FINAL REPORT

Department for International Development:
Knowledge and Research (KaR) Projects

Cost Recovery in Water and Sanitation Projects

Contract No. R7384

Volume 1: Main Report

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Environmental Resources Management
8 Cavendish Square, London W1M 0ER
Telephone 0171 465 7200
Facsimile 0171 465 7272
Email post@ermuk.com
http://www.ermuk.com

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Prepared by Dominic Waughray, ERM International Development and Dominic Moran, Scottish Agricultural College.

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Approved by: _____

Signed: _____

Position: _____

Date: _____

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EXECUTIVE SUMMARY

Background

This is the Final Report for the Department for International Development's Knowledge and Research Project R7384, entitled Cost Recovery in Water and Sanitation Projects.

The project has been managed by Environmental Resources Management Ltd. The key research partner was the Scottish Agricultural College, in Edinburgh. The project lasted September 1999 – December 2002.

The purpose of the project was "to review and interpret cost recovery mechanisms across a wide range of water and sanitation schemes in order to recommend a portfolio of best practices for achieving financial sustainability and maximising the potential for private sector partnerships".

The investigation focused particularly on cost recovery for water and sanitation programmes in rural and peri-urban areas. This is because it is here where people are generally the most poor and cost recovery/private sector involvement is presumed to be most difficult. Geographically, DFID requested the research to focus on the experiences and challenges of South Africa and India.

Key research activities included:

- *A literature review;*
- *An analysis of data obtained from a survey on cost recovery in the water and sanitation sector;*
- *A meta-analysis of willingness to pay papers; and*
- *Field visits to projects and policy makers in South Africa and India.*

This final report presents our findings to these questions, drawn from across our investigations. The report is composed of five chapters.

- *Chapter one provides some context and rationale to the research and the project;*
- *Chapter two examines some of the issues underpinning cost recovery – understanding what demand means; looking at the financial and economic interpretations of cost recovery; using tariffs, subsidies and credit to capture costs; and using cost benefit analysis to design for, and evaluate, success in cost recovery;*
- *Chapter three presents the results of the desk based and field research investigations into what seem to be the important issues that influence cost recovery;*
- *Chapter four looks specifically at the issue of cost recovery and the chronically poor;*
- *Finally, and based upon an assimilation and comparison of the research findings, chapter five presents some practical and strategic recommendations for a framework of principles, within which cost recovering water and*

sanitation policies, programmes and projects can be designed for poor people in rural or peri-urban areas.

It is important to note that this (desk) study focuses only on the financing and design issues required to try and enhance cost recovery within water and sanitation schemes in peri-urban and rural areas. It does not attempt to provide an integrated set of engineering and technical recommendations for successful water and sanitation programme design.

Nevertheless, we feel that this report contains much useful and practical information on the issues of cost recovery for water and sanitation programmes aimed at poorer people. The findings are targeted toward those national government agencies, international development agencies, (international) financial institutions, (I)NGOs and private sector operators who are engaged in the design, development and implementation of water supply and sanitation projects and programmes for poor people and who are concerned about financial sustainability issues. It is hoped that the findings presented here can help to influence their debates on policy and strategy development for financially sustainable rural and peri-urban water and sanitation services.

The main conclusions of the research are summarised below. They are split into four areas:

1. *Key findings (on financial sustainability, taking account of demand, the use of tariffs and subsidies);*
2. *A framework of principles for achieving cost recovery (at the policy, programme and project level);*
3. *Issues of particular relevance to the chronically poor: and*
4. *Potential next steps*

1. Key Findings

1.1. On financial sustainability

Financial sustainability is important because there is simply not enough public sector money available to either fund all of the water and sanitation projects and programmes required for poor people in rural and peri-urban areas, or to continue to fund the existing investments when their assets need replacing. Somebody has to pay for water and sanitation projects, in the long run, and this will have to ultimately involve their users to a large extent. This is an important issue for those concerned about mobilising the finance (ODA, private sector or otherwise) to meet the 2015 Millennium Development Goals for water and sanitation. Designing and implementing water and sanitation programmes and polices that place an emphasis on being financially sustainable in the long term is equally as important as finding the finance for the initial capital investments. If this does not happen, then dependency on cyclical bursts of overseas aid and other forms of grant finance will never be broken.

Most practitioners focus on the financial costs of programmes and how to recover them. Few focus on economic costs, or values (opportunity or environmental costs),

though these can be extremely important to society as a whole, especially as water scarcity increases.

It was found that many practitioners misunderstand the concepts and terminologies associated with financial costs. Thus, a clear definition is presented in the report. It groups financial costs for water and sanitation programmes into three main categories – costs of operations; costs of capital maintenance charges and costs of servicing capital. To be financially cost recovering, the first two of these cost categories should be covered and, in relation to the programme's financing arrangements, so should the relevant amount of the third cost category.

However, not many water and sanitation projects or programmes in rural and peri-urban areas recover more than their costs of operations and possibly some of their costs of capital maintenance. They rarely cover costs of servicing capital. This means that long-run financial sustainability in the rural and peri-urban water and sanitation sector is rare.

Donor agencies in particular (and some NGOs) are not very good at achieving long-run financial sustainability in their water and sanitation investments, especially in rural and peri-urban areas. This is generally because they have a more "public sector" focus – their projects tend to reflect a desire to meet basic needs or to ensure an equitable use of the subsidy or grant on offer, rather than to cost recover.

Private sector agencies (IFIs and the local/ international private sector) and some NGOs, however, tend to aim for a recovery of the costs associated with all three cost categories. Indeed, many local water retailers and community groups operate as quasi-private sector agents, obtaining an operating surplus, while often working with quite poor consumers. This private sector "ethos" means that these projects tend to be financially sustainable.

The challenge is how to retain the positive (rights-based) components of the public sector water and sanitation programmes (equity, poverty-focus, participatory etc.), whilst making them as good at achieving long run financial sustainability, as those projects with a private sector "ethos".

A number of components of project design to be examined in order to recommend how to meet this challenge.

1.2 On taking account of demand

To make water and sanitation investments more financially sustainable, it is generally agreed that it is useful to design them around what users want, and therefore what they are willing to pay for. This is broadly known as taking a "demand responsive approach", the details of which have been encapsulated by various World Bank publications. However, many sector professionals have interpreted this approach in a mostly financial manner, using it to try and find better ways to discuss with potential users the most affordable option to choose from a range of technical, low cost technologies. This is misleading.

In fact, a truly demand responsive approach and the willingness to pay (WTP) estimates it derives from potential users, sits more closely with an economic assessment of value than a financial assessment of costs. Within a WTP bid, evidence suggests that respondents will place a value not only on the technical option on offer and its cost to them, but also on the institutional arrangements, the management set-up, the suggested pricing schedule and other attributes of the water and sanitation "product" on offer. Hence, the water and sanitation technology may stay the same (constrained by logistical or engineering limits), but ways and frequencies of paying, collecting fees, managing, owning or using the product can be worked upon, causing people's WTP to change, depending on their preferences.

This is supported by our other findings. For example,

- *Household income, though important, is not the overriding determinant of demand for improved water and sanitation services. Poorer people see water as a relatively income inelastic good and are willing to pay for it. The way they are asked to pay for it, however, will affect how much they are willing to pay.*

- *Financially sustainable water and sanitation programmes seem to work by translating users' notional demands (what I would like) into effective demands (what I can afford) for water and sanitation investments.*

- *To achieve this, financially sustainable water and sanitation programmes for poor people often include the development of a source of community finance to help users pay for the improved levels of services, as part of the project design and implementation process.*

1.3 On the use of tariffs and subsidies

A tariff for water is the key mechanism whereby payments from the user can be captured to cover costs. An efficient, cost recovering tariff policy should be one that reflects the marginal economic costs of supply. This should be the "first-best" benchmark.

