

Chapter 2

Principles and practices



WaterAid/Jim Holmes

Improved water supplies, adequate sanitation facilities, and hygienic behaviour are all vital and interlocking elements in the water supply and sanitation sector. Investment in one element without complementary efforts in the others carries a strong risk that health benefits will not be achieved.

The poor face the greatest risk from faecal-oral disease transmission. It follows that sanitation and hygiene promotion activities have to accompany all poverty-focused water supply interventions (recognizing that there is a tension when participatory studies reveal a strong user priority for water supply only).

2.1 Key issues and interlinkages

In keeping with the aim of this manual to promote and facilitate an interdisciplinary approach to WS&S, the *Principles* and *Practices* of WS&S programmes and projects are described in Sections 2.2 to 2.8 from seven different perspectives:

- Section 2.2 Social development
- Section 2.3 Health
- Section 2.4 Environmental sustainability
- Section 2.5 Economic and financial
- Section 2.6 Institutional
- Section 2.7 Technical
- Section 2.8 A social marketing approach to hygiene promotion and sanitation promotion

First it is helpful to look at a number of key issues which apply to several — in some cases all — of those perspectives.

2.1.1 Water supply, sanitation, and hygiene promotion as a coherent sector

The WS&S sector has been described in Chapter 1, and it is important to consider the sector as a whole. But in what sense do water supply, sanitation, and their promotion constitute a coherent sector? Why do sector professionals insist on considering these issues simultaneously, even where implementation often reflects a higher priority for one component than another? The history of the industrialized world and current experience in developing countries do *not* show the individual elements to be inextricably linked in the minds of the general public. They will almost always see water supply as the highest priority.

There are several good reasons for considering WS&S as a sector:

- **Health aspects** The main health benefits of improved water supply lie in the reduction of faecal-oral diseases, as described in Section 2.3. But faecal-oral diseases are spread through a multitude of routes, most of which are best controlled through improved sanitation and hygiene promotion. If water supply is intended to improve health, it is critical that efforts to control this single route of disease transmission are linked with control of the many others



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Safeguarding community water supplies (quantity and quality) depends on an effective *integrated* approach to the management of national and regional water resources. World leaders have endorsed the concept of integrated water resources management (IWRM), most notably at the 1992 Earth Summit in Rio de Janeiro. In practice though, there is a danger that irrigation, industry and, latterly, ecological interests dominate IWRM thinking, with the WS&S sector sidelined.

through basic sanitation and hygiene promotion. The simple logic of public health also suggests keeping drinking water clean by isolating human wastes through sanitation.

- **Technical aspects** The widespread historical experience of piping water into homes without sufficient attention to what subsequently happens to the wastewater has taught sector professionals that they need to consider both simultaneously. Environmental sanitation becomes the mirror image of water supply, particularly where water-borne sanitation is adopted.
- **Behavioural aspects** Throughout both the industrialized and the developing world, governments have seen the need to 'sell' the services together. Where sanitation is effected through sewerage, the costs may be viewed logically as a consequence of water piped to the home. It is then easier to capture willingness-to-pay for water to recover the costs of sewerage too.

The need to consider *promotion* as a necessary accompaniment to the provision of water and sanitation hardware also stems from behavioural experience. It is the *use* of hardware that changes the quality of people's lives, not its mere construction/installation; supplying hardware that people do not want is a waste of both time and scarce resources. The bitter experience of so many projects in the 1980s where newly installed facilities were not always being used — led to promotion being established as the third component of the sector.

Participatory approaches may reveal a much stronger demand for water than for sanitation. So, in the short term, it may seem expedient to address only the water supply side of WS&S. This should be resisted in a poverty-focused project, unless for some exceptional reason the reduction of faecal-oral diseases is unimportant for the project. After fifty years of learning lessons in the sector, the need to link water, sanitation, and hygiene promotion has become clear to those who have seen what happens when they are dealt with in isolation.

