of maintenance costs. As the fees rose, willingness to pay declined. At one point, GWSC field staff were spending as much as 50% of their time trying to explain the necessity of the tariffs to users.

The CIDA-funded project had been attempting to introduce strong elements of village level operation and maintenance into the programme, and was seeking to foster a sense of ownership and responsibility among user communities. The introduction of fees substantially undermined these objectives, with communities which were paying regarding maintenance as exclusively a government responsibility. Community demand for concrete pads and stock-watering troughs (for which they had previously been making a significant contribution) dropped dramatically. Delinquency on payments was so bad that GWSC had to resort to strong-arm tactics, including the disconnecting of handpumps.

(Source: Wood, 1988).

**Table 4: Managing Cost Recovery: Rating Options**

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### **Flat Rates**

**Positive factors**

- Relatively easy to administer
- No overhead for metering

**Negative factors**

- Charges may not reflect access to supply or level of consumption
- Rates may not reflect ability to pay of all users

**Pre-conditions**

- All users must be known
  - Water needs must be more or less even
- 

### **Graded Rates**

**Positive factors**

- Charges reflect consumption and ability to pay in a more equitable way
- Poorer members of community can be subsidized by the richer
- Rates can better reflect actual service level

**Negative factors**

- Disputes may arise over basis for grading
- Higher rate payers may have disproportionate influence over management of scheme

**Pre-conditions**

- Clear basis for grading
  - Recognition that better service should be reflected in higher charge and willingness of richer users to subsidize the less well off
- 

### **Mixed Systems**

**Positive factors**

- Offers consumers choice of service level
- Rates reflect level of service
- Poor can benefit from subsidized or free basic service

**Negative factors**

- May be difficult to optimize balance between house connections and standposts

**Pre-conditions**

- Adequate demand and willingness to pay for house connections
- 

### **Water Metering**

**Positive factors**

- Charges reflect volume of water consumed
- Encourages more efficient use of water by consumers
- Demand can be regulated, and water resources conserved, by use of progressive rates

**Negative factors**

- Raises cost of service due to higher overheads for meter reading, billing, collecting payments, policing delinquency
- Subject to fraud, tampering, and illegal connection
- Extra maintenance required to keep meters in working order

**Pre-conditions**

- Good institutional capacity in service agency
  - High efficiency of service to ensure cost-effectiveness and consumer satisfaction
- 

Adapted from van Wijk-Sijbesma, 1989.

## Commercial options

Water vending is the most common commercial option (Table 5) in low-income areas. As a long-term solution, it is probably among the least desirable of options, but it can be an effective interim measure, particularly where it can be well-regulated and subject to proper quality control. In temporary settlements, such as squatter areas or transit locations (eg. in refugee situations), it may be the only viable solution to meeting basic water needs.

**Table 5: Managing Cost Recovery: Commercial Options**

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### Vending (inc. coin-operated taps)

<i>Positive factors</i>	<ul style="list-style-type: none"><li>• Strong incentive for reliable service and system maintenance</li><li>• Transfer of management responsibility to private sector</li><li>• Time and labour savings for consumers</li><li>• Large range of options, from individual private enterprise to cooperative community management</li></ul>
<i>Negative factors</i>	<ul style="list-style-type: none"><li>• Relatively high cost to users</li><li>• Water quality hard to guarantee</li><li>• Scope for exploitation where source options are limited</li><li>• Coin-operated systems vulnerable to tampering and breakdown</li><li>• Price levels may prohibit adequate levels of consumption and use</li></ul>
<i>Pre-conditions</i>	<ul style="list-style-type: none"><li>• Adequate institutional capacity to control vending practices in interests of consumers</li></ul>

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Adapted from van Wijk-Sijbesma, 1989.

## Indirect options

Raising funds through various forms of taxation (Table 6) has a number of attractions in both urban and rural areas. General levies have been used with a fair degree of success in urban site-and-service schemes in Botswana, for example, and in Britain and elsewhere local taxes provide a substantial source of revenue for a broad range of basic services. In rural areas a development levy, collected on a household basis, can provide income for services such as roads, clinics, schools, extension services, as well as water and sanitation. At a local level this approach might be appropriate where there is a wide variation in individual system costs but little difference in service levels.

In certain circumstances, raising tax revenue from production may be an highly appropriate approach to linking cost recovery to economic benefits obtained from water systems, as the example from Pakistan indicates (see Box 9).

**Table 6: Managing Cost Recovery: Indirect Options**

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**Taxation**

**Positive factors**

- Financing of general services streamlined and easier to administer
- Cross-subsidies can be introduced through property taxes, etc.
- Payment can be linked to production and/or income level

**Negative factors**

- Charges may not reflect levels of service and consumption
- Water agency may not have direct control over finances, and hence cannot guarantee adequate resources
- Users not aware of real costs of services
- Limited scope for community/user involvement in decision making and system management

**Pre-conditions**

- Good institutional capacity and efficient management in support agencies
  - Good coordination and cooperation between different service agencies
- 

Adapted from van Wijk-Sijbesma, 1989.