Tariffs can be flat rate or volumetrically based. In general, volumetrically based tariffs are preferable, as the charges for different amounts can be more pro-poor focused (lifeline, increasing block or two part tariffs). Free water tariffs, though politically attractive, can be difficult to target particularly on the poorest, and can create financial sustainability challenges for the operator. They may also not actually be needed - it is important not to forget that people in general are WTP for water and sanitation services, and that WTP for service improvements is generally income inelastic.

Tariff policies will vary, but some general guidelines can hold. Communal (standpipe, or borehole) users should face a tariff linked to the costs of operation and the costs of capital maintenance charges for a basic level of service; and individual connections should be charged the average incremental cost of the costs of operation and the costs of capital maintenance charges, plus any costs of servicing capital, which are relevant to the programme. The same differentiation should apply to networked or non-networked sanitation (or sewerage) services. The use of output-based tariffs may be a

useful way to gradually introduce the concept of payment into existing or new water and sanitation programmes for poor people. With the right programme, poor people will pay for a connection charge to a water and sanitation programme. Some may need a loan or subsidy to help them. Within the programme, differing volumetric charges, gradations of different tariffs for different levels of service provision, cross subsidies and other forms of targeted tariff policy or service delivery can also be introduced for different consumers, although within-programme cross subsidies (which can work) can be very difficult to monitor.

With these minimum-charging principles in place, the water and sanitation programme will be financially sustainable (although this strategy assumes grants will be required to kick start non-networked, usually rural, improvements). For those (usually networked) programmes where a return can be achieved on the water and sanitation asset, the accumulated financial surpluses can over time also be lent to other groups to start similar schemes.

Without these principles in place, water and sanitation programmes will not be financially sustainable.

The way poor households are asked to pay for water and sanitation services affects how much they are willing to pay. Discussing the use of credit or other methods of financial assistance, and the type of payment structure on offer, are therefore important. They can help shape poor households' willingness to pay (i.e. credit can translate a notional into an effective demand for water and sanitation improvements). A sustainable financing strategy for a water and sanitation project or programme may often require, therefore, the building of a parallel source of financing to help poor people pay for access to an improved level of service and its long run costs, as well as an appropriate technical solution. Indeed, credit can help tie users into a repayment schedule. Other practical approaches to help poor users pay often involve various forms of pre-payment or pay as you use charges. These can be successfully implemented with clear concessions for poor or disadvantaged users.

2. A Framework of Principles for Achieving Cost Recovery

Water and sanitation programmes that are financially sustainable seem to have tapped into poor people's notional demands, and have then found ways to make various schemes derive a return on their assets that allow them to finance themselves. Successful schemes tend to be locally run, easily replicable, but dependant on a wider decentralisation policy within which to work. They have often benefited from a "seedcorn" grant and parallel community financing mechanism. The poverty of their participants does not seem to have been a constraint to their success.

To achieve financial sustainability in water and sanitation programmes, therefore, a range of complex and critical issues need to be worked through at the policy, programme and project (individual scheme) levels. Many of these issues may require shifts in the policy and approach of the Donor Agencies, international NGOs and the international private sector themselves.

The framework of principles presented below thus covers five areas: policy level issues; programme level issues; project level issues; issues relating to the role of national

public water agencies and issues relating to the role of the (international) private sector.

2.1 At the Policy Level

Financially sustainable water and sanitation programmes and projects work best where a decentralisation policy is present. A clear and uniform national policy for the investment and longer term financing of water and sanitation services in rural and peri-urban areas is therefore required within the country where assistance is to take place (a "Water and Sanitation Sustainable Finance Policy for the Poor").

The objectives of the policy should be as follows:

- *To decentralise water and sanitation responsibilities for financing, implementation and development to the lowest possible level of decision-making, while ensuring a system of sub-sovereign guarantee provision can be built into the decentralisation process in order to attract financing.*

- *To provide a legislative environment that allows and helps the poor to organise and undertake water and sanitation schemes, with technical and managerial support, credit and information available as required.*

- *To provide assistance in the development of the social capital and networks required to allow decentralised decision making to take place among the poor, if civil society is weak.*

- *To provide an independent regulatory environment that sets out clear signals on price, market-entry, service differentiation/ innovation and price-credit-subsidy mixes for pro-poor water and sanitation service delivery.*

- *To define clearly the gradation of financial costs that should be recovered by a water and sanitation project or programme; and to state that the "first-best" water pricing policy against which tariffs should be benchmarked is to price water and sanitation programmes such that they capture long run financial costs and allow regions to explore water rights trading, such that scarcity costs may be addressed.*

- *To promote local partnerships between local community groups, NGOs, the local private sector and Government Agencies to help deliver the water and sanitation schemes in these programmes.*

- *To develop self-sustaining community investment finance initiatives to help poor people finance the water and sanitation schemes they want.*

- *To focus pro-poor ODA water and sanitation finance only on helping to create outputs that sustain themselves financially in the long run. Only those that are designed to be financially sustainable should be able to access supporting funds.*

- *To promote the need for iterative, demand focused design processes that can strengthen key parts of the water and sanitation "product" to suit local conditions,*

for example particular institutional or payment arrangements, or certain technical components, such as sanitation.

Agreement by donors and government agencies on the core objectives of this water and sanitation Finance Policy for the Poor is also essential to inhibit Government interference, and to prevent market distortion by different donor agencies offering differing levels of financial assistance or conflicting approaches.

2.2 At the Programme Level

A number of key issues seem be important to help design a water and sanitation programme in rural and peri-urban areas that delivers financially sustainable projects.

2.2.1 Think small.
Although donors prefer large scale programmes, a portfolio of many smaller schemes should be encouraged that best suit each of their particular user groups. This could be on a village-by-village or on a slum-by-slum community basis. Smaller schemes mean lower exposure for the users to the risk of financial failure. Micro-networks, or non-networked systems, with up to about 50 households per group seem to be a feasible size for success, though there are no hard and fast rules. To allow an element of scale up, this approach can "join up" the schemes, such that representatives of the schemes can "network" with each other, to facilitate replication and cross-fertilisation of ideas and also to strengthen the overall voice of the poor in their demands for service improvements.

2.2.2 Think many.
Pepper a neighbourhood, or rural area with several small schemes, each having been iteratively designed to suit very local needs. Local information exchanges will create the most effective hybrids.

2.2.3 Think unsystematically.
There will be many different ideas and approaches as to what may work. By taking an output-based approach, it does not matter so much what the design of each local scheme in the programme is (as technical options are limited, people may choose differences in the institutional, payment, management options), so long as minimum (technical, social, environmental) criteria are met and the scheme delivers the output required. With a stake in their own project, people will also choose their options carefully to match their local conditions.

2.2.4 Use Grassroots Organisations to help design and deliver local schemes.
There are usually grassroots organisations such as local NGOs, community based organisations, community groups or local vendors, private sector actors or informal service providers, who know who the local users are, what they want and what they will pay for in terms of water and sanitation services; or who can find this information quickly and efficiently. The programme should use them to identify the initial desires of the community and also to assess the potential of these grassroots organisations to be local water and sanitation project service coordinators.