2.1.2 Integrated water resource management

All the agenda-setting international meetings of recent years (New Delhi, Dublin, Rio, Noordwijk) have led their recommendations by urging the adoption of sector strategies based on integrated water resources management (IWRM). The latest recommendations of the Commission on Sustainable Development, CSD6, continue to urge governments to accelerate moves to implement IWRM strategies. In the case of WS&S, that means integrating demand forecasts into national plans for allocating water resources nationally; it means ensuring that proposals for sanitation and sewerage improvements are consistent with national strategies for water conservation and pollution prevention; it means institutional linkages to ensure compliance with river quality objectives and other environmental standards; and it means a role for communities in catchment

stewardship as well as the local focus of WS&S improvements. The implications pervade many of the topics discussed in later sections of Chapter 2 and particularly Sections 2.4 (Environmental sustainability), 2.5 (Economic and financial perspectives), and 2.6 (Institutional perspectives).

2.1.3 Sustainability, effectiveness, equity, efficiency, and replicability

These concepts are linked together and need to be considered as a package of issues, most importantly at sector-policy level, but also in the planning and design of any project. There are tensions: financial sustainability typically means charging users for services, but equity emphasizes keeping charges to poor people affordable, which may require public subsidy and which will restrict replicability, as subsidies are limited.

Reaching a compromise between these conflicting objectives is a political process. DFID should encourage stakeholders to conduct this process in a transparent manner, making certain that decision-makers are well-informed of the results of sound analysis, for instance on levels of subsidy and cost recovery; on what people currently pay and are willing to pay; and on the costs and benefits of alternative options/levels of service and pricing regimes. DFID's primary objective should be to resolve these issues in a way which provides sustainable and affordable basic services to the maximum number of poor people.

Sustainability

Sustainability has become the top item on many development agendas since the Earth Summit, and rightly so. In sectoral terms, aiming for sustainability means ensuring that WS&S services and interventions continue to operate satisfactorily and generate benefits over their planned life. In broader terms, it means ensuring that WS&S project interventions support, rather than threaten, overall environmental sustainability.

Sustainability has environmental, institutional, financial, technical, and social dimensions which are considered in the corresponding sections of Chapter 2. Fundamentally, it is about the operation and maintenance of installed facilities, but it has to be considered from the very start of a project, to ensure that the prerequisites for long-term sustainability are in place. Strategies most likely to contribute to the improved sustainability of WS&S programmes and projects incorporate activities which ensure that the services provided reflect the true demand, that the benefits are optimized, and hence that users appreciate the value of the services. Those activities include:

- Mobilizing and facilitating the active participation of both women and men in decision-making around technology choice, siting, O&M, and management processes.
- Taking culture and context into account and understanding local priorities and preferences for WS&S, as well as formal and informal power structures and institutions.

Since the Rio Earth Summit, *sustainability* has been a prime criterion in development projects. Historically, the WS&S sector did not have a good record in achieving sustainable projects. Many broke down or fell into disuse once the external support came to an end. The participatory approach, more appropriate technology choice, better provision for access to spare parts, and the equipping of communities for operation and maintenance and financial management have led to significant improvements in recent years.

In WS&S programmes targeted at the poor, sustainability is linked to four more success criteria: *effectiveness; equity; efficiency; and replicability*

- Establishing an institutional framework which aims to provide the levels of service that different sections of society want and will use and pay for at the prices to be charged.
- Setting charges for services at levels which will generate sufficient income to cover the operation, maintenance, and replacement (i.e. capital) costs of infrastructure, and ensuring timely collection of revenues due.
- Ensuring that if subsidies are used, they relate to capital costs, with O&M costs recovered in full from users.
- Enhancing hygiene promotion programmes, which focus in turn on men, women, and children, to stimulate demand for and use and care of improved water supply, sanitation, and waste disposal facilities.
- Ensuring that the technical, institutional, and budgetary needs of consultation and decision-making are catered for in the planning, design, and implementation phases.
- Matching capital investment with both information sharing and capacity building at community level and corresponding training and career development programmes for O&M staff, technicians, mechanics, and caretakers.
- Encouraging and equipping local water associations and water committees to manage community WS&S systems, with technical backup where required.
- Establishing preventive maintenance schedules, leak detection programmes, and regular quality surveillance, with formal reporting and follow-up procedures.
- Making optimum use of existing retail outlets and distribution channels, strengthened where necessary, to assure the accessibility of spare parts, tools, and materials for the operation and repair of WS&S facilities.
- Enabling private sector agencies to offer support services where these can be provided more effectively than through public utilities.
- Using demand management measures, including tariff structures, to encourage water conservation and minimize waste.
- Ensuring the continuing availability of a safe and adequate supply of water, and protecting the environment against adverse impacts from wastes, by following integrated water resource management principles.