Box 9

**LINKING PAYMENT TO PROFIT: TAXATION PROPOSALS IN PAKISTAN**

In Sindh Province, Pakistan, recovering costs for rural water supply services has been a significant problem, with recovery rates ranging between 10-75%. The provincial government believes that the rate can be increased to 50-75% if the right approach is adopted. A major problem is one of equity, with operation and maintenance costs in smaller village schemes being much higher than those for larger villages, though service levels enjoyed by farmers are much the same. Per capita and per household costs in medium and small villages are estimated to be higher than in large villages by ratios of 2:1 and 3:1 respectively.

A proposal under consideration seeks to take advantage of the strong link between domestic water supply and water provided for irrigation purposes by recovering costs through a tax on farming produce, thus linking payment to direct benefits gained across the province as a whole rather than asking each village to directly meet the costs of its own scheme.

Fees are already paid by farmers on farm produce, with rates being set at R.6.00 per 100kg of cotton, R.0.75 per 100kg of paddy rice, and R.0.50 per maund for sugarcane. It is estimated that an increase in these fees from R.6.00 to R.8.50, from R.0.75 to R.1.25, and from R.0.50 to R.0.65 respectively would provide enough revenue to meet a large proportion of O&M costs. Though representing relatively large increases in the actual fees paid, the revised charges would still represent a very low proportion of current prices, which are, for example, R.2000.00 per 100kg for cotton and R.200 per 100kg of paddy rice. The increases would be viewed as public health surcharges and credited to a separate account to meet O&M costs. In addition to paying fees, community members would also contribute labour for O&M work, to make up for the cash shortfall in meeting full costs.

(Source: personal communication).

## Management by user communities

As well as establishing effective methods for managing financial contributions, it is also important to clearly establish who will take the management responsibilities. Many of the methods described are suitable for management by communities just as much as by agencies.

In recent years, management of improved water and sanitation systems by user communities themselves has been increasingly advocated. Some have seen a direct relationship between community management and community payment for services (McCommon et al, 1990; African Development Bank, 1990; UNDP, 1990a). Others take a softer line, while nevertheless seeing an important link between management and cost savings, on the one hand, and user financing (to some degree or another) on the other (van Wijk, 1989).

The trend towards management by communities rather than by agencies implies a change in role for the latter as well as the former, with governments being urged "to concentrate less on direct intervention in providing services and more on enabling public and private institutions to deliver services" (UNDP, 1990b; see also PROWESS, 1990). In theory, this should lead to a reduction of the financial and managerial burden carried by governments (and external support agencies) in developing countries, in both implementing and sustaining sector programmes. At the same time, agencies will need to build up expertise in new areas, while cutting back provision in others, in order to provide the support required by communities and the private sector in building their own capacities. McCommon and her co-authors propose a list of pre-conditions for community management (see Box 10).

The creation of each of the pre-conditions in themselves represent enormous and complex tasks, which carry their own cost and time implications. More work is required in both evaluating the validity of this list, and in assessing the costs and benefits of creating a suitable environment for community management.

Box 10

### PRE-CONDITIONS FOR COMMUNITY MANAGEMENT

- \* There must be community demand for an improved system.
- \* The necessary information required to make decisions must be available to the community.
- \* Technologies and levels of service must be commensurate with the community's needs and capacity to finance, manage, and maintain them.
- \* The community must understand its options and be willing to take responsibility for the system.
- \* The community must be willing to invest in capital and recurrent costs.
- \* The community must be empowered to make decisions to control the system.
- \* The community should have the institutional capacity to manage the development and operation of the system.
- \* The community should have the human resources to run these institutions.
- \* There should be a policy framework to permit and support community management.
- \* Effective external support services must be available from governments, donors, and the private sector (training, technical advice, credit, construction, contractors, etc.).

(Source: McCommon et al, 1990).



Community management is likely to carry costs as well as benefits. The principle benefits might include: more efficient use of resources (by, for example, improving the likelihood that service levels and technologies will more closely meet community needs); greater community commitment to improved water and sanitation facilities; more effective use of improved facilities (leading to better operation and maintenance, and greater benefits to health); and a generally improved capacity for community self-improvement.

On the down side, concentrating on developing community management systems may lead to: a slowing down in overall output (and, hence, even lower levels of coverage than are already being achieved); further neglect of the least advantaged (in so far as the approach is directly linked to willingness to pay); and greater, rather than less, pressure being created in already weak central institutions.