2.2.5 Use an in-country Partner Organisation as a knowledge manager.
An in-country Partner Organisation should be used to identify and maintain this grassroots network, and to help each of the local groups form the right partnerships to

develop and manage their small-scale water and sanitation schemes with the local users. The Partner Organisation should have a good contact network of local water and sanitation-focused grassroots groups, as well as a credible relationship with regional level suppliers, State Water Agencies and the larger private sector actors.

The Partner Organisation for the programme may be a well-established national NGO, the country representative of an INGO, an in-country water and sanitation provider, or a pro-poor engineering/ consultancy firm. The Partner Organisation should manage the grassroots organisations and their implementation of local water and sanitation projects via simple, performance based, or output-focused contracts.

Where these community networks do not exist, or are patchy, it will be worthwhile for the Donor or Government Agency to invest in their development. Potential Partner Organisation Firms or international NGOs can help this process. This could be done as part of a wider (and not necessarily water and sanitation focused) poverty reduction process, or as part of a wider civil society or local governance development initiative.

In turn, the Partner Organisation should be evaluated based on how many local water and sanitation schemes are created and then sustained, and how many are replicated; success should not be equated to how much money was disbursed (in fact, the reverse) or what technologies were used. Innovations in terms of local management, payment and financial structures should be looked for, successful ideas should be encouraged and knowledge should be transferred between users. Key indicators, such as for social development, environmental and health should be monitored and evaluated at key points in contract renewal, and the contract refocused or re-tendered if needs be. Quite simply, if a local scheme works, it works, and its customers will becomes its best advocates for replication. If it does not work it will fold, and the local contractor or user group will face the loss of their stake. If local contractors know their market, the scheme should not fold, but should organically grow.

The Partner Organisation can also help local community groups and service providers in the provision of training, leadership development, and community conflict resolution and in the development of systems for internal decision-making, as appropriate.

2.2.6 No easy money at any stage of the programme.

At the individual scheme level, examples show that if poor people want a water and sanitation investment, in most cases they will pay for it or seek ways to help them pay for it. Any external finance should therefore be used to support these energies, rather than distort them. Hence, grants for individual schemes or projects should not provide 100% of a project or programme's capital costs. However, supporting financial mechanisms to promote payment will be important to help people pay for the remainder. To start with, some seed-corn money, disbursed by the Partner Organisation to the local service provider, may be required either for capital investment or to kick start savings schemes to help pay for the local water and sanitation projects. Following this initial injection of funds, all long term costs for the project should be sought from its users. Replication should not require any further capital investment grants to the same level - new users should seek to draw mostly upon the financing mechanism of the original project and the surplus it produces.

At the programme level, funding should move away from (unsustainable) large ODA or public sector grants. Instead, finance should come from a (partial) combination of grants and soft loans issued by a donor-related agency or IFI; and other forms of finance, perhaps mobilised by a development or water orientated fund. Risk to payback of the private sector co-finance component, could be underwritten by well-structured risk guarantees, or by a donor agency. With this kind of financing package in place, a private sector "ethos" would necessarily be required in order to service the costs of capital assembled to finance the capital investment in the Programme. This would ensure a culture of financial sustainability within the Programme.

The targeted uses of grants, however, via output-based aid to create the necessary pro-poor "software" for Programme implementation – demand responsive designs, supporting finance, other training and capacity building - will be critical for success. It may be the case that the grant component would be undertaken first, such that, based on outputs being achieved, sequential delivery of the financing component could follow, with minimum risk to the investor(s)of up front exposure.

If appropriate, the poverty focused water and sanitation programme and its financing package could also be developed to gain support from a Poverty Reduction Strategy Credit, thus helping to lower the cost of servicing the financial capital required still further.

2.2.7 Take an "output-based" approach at all levels of the Programme.
An output-focused approach can help the Programme to deliver at all levels. Output based subsidies can provide clearer thinking about the use of any subsidy on offer (perhaps directing funds to the one-time costs of service connection, rather than the ongoing costs of consumption); and about the objectives of the programme that need to be met (a suite of financially sustainable, self-replicating local water and sanitation schemes), so that contracts can be renewed or payments made to service deliverers, at all levels. Output-based tariffs, whereby users pay tariffs in exchange for an improved service and based on an agreed schedule of improvements, could also be a useful mechanism to draw users into a payment habit. An output-based subsidy structure could also help, whereby the Partner Organisation is provided with subsidies from the Government or Donor to address gaps in cost recovery based on the service delivery levels and other factors that are specified as benchmarks to development.

2.2.8 The demonstration effect works well.
The demonstration effect is a critical factor in success, not only on a community-to-community basis, but also in terms of changing the mindset of local water and sanitation agency staff, local, regional and national decision makers, and donor agency water and sanitation personnel. Indeed, local community operator-user groups can be federated so that the demonstration affect can work as a motivating force among the local population as well.

2.3 At the Scheme Level

In order to encourage successful, cost recovering water and sanitation schemes that deliver financially sustainable services to the rural and peri-urban poor, it is vital for the Partner Organisation to:

- *Work at the local level on small-scale schemes.*
- *Develop partnerships between local users, local NGOs or community based organisations and local (private/ informal sector) water providers.*
- *Undertake an iterative process with local focus groups to design a demand driven water and sanitation "product".*
- *Focus on the output of the project required and work backward to develop a locally owned process that will make it work.*
- *Provide small amounts of community financing or "seed-corn" grants to kick off the process.*
- *Get the users to find a way of managing costs and make the initiative pay for itself in the long term.*
- *Focus on locally based systems of fund collection and project management, which are transparent and locally accountable.*

Importantly, success at the scheme level will be measured by staying power and local replication, with minimal resort to grant financing. If other people replicate the water and sanitation scheme - with no external grant funding - they obviously like it, want it and are willing to pay for it. If the scheme keeps going, longer run costs are de facto being recovered.

2.4 Potential Role of National Water Agencies

National or State Water and Sanitation Agencies or Parastatals with responsibility for water and sanitation service delivery in peri-urban or rural areas are an important stakeholder group. However ineffective or awkward the state water and sanitation service agencies and decision makers may be at first, they must become actively engaged in the process of re-gearing water and sanitation improvements to be financially sustainable.

The challenge will be for the Partner Organisation to strike a partnership with the relevant State Agency; and to gradually help build capability within these agencies in financial understanding and local contracting/ regulation/ evaluation procedures, so that the local state structures can gradually take the reins. To move from a centrally managed, supply and target-driven mindset in the State Agency to one of managing a range of very local contracts focused on outputs, is difficult. However, the "seeing-is-believing" aspect arguably provides a more powerful steer than simply building capacity alone.

In certain cases the State Agency may be able to take on the role of the Partner Organisation immediately. In most cases, however, it may be that the immediate role the State Agency can play relates to either the supply of bulk water supply and/or wastewater treatment services (and the negotiation thereof of more amenable supply contracts with the Partner Organisation); or in technical backstopping through the provision of repairs, rehabilitation services, etc. Generally, there should be the potential for the State Agency to enter into a learning partnership with the Partner Organisation, especially if it brings to the table a good knowledge of the priority areas to target under the programme, recommendations for local service providers or private sector actors; and extension staff who know and can liaise with the various communities in the region. In all cases, the aim should be to empower the State Agency to over time become the driver of the Partnership.

2.5 Potential Role of the Private Sector

Development agencies find it difficult to manage water and sanitation programmes with a private sector mindset. They look for break-even, or rights based markers, in relation to access and financing and are not good at creating sustainable financing arrangements. Often many NGOs do the same. There is a clear role for the private sector, therefore; and their participation can occur at two levels, local and international.