By measuring *effectiveness*, the concept of sustainability is extended to ensure that improved water and sanitation systems deliver the anticipated benefits to the intended people. That means coupling hardware projects with hygiene promotion, and ensuring that all sections of the community have access to affordable and reliable services.

Effectiveness

Effectiveness is the degree to which WS&S services and interventions meet their objectives. In the case of DFID programmes, that implies that WS&S reaches poor people and that poor people use the services (see Sections 2.2 and 2.7), that facilities and services are integrated as required to deliver benefits (as described in Sections 2.3 and 2.8 for health benefits), and are kept in good operating condition (Sections 2.6 and 2.7).

This last point is also related to *equity*. Too many WS&S projects benefit the better off and further marginalize the poor. Subsidies enable higher income users to use more water, while the poor still cannot afford basic services. Women often have the burden of paying for, as well as carrying, the water. It is vital that charging systems and choices of service levels are designed to enable women to obtain and pay for convenient water supplies, and to invest in improved sanitation systems. It is quite possible to do so without abandoning the concept of water as an economic good or the principle that the full costs of WS&S services should be recovered from users.

The huge numbers of people who lack access to safe water and hygienic sanitation will only be served when investment *efficiency* is related to the number of people served for every thousand dollars invested. Right now, too high a proportion of government and donor finance is directed towards high-cost projects serving urban élites. Even then, far too much water is wasted through leakage, inadequate billing, or illicit connections. Cutting unaccounted-for water needs to be an element of WS&S programmes.

A crucial requirement for effectiveness is that programmes and projects are designed from the start in an interdisciplinary way, so that all the necessary components from the various disciplines are integrated into the programme. Without this co-operation, early decisions may preclude some important options being included later, leaving inadequate preparation time for preparatory activities such as data collection on existing practices and views, and training of hygiene promoters.

Equity

Current provision of WS&S often fails to reach the poor and other disadvantaged groups. Frequently it also fails to take account of the particular needs of women, children, old people, the sick, and people with a disability. Reaching these groups involves both practical concerns (for example design issues which are considered in Section 2.7) and strategic issues of status, power, pay, etc. (see Sections 2.2 and 2.6). Gender issues in particular are *crucial* for the success of WS&S programmes, therefore gender perspectives pervade all the sections.

The real needs and potential contributions of disadvantaged groups and presently unserved populations must be reflected in programme planning, through an appropriate institutional framework.

Equity issues also arise when new approaches require communities to pay when their neighbours or urban/rural counterparts previously have not (see Section 2.5). The level of contribution of the poor is a particular concern in situations where middle/high-income users in the locality are paying tariffs which are well below the cost of WS&S. Equity objectives may require mechanisms, such as targeted subsidy or cross subsidy, to ensure that the prices that poor people pay for basic services are affordable, even where the overall thrust of sector policy is towards charging users the full costs of services provided.

Efficiency

Efficiency represents the output produced per unit of resources (water, staff, funds) and shortages of resources imply that high efficiencies will be needed to meet the gap in WS&S coverage. Past WS&S projects have been inefficient in a variety of ways. In coverage terms, the focus on high-cost projects serving urban élites has severely restricted the number of people served per unit invested; neglect of sanitation and hygiene education has reduced benefits from water schemes; and poor operation and maintenance has led to high water losses and low cost recovery. Efficiency issues are considered in Sections 2.5 and 2.7.

Replicability and transferability

The immediate challenge is to enable poor people to have access to WS&S. This means keeping basic services for poor people affordable, while aiming to recover a high proportion of capital and recurrent costs from users. Available public subsidy can then be used effectively to extend services to as many people as possible. National

The last extension of the 'sustainability' criterion is *replicability*. So many projects and programmes are necessary to combat the appalling backlog of inadequate WS&S services, that replicability (and extendability and transferability) needs to be a key consideration in the design of all individual projects. High levels of subsidy, institutional complexity, and dependence on long-term external support are all factors which make programmes hard to replicate.

Local manufacture, community management, skills development, and standardization of hardware and spare parts all contribute to replicability.