For many financing institutions, the most important question in the long term may be whether or not this approach will cost less. At both the beginning (Whyte, 1984) and end of the Decade (McCommon et al, 1990) it has been acknowledged that increasing community participation may cost more in the short term.

A decisive factor is the willingness of communities themselves to take on management responsibilities. It cannot be assumed that communities will always welcome such responsibilities. Experience in trying to support effective village-level operation and maintenance systems has shown that community responses and interest can vary considerably. Many of the pre-conditions for community management are closely linked with the factors outlined earlier which are likely to influence willingness to pay. Community management will only prove successful if communities themselves are willing to manage as much as they are willing to pay. Equally importantly, agencies must also be prepared to give the necessary support to communities in assisting them to develop the capacity to take on new management responsibilities. This may involve basic training inputs to cover issues such as maintenance procedures, financial management and accounting, etc., to more complex approaches designed to generally improve problem-solving and management skills. Working out solutions in collaboration with communities is the most promising approach. None of the pre-conditions can be imposed from above, since virtually all depend on energetic inputs from both agencies and users, based on common goals and a commitment to working in partnership.

## **Management and the private sector**

Alongside a more prominent management role for communities, greater participation by the private sector in both the installation and management of improved water and sanitation services has also been advocated (cf. Churchill, 1987; Briscoe and de Ferranti, 1988; UNDP/World Bank, 1990). Water vending itself provides evidence of significant private sector involvement already playing a role, and in other areas, such as latrine construction (cf. Evans and Pollard, 1988; UNDP/World Bank, 1990) private contractors have played a key part in project success.

The idea of public/private partnership has been promoted as an approach for sub-Saharan Africa in an article which provoked a fierce critical response. Citing evidence from Côte d'Ivoire, Botswana, and Kenya, and with comparative examples from the USA and France, Lewis and Miller propose such a partnership as a means of counteracting the weaknesses of an all-public or all-private approach. The contracting out of certain services such as billing, construction and maintenance, under government regulation, is seen as a means of using the strengths of the private sector, while avoiding the dangers. In the process governments would be relieved of the tasks for which their capacity is compromised by their

bureaucratic nature. A major problem to be overcome in successfully developing a partnership of this kind is the political uncertainties inherent in many developing countries which may be a disincentive to private sector involvement (Lewis and Miller, 1987).

In a forceful response, Cairncross expresses the view that the idea of public/private partnership as advocated may be "yet another aid agency fad" and an example of the "transient obsessions" which hinder the development process. Cairncross's objection is based, among other things, on the argument that control of both the public and private sectors in many developing countries is so intertwined that the idea of government regulating private sector excesses is hopelessly optimistic. Firm government control is likely to be required if any gains in efficiency from privatization are to be passed on to the consumer. This task is seen as "...daunting in the highly-stratified societies of the Third World, where the owners of private companies have far more political influence than a mass of over-charged water consumers" (Cairncross, 1987). Cairncross does not reject the idea of an increasing role for the private sector, but urges caution and recommends small-scale local experiments to pilot test options rather than sudden major shifts in approach.

Recent experience in Britain has indicated that, whatever the general merits of privatization, effective government controls are likely to be necessary to protect public interest. Within a year of the privatization of the water and sewerage industry, pollution levels caused by sewage discharge into Britain's rivers rose by 20% (Sunday Times, 16 June 1991).

More knowledge is clearly required about the dynamics of the private sector in developing countries and the positive and negative implications of transferring greater responsibilities into private hands before major moves towards privatization are made. At the same time, there are many examples of successful transfers of responsibility on a more modest scale which have made important contributions to project success and have enhanced the process of skills transfer and income generation in developing countries. Privatization at this level is already proving itself, and shows a high potential in contributing to sustainability.

## 7. *Resources Coverage and Sustainability in the 1990s*

The problem of cost recovery and sustainability is controversial, but in the midst of the controversy there is significant consensus. Few would deny that current approaches are inadequately contributing to sustainability, and that significant reorientation is required to achieve effective and sustainable sector development. The resources which are available to the sector must be used to the best possible effect, and all available resources, including those in communities, must be mobilized. Much of the argument is over methods and approaches, and competing philosophies of development. The relative merits of different views will ultimately be tested in the field, and the proof found in actual practice. There are many gaps in knowledge which need to be filled before confident progress can be made. Many of these can only be filled by experimentation and trial and error, as well as by learning as much as possible from past experience.

Some of the gaps in knowledge are yawning and obvious. The costs of water and sanitation improvements must be known before cost recovery can be sensibly addressed. If costs are unknown, prices cannot be set and ability to pay cannot be measured. Sector programmes must make costing, and cost effectiveness, explicit areas of concern. The effects of different cost levels and approaches on the world's poorest people requires more detailed investigation. This may be helped by the adoption of a wider, multi-sectoral perspective in which water supply and sanitation provision is seen in the context of other basic needs, not as a competitor for scarce resources but as a collaborator in the search for generally improved standards of living. If improved water and sanitation services can only be provided at the expense of other basic needs, then the solving of one problem will only create others with a negative net effect on development as a whole.