At the local level private sector participation can occur on the supply side, through the use of community contractors, local entrepreneurs, retail water suppliers and water and sanitation related NGOs who can run local schemes with a private sector "ethos"; or through the use of local private sector services, which can supply the products or advice required in the supply chain for delivery.

At the international level, the role of the private sector seems more likely to take place within the context of Partnerships. It seems unlikely that a large-scale private sector water operator would be enthusiastic to invest directly in such a poverty focused Water and Sanitation Programme, as described above. Conversely, however, it would also seem unlikely for a sub-sovereign State Agency or Government, an (International) NGO or a sub-national Water retailer, to be viewed by potential international investors as being risk-free enough to attract the non ODA finance components discussed. Instead, these institutional investors may prefer to see overall financial responsibility of the Programme in the hands of an international private sector actor, with experience in the water sector, and with satisfactory levels of (sub sovereign) risk mitigation in place. Consequently, some sort of a Partnership between these different stakeholders would seem a useful combination, such as:

- *The INGO or sub-national Water Retailer as the Partner Organisation with in-country pro-poor mobilisation and service delivery skills.*

- *An International Private Sector Company with experience and skills in managing programmes with a private sector "ethos" in order to reduce risk of delivery, ensure the costs of servicing capital are met; and provide technical services if required.*

- *The State or Municipal Water Authority as a Partner that can grow its role and responsibility within the Partnership, as capacity is built and demonstration effects kick in.*

- *The State Government acting as a guarantor for the Programme, within the context of the National Water Financing Policy for the Poor.*

The private sector company will also be able to interact with the donor or government, the partner organisation and the state water agency in terms of training, technical advice, strengthening of financial sustainability issues, monitoring and evaluation. With overall output achievement resting with the private sector company, the donor or government can replace either the company or the Partner Organisation and the integrity of the programme with the recipient State Government, the State Water and Sanitation Agency and its population will remain. Again, disbursements to the company could be sequential, and based upon outputs being achieved. Financial incentives to deliver could be based upon key performance indicators at the programme level being met - financially sustainable and replicable local schemes, which are equitable and institutionally robust, with feedback coming from the users, the Partner Organisation and the State Water and Sanitation Agency. With a focus on clearly defined outputs, and feedback from users, the potential for collusion and corruption is also limited.

Over time, the aim would be for the private sector firm to gradually withdraw, transferring this role to the State Water Agency with responsibility for water and sanitation. Other specialist international private sector inputs could continue to be provided, however, and these may involve issues related to the provision of management techniques (accounting, cost-control, billing software, customer relations, contracting, etc.).

3. Programmes for the chronically poor

As part of the programme, or separately if necessary, the Partners can help develop with the Agency or Government a suite of much more strategic water and sanitation initiatives for the very poorest groups of people in the country or region. These may be those people in more remote rural areas, who are from a certain social or ethnic background, or who may suffer from conflict or post-conflict issues.

For these people, water and sanitation issues will probably still be very important, and perhaps more explicitly linked to their chronic poverty. In these cases, much more livelihoods-focused and poverty reduction orientated water and sanitation initiatives can be developed. With the right design, these schemes can also be financially sustainable in the long term. However, the financing for these schemes may initially be more ODA grant intensive, with a longer time lag to be expected in terms of costs of operations and capital maintenance charges being met. Hence, finance for some future costs of capital maintenance charges may also be required up front.

Nevertheless, if the national policy framework is in place and decentralisation is encouraged, then water and sanitation interventions for the very poorest, which gradually become financially sustainable, should be able to emerge in the medium to

long term. Their development could be more explicitly linked to wider poverty reduction strategies for the country.

4. Concluding comments and next steps

This study was mostly a desk review-based exercise, with a limited country remit. Its recommendations are therefore ideas, based upon (and constrained by) the research and its remit. Nevertheless, through the framework described we would suggest that there is a way in which finance could be mobilised to help trigger and then sustain cost recovering water and sanitation programmes for the poor in peri-urban and rural areas. However, it will require some innovative thinking and a "leap of faith" among donors, investors, INGOs and the private sector to make this happen. One successful demonstration programme may be enough to forge the way ahead.

There are still are a number of clear opportunities for further work, whose outputs could feed usefully into furthering the policy agenda on this issue. These opportunities can be split into blue skies research and action-research orientated exercises.

Blue Skies Research

- *The undertaking of further analysis of the valuation of key attributes of water and sanitation services for the poor, through perhaps the development of conjoint analysis as a demand assessment tool.*

- *The undertaking of a much wider meta-analysis study to provide pointers on the key drivers for demand, perhaps in particular geographical regions or for particular types of technology, or income groups.*

Action Oriented Research

- *Development of the strategic policy and programme design framework presented here on financial sustainability in the water and sanitation sector, by drawing upon a wider set of country experiences and sector professionals*

- *With some development support from a donor agency, the design and implementation of an innovative pilot programme of water and sanitation schemes for the poor, based upon the recommendations we have developed. This could take place in partnership with a suitable partner organisation for in-country mobilisation (an INGO or a Water retailer with development skills), an international private sector partner from the water industry, a combination of interested IFIs, private finance investors and/or other financing funds and a suitably interested State or Municipal Water Authority. A key output would be to show that, with minimum grant based inputs a programme of financially sustainable, cost recovering and self-replicating water and sanitation projects can be developed and implemented for poor users in rural or peri-urban areas.*

Finally, it should be noted that the findings contained here should by no means be viewed as "the last word" on this topic. Indeed, since this research project began, a range of other research institutions and organizations have also started to look at issues of financing and cost recovery, often in more detail or using more resources. The thoughts and framework presented here could be seen to represent, arguably, the first proper look at cost recovery and financial sustainability issues for water and

sanitation programmes for poor people in peri-urban and rural areas; and as such can provide a foundation for other researchers to build upon.

Acronyms

AMU	Appraisal and Monitoring Unit
ANC	African National Congress
AP	Andhra Pradesh
APUSP	Andhra Pradesh Urban Services for the Poor Project
APUFIDC	AP Urban Finance and Infrastructure Development Corporation
BoTT	Build, Operate, Train and Transfer
CBA	Cost Benefit Analysis
CBO	Community Based Organisation
CEA	Cost-Effectiveness Analysis
CERWAS	A Vietnamese government WATSAN agency
CVM	Contingent Valuation Method
DFID	Department for International Development
DPLG	Department of Provincial and Local Government (South Africa)
DPMU	District Project Management Unit
DRA	Demand Responsive Approach
DWAF	Department for Water Affairs and Forestry (South Africa)
ERM	Environmental Resources Management
ERR	Economic Rate of Return
FIDIC	International Federation of Consulting Engineers
GoK	Government of Kerela
GP	Gram Panchayat
HDC	Historically Disadvantaged Country
Hh	Household
IBRD	International Bank for Reconstruction and Development
IFI	International Financial Institution
INGO	International Non-Governmental Organisation
IRC	International Water and Sanitation Centre
IRR	Internal Rate of Return
ISD	Institutional and Social Development
Jowan	Johannesburg Water Management Company
LRMC	Long Run Marginal Costs
MAPP	Municipal Action Plan for Poverty Reduction
NASRAD	A local NGO supporting projects in Kerela, India
KRWESP	Kerela Rural Water Supply and Environmental Sanitation Project
KWA	Kerela Water Authority
MAUD	Andhra Pradesh State Government Department of Municipal Administration and Urban Development
MSU	Municipal Strengthening Unit
NGO	Non-Governmental Organisation
NPV	Net Present Value
ODA	Overseas Development Assistance
ODI	Overseas Development Institute
OFWAT	Office of Water Services (United Kingdom)
O&M	Operations and Maintenance
OLS	Ordinary Least Squares
PIA	Project Implementing Agencies
PIU	Project Implementation Unit
PMU	Project Management Unit