The water supply service level which can be provided ranges from a communal handpump shared by more than 100 users to a house connection giving 24hr individual service.

Sanitation may be a simple pit latrine or a flush toilet connected to a sewer system or septic tank.

The distant handpump may be seen as a 'basic' service level, but it should not be assumed that this will be the preference of all poor people. Yardtaps provide a more convenient supply than handpumps or public standposts and this may be reflected in the willingness

and international efforts in the 1980s and 1990s have improved coverage, but much remains to be done (Section 1.3). In addition, population growth, increased urbanization, and aspirations for better WS&S levels of service, will necessitate continued expansion of WS&S services for the foreseeable future.

Therefore it is essential that services and interventions can be replicated to provide this expansion. Services which are heavily subsidized, or not replicable for other reasons, fail to address the challenge of coverage, and may make it more difficult by establishing unrealistic expectations or standards.

Replicability should not imply rigidity. The model needs to be flexible to meet demand for improved levels of service. Section 2.7 describes technical replicability through standardization of a range of designs from which choices can be made (handpump standardization is an example). Similarly, approaches to tariffs and to hygiene promotion are described in Sections 2.5 and 2.8. The empowerment of community motivators to spread best practices features in Section 2.2.

An important consequence of the focus on replicability is that external support agencies accept the national approaches and standards, rather than insisting on their own. A focus on transferability highlights the fact that technologies as well as development processes may need to be adapted to local contexts and conditions, rather than simply replicated. DFID is addressing this through the concept of partnership (see Section 1.5).

2.1.4 Levels of service

Levels of service can be expressed in technical design terms (for example, for sanitation, a simple pit latrine, a pour-flush latrine, or piped sewerage; or for water supply, the quantity and quality of water available within a given distance), or in performance terms (for example with a stipulated measure of reliability). Typical levels of service are shown in Table 2.1.1.

It may well be that a range of levels of service are available, and it is clear that people have strong views on these, particularly where they are asked to pay for the service (see Section 2.5). This is reasonable enough, as the levels of service differ in terms of convenience and health benefits as well as cost.

Technical departments often start with particular ideas about what level of service may be appropriate for a given community, but under a demand-responsive approach these need to be put to one side, and instead a wide range of technically feasible options explored with the primary and secondary stakeholders.

Basic needs for public health

A minimum level of service is vital to meet people's basic needs for water for drinking, washing, and cooking, and for disposal of excreta and other wastes in a manner which is safe for them and the wider community. The sustainability of this basic-needs level of service

1. Point sources include collection from handpumps, open wells, standposts/ tapstands, roof catchment, protected springs and ponds, and purchase from water vendors.
2. Return travel time includes queuing time (see Section 2.3).
3. Sullage comprises all used water, excluding toilet wastes.
4. Improved pit latrines include sealed lid, VIP, and pour-flush pit latrines.
5. Safe water does not represent a health hazard to the users (see Section 2.3).
6. Adequate water means sufficient to meet users' demands at the waterpoint, and may be intermittent or continuous supply.

Table 2.1.1 Typical levels of service providing access to safe water supply and sanitation in rural and urban areas

Level of service	Water supply	Sullage disposal	Sanitation
(Deficient)	(Water source unsafe or inadequate or return travel time more than 30 minutes)		(Open defecation OR dirty communal latrine)
Minimum	Communal point source with safe and adequate water and appropriate drainage, return travel time less than 30 minutes	Soakaway or other drainage at public waterpoint. Some sullage disposal at household level on plot or onto field, or, in urban areas, gutter or open or covered sullage channel	Simple pit latrine on householder's plot
Intermediate	Point source on household plot with safe and adequate water supply (usually metered) and appropriate drainage	Soakaway on plot OR open or covered drain from plot to safe disposal; connecting channels within plot (made by householder)	Improved pit latrine or pour-flush toilet on householder's plot
High	Piped connection (usually metered) into house with safe and adequate water under continuous pressure	Open drain to safe disposal OR pipe to septic tank or sewerage	Flush toilet with septic tank OR sewerage (if water supply is sufficient)

of users to pay more for the increased level of service. However, designs and charges need to reflect the need to dispose of the extra water used, including safe disposal of sullage.