At present, not enough is known about the affordability of water and sanitation services. Methods of investigation of both the costs and benefits of improved services need further refinement and development. Equally, more needs to be discovered about the implications of asking users to pay more. Will user payment really lead to greater empowerment, a higher commitment to sustainability, more effective performance, and to equitable development? Much of the evidence currently available is highly case-specific, and too controversial to draw solid conclusions.

The management of sustainable water and sanitation services is a major problem area. New ideas need to be tried out, but in ways which allow lessons to be quickly learned and experience to be rapidly adapted to further development. Blueprint approaches, on the basis of past experience, can as often lead to disastrous failure as to success. Moving towards greater decentralization, more community management, and increased privatization of service provision, all carry costs as well as benefits, and the pressure on service agencies is unlikely to decrease, whichever approach is adopted. Agencies as well as communities must adapt and change, but must continue to gain in strength and capacity. Basic problems, such as institutional weakness, will not be solved simply by transferring responsibility elsewhere.

An important conclusion which can be drawn from this review is that the problem of cost recovery cannot be addressed in isolation from other issues and problems in the sector. Solutions are unlikely to be found except as part of the general development of sustainable approaches which take account of all the elements contributing to this process. A resources coverage approach, with strong partnership elements between agencies and users, shows considerable promise, though further refinement is still required. Whatever new models develop from the debates on sustainability it is unlikely that success will be achieved

without the role of user communities being considerably enhanced, and the expressed needs of users being explicitly and centrally accounted for in improvement programmes. The sector is still hampered by the essentially technical thinking of many of those involved and, in this respect, change is needed in agencies just as much as in communities.

Cost recovery and sustainability have been placed on the agenda as a major challenge for the 1990s. Much more needs to be learned. At the same time, experience points to many lessons, of which a number have been highlighted in this document. These are summarized below.

- All resource needs should be met in a balanced way, with financing being recognized as one among many resources which must be covered.
- Agencies must be prepared to make the change from being providers to facilitators, and users from beneficiaries to partners. This new relationship needs to be negotiated between the partners, rather than being predetermined or imposed.
- Approaches must be developed which seek and produce real benefits from water supply and sanitation improvements. This is essential to both increase willingness to pay, and, where necessary, to justify public investment in services for those who really cannot afford to make a cash contribution. No one should assume that having an improved system is in itself a sufficient justification. The identification of the benefits to be pursued, the development of strategies to achieve them, and the monitoring and evaluation of approaches and results, must be a joint enterprise between agencies and users to ensure that perceived needs are met, and that, when they are, everyone is able to recognize it.
- As many benefits as possible should be sought in order to optimize cost effectiveness. Pursuing health benefits alone, for example, may not be enough to justify the levels of investment required.
- The true costs of water supply and sanitation improvements, to both agencies and users, must be known and recognized by all, and cost patterns and variations identified and assessed.
- The importance of the opportunity cost of improvements to both agencies and users must be clearly recognized, and strategies devised to make this as low as possible.
- Cost effectiveness is vital to reduce both the actual and opportunity costs of achieving benefits, to promote greater faith in support agencies, and to stimulate higher levels of willingness to pay among users.
- The general poverty of many of those without adequate water supply and sanitation services must be recognized, and sufficient allowance made for those who really cannot afford to make a cash contribution to basic services.
- A clear understanding must be developed of the factors influencing willingness to pay, and strategies developed to ensure that all of these are adequately addressed.

- Work must continue to further refine methods of measuring ability and willingness to pay, and investigations of this kind included in all projects with user payment as a goal. The development and use of more participatory research methods may help this process.
- Investigations of ability and willingness to pay must include identification of who will actually be responsible for payment. It should not be assumed that this will always be men.
- Financial management and revenue collection systems must be carefully selected and developed to ensure their appropriateness to local conditions.
- Where private sector involvement is significant or predominant, adequate controls must be put in place to protect consumer interests.
- Transferring greater responsibility to the private sector must be undertaken with caution to ensure that genuine improvements in service are achieved and savings made.
- Where community management is to play a major role, agencies must recognize the implications this will have for the way in which support is provided. Agencies must be prepared to build their own capacity to meet these new challenges.
- Above all, the problem of sustainability must be seen as one which is of common and equal concern to both agencies and communities. Once this is recognized, genuine partnership becomes a real possibility and may help to unblock many of the bottlenecks which stand between the goal of sustainable development and its achievement.

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