Pp	Per person
Pd	Per day
PPA	Participatory Poverty Assessment
PRA	Participatory Rapid Appraisal
PRS	Poverty Reduction Strategy
PV	Present Value
QC	Quality Control
RGNDWM	Rajiv Ghandi National Drinking Water Mission
SALGA	South African Local Government Association
SCBA	Social Cost Benefit Analysis
SHE	Sanitation and Hygiene Education
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
USD	United States Dollars
WASS	A private water company, subsidiary of Northumbrian Water
WATSAN	Water Supply and Sanitation
WEDC	Water, Engineering and Development Centre
WSA	Water Services Authority (South Africa)
(WB)WSP	UNDP/World Bank Water and Sanitation Programme
WSP	Water Service Providers
WTP	Willingness to Pay

GLOSSARY

Affordability
What someone can pay for a WATSAN service (usually constrained by access to cash). An analysis of affordability estimates households' current incomes and assesses what type of WATSAN service they could pay for or could be undertaken relative to their (cash) income. This report links affordability to effective demand.

Average Incremental Cost (AIC)
Average incremental cost analysis is a method by which to establish the average unit cost of a service (e.g. average water supply costs measured in US$/m^3), a measure that can be used both for comparing programme costs and for providing a good general indication of the affordability of the proposed measures. It provides a sound basis for establishing the average tariff level needed to achieve full cost recovery from users and as such is a useful proxy for a long run marginal cost. It is calculated by dividing the present value of a project cash flow by the present value of its associated water supply, thereby providing an estimate of the average cost per cubic metre of water provided. It is expressed with the following formula:

$$\sum_{t=o}^{n} (C_t / (1+d)^t) / \sum_{t=o}^{n} (O_t / (1+d)^t)$$

where C_t is project investment and operation cost in year t;
O_t is project output in year t;
n is the project life in years;
and d is the discount rate.

Ceteris Paribus
Literally, "other things being equal". This term, used in economics, indicates that other variables except the ones specified are not expected to change.

Charges and Tariffs

- Charge: to set or ask a price for a given amount (of WATSAN service): the charge could be US$3 per m^3 of water

- Tariff: a schedule of prices or fees (for WATSAN services) set by an institution (the Government).

The overall tariff may be an increasing block tariff; but the charge for water per m^3 within each of these blocks may be different.

Contingent Valuation Method
An approach often employed within the water sector to valuate non-market goods and/or services, whereby consumers are asked what they would be willing to pay for a specific quantity or quality of goods or services.

Cost effectiveness analysis (CEA)

An analysis that seeks to find the best alternative activity, process or intervention that minimizes resource use to achieve a desired result – the most cost effective way to meet a given policy target, for example.

Cost Recovery
A range of interpretations exists for this phrase, in relation to water and sanitation programmes (see *Annex C* pp C2-3, for definitions from DFID, BPD, Danida, WaterAid and the World Bank, for example). This study defines cost recovery as being the recouping of some or all of the following financial and economic costs of service delivery, through the implementation of a charge or tariff that users pay and which is effectively collected. Financial costs to recover include costs of operations, costs of capital maintenance charges and costs of servicing capital. Economic costs to recover include scarcity (opportunity) costs. To be effective, a policy is usually required that sets out what costs a WATSAN programme can charge for. This is especially important for economic (scarcity) costs of water, as these are most efficiently recovered through the ability to trade water rights rather than setting prices.

Decentralisation
Within the water sector, a management model whereby central governments assume a regulatory and facilitating role in service provision, and pass implementing power – ideally both institutionally and financially – to regional and local levels of government.

Demand
A defined relationship between price and quantity, holding everything else constant. The amount bought at a particular price is the "quantity demanded." In economic theory, a demand curve assumes that at each point along the curve people will be able to purchase the given quantity of the good supplied – i.e., demand is equivalent to willingness to pay. The notion of demand can be broken down into two categories. **Effective demand** involves both the desire and the cash to purchase; just wanting something (but not being able to exercise that demand) is called a **notional demand.** In this study we equate affordability analyses to the measurement of effective demand and suggest that willingness to pay studies are more geared to capture notional demands. We suggest that designing and supplying WATSAN services based on the ability of poor people to pay for them in cash (i.e., on the basis of effective demand) could perpetuate a problem of undersupply. We look at those WATSAN initiatives for poor people, which offer to provide financial support (in the form of subsidies, credit, revolving funds, etc.) to their consumers alongside the potential WATSAN intervention to help pay for it. This changes what the users are interested in and willing to pay for, thereby translating their notional demand into an effective demand. Through a combination of subsidies and credit as well as careful design, the chances of cost recovery are thereby heightened.

Demand Responsive Approach (DRA)
DRA is an approach to WATSAN that attempts to respond to consumer demands and which aims at making projects more sustainable than supply-

driven approaches. Mike Garn in a 1998 World Bank paper comprehensively outlined DRA, where he listed the following as key characteristics:

- Community members make informed choices about:
  - Whether to participate in the project;
  - Levels of service, based on willingness to pay;
  - When and how their services are delivered; and
  - Financial management and management of operations and maintenance.
- Governments play a facilitative role;
- An environment enabling private (and NGO) participation is created; and
- An adequate flow of information is provided to the community.

More controversially, Garn also suggested that in order for DRA to work effectively there needed to be competition among communities for funding, in order to decide whether to provide support to a particular community and what type of system and level of service to provide.

Demonstration Effect
This phrase is used within this report as adopting a "seeing is believing" approach to promoting cost recovery in the water and sanitation sector. When one community (or household) has success at achieving cost recovering and safe water supply and sanitation (which has other social and environmental benefits), other communities (and/or households) are more likely to "buy in" to the concepts underpinning the success.

Discounting
A technique which translates all of the future costs and benefits into their present values. Essentially, discounting reflects peoples (or society's) time preferences, or opportunity costs of capital.

Depreciation
The anticipated reduction over time in the value of an asset that is brought about by physical use or obsolescence.

Economic cost
Within the framework of water policy, economic costs of water use include not only the financial costs of providing water service, but also the environmental and social considerations associated with the project. For example, the cost to society of pumping groundwater resources at an unsustainable rate, or the time and effort saved by having a house connection rather than walking 2 km to a water source, are included as part of economic costs.

Economic rate of return (ERR)
The rate of return that would be achieved on all project resource costs, where all benefits and costs are measured in economic prices. The ERR is calculated at the rate of discount for which the present value of net benefit stream becomes zero, or at which the present value of the benefit stream is equal to the present value of the cost stream. For a project to be acceptable, the ERR should be greater than the economic opportunity cost of capital (which is the

real rate of return on economic prices on the marginal unit of investment in its best alternative use.

Emerging Africa Infrastructure Fund
A public-private financing partnership initiated by the UK Government's Department for International Development to make available long-term debt financing for private sector infrastructure companies in sub-Saharan Africa, with a goal to raise roughly US$450 million from European donors and private sector financiers.

Financial cost
Within the framework of water policy, financial costs of water include the more tangible costs associated with supply. These would include the costs of construction, supplies, labour, and so forth. Financial costs may be categorised into cost of operations; cost of capital maintenance, and cost of servicing capital.

Flat rate tariff
Tariff structure whereby all consumers – whether rich or poor – pay the same "flat" rate for a given level of service, regardless of consumption.