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depends on users' willingness-to-pay the recurrent costs, or failing that, the government's willingness to subsidize the service over the medium term. In some circumstances neither poor users nor the government will pay. Further work is then needed to establish conditions for sustainability (possibly focusing on policy and institutions, maybe including cross-subsidy from richer or industrial consumers), or to identify a different (possibly higher) level of service which would be sustainable because users would be willing to pay for it.

Convenience

Higher levels of service are often desired for convenience, and people may be willing to pay for this, especially if the effective tariffs are no higher — this may happen for example with an intermediate level of service (a yardtap) where they are purchasing water themselves instead of through a vendor at a standpost. See Sections 2.5 on willingness-to-pay and 2.7 for examples of costs. In addition, higher levels of service can provide the conditions for greater health benefits (see Section 2.3). Therefore programmes should aim to provide people with the option of choosing a higher level of service, or

The issue of water pricing and cost recovery is complex and is dealt with in considerable detail in Sections 2.5 and 2.6. The big challenge is to enable the poor to obtain basic services at an affordable price while still achieving the full cost recovery needed for sustainability. In fact, the evidence is that poor people's willingness-to-pay for improved water services is quite high (many already pay high prices to water vendors for unsatisfactory supplies). On the other hand, willingness-to-pay for sanitation facilities depends on promotion and motivation.

Community participation has been accepted as a principle for many years. In the WS&S sector, and particularly where DFID is concerned, decision-making needs to involve all stakeholders as partners. And participation goes beyond the involvement of communities in decision-

'Appropriate technology' may not be acceptable

Women do not always welcome 'appropriate technology' which has the approval of engineers. An example of this was from the Yucatan Peninsula of Mexico, where pit latrines had been recommended by an engineer who was normally well attuned to social considerations. Yucatan women did not want pit latrines — they wanted a flush latrine which they thought was more modern and convenient. Instead of assuming that we know what people want we should listen to them and find out what they really want and why.

Bingham, World Water, 1984

upgrading to a higher level in the future. The technical issues of designing communal systems taking account of individual choices and willingness-to-pay are discussed in Section 2.7.

2.1.5 Affordability, tariffs, cost recovery

Without adequate cost recovery, WS&S services will not be sustainable or replicable. The concept of water as an economic good is gaining currency, but it has to be read with the condition which was attached to it at the Dublin Conference: *'within this principle it is vital to recognize first the basic right of all human beings to have access to clean water and sanitation at an affordable price'*. This basic right is open to different interpretations. For this *Guidance Manual* it is the right to a minimum level of service, for water supply, sullage disposal, and sanitation, as described in Table 2.1.1. The affordable price should be interpreted on a case-by-case basis, as described in Section 2.5, taking account of:

1. recurrent costs (which should usually be recovered in full, to facilitate sustainability);
2. capital costs (in both financial terms, based on depreciation and interest costs, and in economic terms, reflecting the long-run marginal cost of new services);
3. users' willingness-to-pay for the service;
4. users' poverty; and
5. subsidy policy, (including on cross-subsidy opportunities) and the likelihood that a higher degree of cost recovery may allow available public subsidy to be used to extend coverage and meet the 'basic rights' of a larger number of poor people.

Safeguarding the poor from hardline economic approaches, while pursuing the objective of full cost recovery, is a major challenge for all countries (see Section 2.2). Tariff structures and subsidy policy are discussed in Section 2.5, and cost recovery arrangements in Section 2.6.

2.1.6 Stakeholder participation

DFID is committed to the participation of primary and secondary stakeholders and to ensuring that their perspectives and knowledge are incorporated in any development. The full involvement of users in decision-making is of special importance in WS&S services.

making. It is the *empowerment* of communities to manage and control their own affairs which can have the greatest impact on poverty and equity goals.

Community management is also the key to improved operation and maintenance, particularly in rural areas.

The essence of a demand-responsive approach is that users decide for themselves what are the most practical options to meet their own perceived needs. Those decisions can only be taken after participatory discussions and analysis of available options. The problem is that planners and funders need advance information on the likely outcome of the participatory process, so that projects can be properly appraised and financed.

Participation may occur in project planning, environmental assessment, monitoring, O&M, and evaluation. Participation may affect effectiveness and efficiency goals. But DFID's approach is also concerned with participation as a process of empowerment, promoting equity, and the sustained concern and involvement of primary stakeholders with their living environment.

These issues are discussed in Section 2.2, with detailed recommendations in Chapter 3 for each stage in the project cycle.

A related issue is the devolution of management responsibilities to the lowest appropriate level — a principle endorsed in Agenda 21 (see Section 2.6).

2.1.7 Operation and maintenance, and community management

Operation and maintenance (O&M) is a crucial element of sustainability, and a frequent cause of failure of WS&S facilities in the past. Many failures are not technical ones. They may result from poor planning, inadequate cost recovery, or the outreach inadequacies of centralized agencies. Analysis has to seek out the causes as well as the symptoms. For example, poor cost recovery may be down to poor billing, or it may be caused by excessive waste through poor leakage control, or it may mean that users will not pay for an unreliable or inappropriate service.

2.1.8 Technology choice

The selection of a suitable technology is not an isolated activity, but needs to be based on delivering the chosen level of service in a way which will be effective, equitable, sustainable, efficient, and replicable. This is a major consideration in Section 2.7, but also has important implications on institutional development and financing mechanisms. Crucially, the technology must be within the capacity of the responsible institutions (government, utility, or community) to manage, operate, and maintain it.

2.1.9 Demand assessment

Robust demand assessment is central to effective water supply and sanitation services. It is necessary to inform decisions at the policy stage of the programme and project cycle, as well as the project preparation and appraisal stages. Without information from demand assessment studies, it is harder to predict what the response of users will be to service improvements, especially when they are accompanied by tough cost recovery (see Section 2.5).

A demand-responsive approach to the water and sanitation sector needs to ascertain what levels of service users are willing and able to pay for and what mechanisms might ensure that poor people have affordable access to services. At the centre of this approach is the process of demand assessment itself. Demand assessment techniques

Assessing the likely demand is an important early activity, for which a variety of analytical techniques are available. Choice of the right technique depends on the size and complexity of the proposed programme and the existing capacity in the community for self appraisal. If resources are available, the Contingent Valuation Method is the most reliable. In different circumstances, less costly options can yield worthwhile results.

are discussed in Sections 2.2 and 2.5. Some examples of key techniques and their possible application are summarized in Table 2.1.2.

General points to take into account when considering demand-assessment techniques are:

- The assessment techniques highlighted represent examples along a continuum of quantitative and qualitative research methods; a combination may often be appropriate.
- The wider the range of technically feasible levels of service, or the more complex the existing situation, then the more thorough the demand assessment should be.
- Economic techniques such as the contingent valuation method (CVM) may be more relevant for utilities planning larger investments and where overall programme or project expenditure is high.
- Participatory rapid appraisal (PRA) methods are both more flexible and less costly, and are particularly appropriate where significant community consultation and management is required.
- Demand assessment studies of different scale or depth may be needed at different stages of policy, programme, and project development. In larger and more complex systems, there will be a need to develop institutional capacity for continuing demand-responsiveness.

2.1.10 Demand creation

In some poor communities there may be little demand for hygienic forms of sanitation. People may be satisfied with their existing practices, or not familiar with alternatives. Nevertheless there may be substantial scope for a poverty-focused WS&S project. The appropriate approach for a project to increase sanitation coverage in these circumstances is *not* to provide facilities for which there is little demand, but rather to focus first on hygiene and sanitation promotion as described in Section 2.8. This should create demand for improved facilities, to which the project can respond at a later stage.

Similarly, some poor communities may show little demand for an improved clean water supply, especially if their existing water source is convenient and tastes good and they would have to pay for an alternative system. Again, hygiene promotion is the appropriate focus of a WS&S project until there is effective demand for a new system. One of the startling findings of the 'Evaluation synthesis study of rural water and sanitation projects' (White, 1997) was the large number of new water facilities which were in good order but were not used for lack of demand. It is important not to repeat this mistake by confusing need with demand.

Lack of demand for sanitation is not a signal to do nothing. Nor is it right to go ahead with sanitation improvements which the community has indicated are not wanted. Hygiene and sanitation promotion should be the starting point (even preceding the demand assessment, where possible).