Internal Rate of Return
The internal rate of return (IRR) is the discount rate that would produce a NPV of zero for the programme. Hence, if the IRR is greater than the base rate of interest for the country, then the programme could be seen to be a more viable investment than simply investing the programmes financial resources instead. Many agencies use a "rule of thumb" for the IRR. A good IRR would lie between 10 and 20%. Any higher and it might appear too optimistic. Any lower and the programme could be seen to be delivering marginal benefit to society from the deployment of the financial resources in question.

Millennium Development Goals
A series of development targets that grew out of the agreements and resolutions of world conferences organised by the United Nations throughout the 1990s, and which have been accepted as a framework for measuring development progress. See: http://www.developmentgoals.org

Net Present Value/Present Value

The net present value (NPV) of a programme is the present value of the eventual benefit surplus arising to society from the programme. A calculated positive value for NPV shows the present value by which the programme has increased welfare for society. Programmes with positive NPV make society better off, while programmes with negative NPV make it worse off. Similarly, all programmes with NPV's can be ranked and the one with the highest NPV selected as best for scoiety.

The NPV of a programme can be calculated quite simply on computer spreadsheets. In conceptual terms:

$$NPV = PV_{benefit} - PV_{cost} = \sum_{t=0} \frac{B_t - C_t}{(1+r)^t}$$

where

B = benefits
C = costs
t = time period (t_1 = year 1 for example)
r = discount rate (eg 12%)

The present value (PV) is simply the discounted sum of the costs of the programme alone (or of the benefits alone). It is not a net value, like NPV, hence its use in CEA. Again, the PV of a programme can be calculated quite simply on computer spreadsheets.

ODA (Overseas Development Assistance)
Grants and/or loans typically provided by industrialised countries to promote investment projects and programmes in developing countries.

Opportunity Cost
Given a scarcity of resources to make a decision, the highest valued alternative that is *not* chosen (and is thus "given up") is considered the opportunity cost of the first-best decision.

Parastatal
A company or agency that is either fully or partly owned or controlled by government.

Poverty Reduction Strategies
These strategies, and their papers, describe a country's macroeconomic, structural and social policies and programmes to promote growth and reduce poverty, as well as associated external financing needs. These strategies and papers are prepared by governments through a participatory process involving civil society and development partners, including IFIs, bilateral funders, INGOs, and development agencies.

Reputational Risk
The range of possible gains and losses in reputation faced by a firm, agency, or project that may be affected by the level of involvement a water sector partner, donors, NGOs, or other actor has in the project.

Rights based approach
In relation to the provision of water and sanitation services, the international community has made commitments to improve health, specifically via the provision of clean drinking water and sanitation, in a number of human rights agreements and at international conferences. These commitments are used as the basis for advocating a rights-based approach to water and sanitation – the international community has stated that it is every person's right (regardless of age, wealth, gender, location, religion, etc.) to receive adequate water and sanitation services. UN Human Rights Agreements concerning health include the Universal Declaration of Human Rights (UN 1948); International Covenant

on Economic and Cultural Rights (UN, 1966); Convention on the Rights of the Child (UN 1989). Specific Targets concerning Water and Sanitation include the Declaration of Alma-Ata (WHO, 1978); World Summit for Social Development (UN 1995); and the World Summit for Sustainable Development (UN 2002). How a rights based approach sits with the idea of water-related services being an economic good, with associated financial supply costs (and who should pay for them), is proving to be a contentious issues for water practitioners to agree upon.

Seed-corn grant
Type of funding whereby financial assistance is provided by donors to kick-start a project or programme, usually to assist with up-front capital costs.

Shadow Price of Water
The value used in economic analysis for a cost or benefit in a project or programme where the market price does not provide an accurate estimation.

Social Cost Benefit Analysis
Social cost benefit analysis (SCBA) seeks to compare the economic benefits of a programme with its economic costs. It is used infrequently in WATSAN programme evaluation. In SCBA it is the *ratio* of costs to benefits (especially over time), which becomes important. This ratio can be measured as the net (present) value of the project; allowing options for different programmes to be compared, even if their costs and benefit flows are quite different.

Volumetric based tariff
Water tariff based on the amount of water consumed in a given period of time. In general, volumetrically based tariffs are preferable, as the charges for different amounts can be more pro-poor focused (these include lifeline, increasing block or two-part tariffs).

Water Poverty Cycle
The concept of a self-sustaining negative feedback loop facing water systems when funding is used for crisis management for systems without promoting cost recovery principles. Where charging for WATSAN services is low, revenue shortfalls lead to poor service delivery and degraded infrastructure. Further, the lack of funding prohibits extending service to the poorest of the poor, and expectations of the system, or incentives to support the system, fall, increasing revenue shortfalls. All aspects of the cycle have negative social and environmental, (especially health) repercussions, which exacerbate water poverty and continue the cycle.

WATSAN
This is a term used throughout the report to refer to water supply and sanitation programmes or projects. It aims to cover all aspects of domestic water supply and wastewater/ sewerage services. For many rural areas, it will relate to non-neworked water supply options (wells, boreholes) and non-networked sanitation options (toilets or latrines linked to sceptic tanks).

Willingness to Pay.

What someone would like to pay for a WATSAN service. An analysis of willingness to pay estimates households' desire for improved WATSAN services and is usually undertaken through the use of a contingent valuation service seeking to elicit a bid from the respondent for a hypothetical WATSAN service improvement. This report links willingness to pay to notional demand.

1 INTRODUCTION

1.1 ABOUT THE PROJECT

This is the Final Report for the Department for International Development's (DFID) Knowledge and Research (KaR) Project R7384, entitled *Cost Recovery in Water and Sanitation Projects.*

The project has been managed by Environmental Resources Management (ERM) Ltd. The key partner research association for the project was the Scottish Agricultural College, in Edinburgh. The project lasted September 1999–December 2002.

The purpose of the project was

"To review and interpret cost recovery mechanisms across a wide range of water and sanitation schemes in order to recommend a portfolio of best practices for achieving financial sustainability and maximising the potential for private sector partnerships".

The investigation focused particularly on cost recovery for water and sanitation schemes in rural and peri-urban areas. This is because it is here where people are generally the most poor and cost recovery/private sector involvement is presumed to be most difficult. Geographically, the research focused on the experiences and challenges of South Africa and India. This was at the request of DFID at the project start.

Specifically, the project aimed to provide more depth of understanding on the issues of demand assessment and cost recovery in water and sanitation programmes, particularly through analysing actual project case studies and undertaking a methodological review of field practices, in order to provide recommendations on how best to implement financially sustainable programmes for poorer customers.

The proposal for the research was drawn up in March 1999. The project was undertaken over a three-year period (September 1999-November 2002), although budget constraints meant that the research was by no means full time. Since March 1999, however, some key events have taken place or have been initiated (for example, the 2nd World Water Forum, March 2000; the World Summit on Sustainable Development, August 2002; the EU Water Initiative; the Global Water Partnership's Panel on Financing Water Infrastructure 2002-3, chaired by M. Michel Camdessus (the "Camdessus Panel", and the 3rd World Water Forum, March 2003) inter alia, that are helping to reshape the role of water and sanitation in development and in poverty reduction.

Another key development has been the clarification and recommitment to the Seventh Millennium Development Goal (Ensuring Environmental Sustainability, which contains a target to *"halve, by 2015, the proportion of people*

without sustainable access to safe drinking water". A further development goal added at the World Summit on Sustainable Development was "*to halve, by 2015, the proportion of people without sustainable access to basic sanitation*". The financing of water and sanitation, therefore, has moved up the scale of international importance, since this research project began.