Table 2.1.2 Demand assessment techniques: Water supply and sanitation

	1. Elicit relative demand between different services *	2. PRA option selection: Internally facilitated *	3. PRA option selection: Externally facilitated *	4. Revealed preference surveys (RPS)	5. Contingent valuation method (CVM) *	6. 'Real' detailed options considered by community groups or ballot
Description of technique	Improvements to a wide variety of different services such as water, drainage, roads, etc., are considered by the communities, who express their relative demand for these services. Total funds available for each community area should be reasonably fixed.	Community volunteers are encouraged and trained to undertake a participatory survey in their own community. Preferences and commitments are then agreed in meetings.	A variety of PRA techniques are used by trained researchers or facilitators to triangulate and confirm the preferences of different community groups, who are also involved in the analyses.	RPSs estimate time and financial costs of current household behaviour, (e.g. payments to water vendors) and time saved in collecting water.	A questionnaire survey to determine the maximum willingness-to-pay of individuals for various options for level of service (including improved reliability), payment arrangements, within the context of the current or specified institutional regime.	Detailed options and their implications (costs, O&M, institutional, etc.) are considered by communities using PRA or ballot.
Potential benefits	simple and easily understood expresses 'real' demand if only in relative terms preferences can be refined during micro-planning inexpensive compatible with PRA work	very good community sense of ownership enhances empowerment useful if demand assessment involves on-going negotiation	good community sense of ownership extension staff can assess appropriate time to elicit demand can enhance empowerment can be used in changing institutional environment	can provide reasonably accurate estimates of current time and cost expenditure and hence possible willingness-to-pay for service improvements data and analysis requirements are modest good baseline data for impact assessment compatible with PRA	provides good data for Project Appraisal good data on WTP and potential revenues for different service levels, assuming a thorough survey is undertaken can guide tariff subsidy and cost-recovery policy similarity to public opinion polls means results conceptually easy for non-specialists and politicians to understand	more precise cost estimates lead to less confusion institutional charging of O&M implications can be thoroughly assessed can be used in a changing institutional environment
Potential risks and constraints	possible group or strategic bias WTP for different service levels not readily known process can be manipulated by extension workers, who do not use sufficient technical or financial rigour	possible group bias liable to lack technical/financial rigour reliant on skills being in the community requires substantial flexibility by external funding agencies and local support institutions	possible group bias process can be manipulated by extension workers, who may not use sufficient technical/financial rigour if not adequately supervised extension workers with good facilitation skills are required	cannot estimate h/h response to price increases (including for new levels of service options) poverty may constrain ability of poor people to convert time savings resulting from service improvements into cash payment for them rarely useful for sanitation projects	risks inhibiting community decision-making and ownership, for instance by raising expectations about particular options relatively high cost and requires specialist consultant for reliable results inaccuracies may occur in a changing institutional environment	risk of key decisions being based on misleading results from an unrepresentative group unless care is taken to avoid group bias requires detailed cost information, so earlier demand assessment may need to use other methods detailed work on some options can be redundant requires flexibility by funding agency
Typical usage	suitable for village or slum general improvement projects. NGOs often use this technique	more suitable where low-tech, low-cost solutions are definitely viable, e.g. handpumps and latrines	suitable in most situations, possibly complemented by other methods	suitable where substantial water supply problems exist. To be used in conjunction with say PRA methods	suitable for informing strategic decisions on levels of service, cost-recovery policy, etc. in large investment programmes, e.g. urban systems, or policy framework for small rural supply schemes	suitable where difficult choices are to be made between different options

* estimated costs of technically viable options are needed for these techniques

The demand-responsive approach is new to many stakeholders in WS&S. The concept is appealing, but unfamiliar. Different skills are needed in all phases of the project cycle. Capacity building is needed, so that communities and their partners can continue the participatory process in the long term, as well as on the initial project.

2.1.11 Capacity building

If partners change their approach to WS&S (for example by moving to a demand-responsive approach with choices) there will be a need for institutional capacity building. This will involve empowerment of primary stakeholders and the development of people's capabilities at local level. It will also involve developing institutional mechanisms and capacity within and among secondary stakeholder organizations, to enable them to respond to demand in a more flexible manner than that with which they may be familiar. The requirements of institutions which are involved in programme and project identification and design will be different from the capabilities required of implementing agencies. Each of the Sections 2.2 to 2.8 has implications for capacity building, and the requirements for institutional development and human resource development (HRD) are particularly addressed in Section 2.6.