Also during the research period the shift within DFID from project support to direct budgetary assistance has become more pronounced. This has influenced the nature of the research in this project, in two main ways:

- Firstly, the research focus shifted from looking at how demand assessment techniques could be better used within a project cycle to enhance cost recovery, to examining the more strategic challenge of how best to design water and sanitation programmes in peri-urban and rural areas that can maximise the chances of long run financial sustainability.

- Secondly, the focus shifted from a project to a policy context – within the context of direct budgetary assistance, cost recovery objectives must be grounded in national policy and strategic ODA programmatic objectives for the WATSAN sector, and not limited to a simple project-based checklist. How should this best be achieved?

Within these contexts for water, finance and development, we feel that the information contained in this report has become increasingly pertinent. The report contains much useful and practical information on the issues of cost recovery for water and sanitation programmes aimed at poorer people. The findings are specifically targeted toward those national government agencies, international development agencies, (international) financial institutions, (I)NGOs and private sector operators who are engaged in the design, development and implementation of water supply and sanitation projects and programmes for poor people and who are concerned about financial sustainability issues. It is hoped that the findings of this research can help to influence their debates on policy and strategy development for financially sustainable rural and peri-urban water and sanitation, in a very practical and evidence-based manner.

1.2 CONTEXT AND RATIONALE

The research project was conceived due to the observation that chronic weaknesses or outright failures often exist in the financial delivery of state owned or managed water supply and sanitation (WATSAN) services[1] in developing countries, especially in relation to issues of maintenance or longer run upkeep and maintenance. This problem is usually worse for the poorest consumers in rural areas, in city slums or in peri-urban townships - they hold less political clout than the middle classes in the urban centres, and service

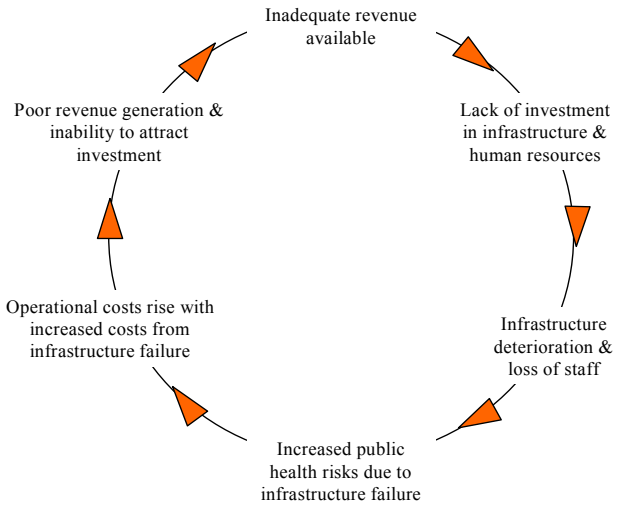
[1] WATSAN. This is a term used throughout the report to refer to water supply and sanitation programmes or projects. It aims to cover all aspects of domestic water supply and wastewater/ sewerage services. For many rural areas, it will relate to non-networked water supply options (wells, boreholes) and non-networked sanitation options (toilets or latrines linked to sceptic tanks).

delivery issues usually have to reach crisis point for them before some capital investment from the municipality or Government takes place.

With many other health and development issues on the agenda, it is extremely difficult for National Public Sector budgets and WATSAN Line Ministries or Agencies in developing countries to resolve this service delivery problem for the poor, even with the support of some ODA. For example, the latest estimates for the finance required to achieve the Millennium Development Goals (MDGs) for water and sanitation coverage range from a further US$9 billion/year (Vision 21), up to US$120 billion/year (Global Water Partnership).[2]

Even if all this initial capital investment can be found, there is still a deep-rooted policy problem of moving away from crisis management and towards the long-term financial sustainability of WATSAN investments for the poorest consumers. This is because charges for WATSAN services, if they do exist, tend to be low, poorly enforced and lacking in political support. This means that revenues to sustain or improve the service are too small. The service falls into disrepair and fewer people pay for them. A lack of attention on cost recovery issues creates a cycle of poor service delivery and, ultimately, water poverty.

Figure 1.1 Cycle of Water Poverty Without Cost Recovery



Source: Adapted from WHO Seminar Pack for Drinking Water Quality

[2] The GWP figures suggest a need to double overall investments from some US$75 billion/year to US$180 billion/year with the increase for water and sanitation from a present level of US$14 billion/year to US$30 billion/year. These figures are given as indicative, and GWP suggests that more rigorous analysis is needed to determine more precise figures. For more details please refer to "Financing the EU Water Initiative"ERM 2002; a paper prepared for DFID and submitted to the GWP "Camdessus Panel" on Water Financing.

However, even if (emergency) public or ODA funds for WATSAN capital improvements are forthcoming and higher charges to pay for the service are set, most WATSAN solutions tend to be centrally planned. Customers, however, (including the poor) are usually not willing to pay for a service that they feel does not really meet their needs, or that they feel they have no control over. Consequently, many large-scale state or ODA-driven WATSAN programmes, which aim to tackle the water poverty problem, also tend to falter after several years. Due to a lack of design and policy attention on how to maximise the chances of financial sustainability in the long term, these well-meaning lumps of capital investment in the WATSAN sector can often need replacing again, once assets start to decay. The water poverty cycle continues.

Hence, WATSAN services for the poor (in peri-urban and rural areas) tend to be worse for longer before something is done; if the money can be found to do something then the need to cover the ongoing as well as the capital cost of the investment is often overlooked, so things will gradually get worse again; and if some form of cost recovering charge is set, it is likely that the demands of the users who are supposed to pay, have not really been taken into account in the design of the programme. As a result they may not want to pay for something that is not quite what they want (especially if they are poor).

This set of interconnected issues is of great pertinence to any discussion about the MDG goals. Unless another MDG for WATSAN is desired in say 2050, equal thought must be given to polices and designs that ensure the long term financial sustainability of WATSAN investments, as well as to the challenge of finding the huge amounts of initial capital investment required.

Greater involvement from the private sector (both in terms of service delivery and investment) is being looked to as a potential solution. While there have been some tangible successes for this strategy within larger urban markets[3], due to a wide range of perceived risks, private sector participation is less likely to occur in the (much poorer) peri-urban and rural WATSAN markets. The international private sector, if attracted at all to the WATSAN market of a developing country, has a desire and experience which focuses mostly on the larger and more lucrative concessions or long term management contracts in the easier-to-bill urban centres; it has not so much interest or experience of working in the urban periphery or in rural areas, where the majority of the water poor live and work.[4]

Hence, with a financially unsustainable and often centrally-run WATSAN sector in peri-urban and rural areas, lacking much innovation or competition in service provision and providing low quality or unreliable services, most of the poorest are forced to fend for themselves for their water and sanitation needs, usually at a high cost relative to their income or time.[5]

[3] For a good overview see Johnstone and Wood (2001) .

[4] ibid.

[5] World Bank 1993; World Bank-UNDP 1999

With some notable private sector exceptions[6], international and national NGOs play an important role in supporting national governments to deliver much-needed WATSAN services to the poorest. NGOs have had many community-based and financial sustainability successes in the WATSAN sector; yet often these initiatives are very local and project based: they do not get (or are unable to be) translated into wider programmatic or policy strategies - the scale within which Government Agencies or ODA investments work. Thus, unless the lessons from project successes on cost recovery can be translated into policies and programmatic guidance frameworks for financial sustainability in the WATSAN sector, then these micro-level success stories will never be scaled up for others to learn, and adapt for themselves.[7]
Finally, many NGOs and, to a much larger degree, ODA-related water sector thinking, does not place as strong a focus on long term financial sustainability as is placed on either finding the up front capital investment for the project or on addressing equity or rights-based issues. Much attention within the donor community is placed on finding affordable engineering solutions, or on ensuring equal access to all within a WATSAN programme.[8] However, much less energy or enthusiasm is placed on calculating what the longer-run costs of the scheme design might be, and the best way of iteratively re-designing all aspects of the system (including institutions and financial mechanisms) such that users are able and want to pay fully for its services and upkeep. In this sense, cost recovery, though essential, remains neither a particularly fashionable nor a well-understood issue in the water and development sector.[9]

Thus, and for all the reasons mentioned above, finding out the best ways to design and implement WATSAN services for poor people that are *financially sustainable,* especially in rural and peri-urban areas, continues to be a real and practical challenge facing national governments, INGOs, NGOs and the international donor community.

For DFID in particular, finding out more about cost recovery in WATSAN projects and programmes is an important issue, for the following reasons.

- DFID's overall strategy for ODA delivery is now focused on budgetary assistance initiatives that seek to improve the efficiency of existing state programmes. Within this context, it is of central importance to provide practical guidance to partner governments on how to design financially

[6] See for example, World Bank (1999) Expanding Water and Sanitation Services to Low Income Households: The Case of the La Paz-El Alto concession. Public Policy for the Private Sector Note No 178.

[7] This was certainly the case at the start of this research project in 1999. As of late 2002, a number of key INGOs were starting to focus on advocacy for best practice with respect to financial and cost recovery issues (for example, WSP, Water Aid) ; and a number of projects have been initiated that look at this scale up issue, for example the recently agreed DFID supported Water Aid ASEH project in Bangladesh.

[8] See for example DFID's 1998 Guidance Manual on Water Supply and Sanitation Programmes.

[9] Although as mentioned this has changed somewhat since 1998. A range of UK and international institutions now have a focus on sustainable financing in demand led WATSAN design, including Water Aid, ODI, IRC, WEDC, WSP Africa, the GWP Camdessus Panel, PWC and the EU Water Initiative among many others.

sustainable (WATSAN) policies and programmes for the poorest, so that these ODA transfers can be used to greatest effect;

- The reform process of many WATSAN sectors in developing countries often includes a longer-term strategy to encourage more private sector investment, in order to relieve the burden on public finances and increase the effectiveness of ODA support. Through encouraging the promotion of financial sustainability in publicly funded WATSAN programme strategies for the poor, it is hoped that commercial investors will increasingly "buy into" them over time. Hence, practical guidance on designing poverty-focused rural/peri-urban WATSAN ODA programmes that can leverage more private sector "buy in" over time is extremely relevant;

- Despite commonly inadequate levels of service provision, the objectives of national water strategies are often politically targeted toward the poor, for example, through the use of cross subsidies between urban and rural or commercial and domestic users to keep costs low or zero for poorer users. Conflicts can thus occur in reconciling these existing political priorities with the need for the strategic changes required to design and price WATSAN services for the poor in ways that encourage financial sustainability. Examples of "stand alone" successes (financially sustainable WATSAN services run for and by poor people) and the reasons for their success can be helpful in convincing developing country decision makers to think differently and act more efficiently in macro-economic terms - something that DFID is interested in helping to do;

- In their March 2001 paper entitled "Addressing the Water Crisis", DFID suggested that the implementation of demand-responsive approaches needs more work on both policy and practical levels. This is because to some, it seems inappropriate to ask poor people how much they are willing to pay for their WATSAN services, and then design a system based upon their answers. Evidence, as provided in this report, which shows that poor people can and, given the right circumstances, will pay for the WATSAN services they want is extremely useful. Further, guidance on how to achieve this in practice will also help to inform this often-fractious debate.

1.3 RESEARCH ACTIVITIES

Over the lifetime of this project, four key research challenges have formed the core of the investigation.

- Does the evidence suggest that poor people will pay for WATSAN services?

- Can some case studies of WATSAN projects for poor people, which claim to recover costs be found? How are they doing it?

- Do demand-focused exercises help in designing WATSAN projects that recover costs? How does the evidence suggest they can best be used?

- As well as public sector works, ODA and NGO projects, is there a role for the private sector in WATSAN service design and delivery in poor areas to help improve the chances of financial sustainability?

By pulling together the findings from these four research challenges, the aim was to develop a generic framework for a fluid, demand-focused approach for designing and implementing ODA-led WATSAN programmes; a framework that built on the experiences of what was found to work, but that can also maximise the chances of cost recovery among the poorest of customers in rural and peri-urban areas.

Over the project lifetime, the key research activities to address these four challenges have included the following[10]:

- Reviews and quantitative analyses of the demand assessment and cost recovery literature;

- Discussion with and surveys of key stakeholders, to draw together and analyse a comprehensive set of case study material on cost recovery initiatives;

- The identification of key similarities and differences within these case studies – what seems to be the critical factors for success or failure?;

- Analyses of those key WATSAN initiatives with the potential for long-term private sector partnerships.

Investigating these challenges and undertaking these activities have resulted in the output of this Final Report.

1.4 STRUCTURE OF THE FINAL REPORT

The Final Report is structured as follows.

- *Section 2 – What is Cost Recovery for WATSAN?* This section provides an overview of the theory about cost recovery in the design of WATSAN projects and programmes; it covers an examination of both financial and economic costs; and cost-benefit analysis issues;

- *Section 3 – What seems to be important?* This section provides an assessment of the current state of understanding and implementation with regards to cost recovery in rural and peri-urban WATSAN projects, drawing on both the results of a desk-based research (literature review, survey, meta analysis) and the results of field investigations in South Africa and India;

[10] The final logical project framework for the research is presented in *Annex A* to this report.

- *Section 4 – Cost recovery for the chronically poor*. This section looks at the challenge of designing and implementing financially sustainable WATSAN policies and programmes for the very poorest, who are usually found in much more remote rural areas or difficult conditions;

- *Section 5 – How to make it happen?* This is the key part of the report. It presents of a series of steps and recommendations outlining, from the evidence gathered, a generic framework that can help to maximise cost recovery in WATSAN programmes, in order to ensure a strong chance of financially sustainable initiatives for the poor in rural and peri-urban areas, particularly in India and South Africa;

- *Section 6* presents some brief concluding comments on the findings and possible directions for future work.

There are eight annexes to this report, presented in a separate volume.

- *Annex A* presents the logical framework for the project;

- *Annex B* presents a detailed overview of Cost Benefit Analysis;

- *Annex C* presents a literature review;

- *Annex D* presents an analysis of data obtained from a survey on cost recovery in water and sanitation;

- *Annex E* presents a meta-analysis of willingness to pay papers;

- *Annex F* presents a detailed overview and case studies in India from our field investigations;

- *Annex G* provides a detailed overview and case studies in South Africa from our field investigations; and

- *Annex H* presents a review of the financial instruments available to help fund water and sanitation programmes.

An overall bibliography is presented both at the end of this report and at the end of the volume of annexes.

2 COST RECOVERY – WHAT IS IT?

2.1 INTRODUCTION

Understanding what cost recovery actually means is very important. Many WATSAN practitioners, whether they are from the national government sector, the research community, consultancy firms, donor or development agencies or from (I)NGOs, enter the WATSAN sector from an engineering or public health background. As well as creating a disciplinary bias in what needs to be a multi-disciplinary sector, this can also mean that some of the finer points of finance and economics may not be as properly understood by many practitioners as they need to be. This can create misconceptions and misunderstandings.

This section, supported by *Annex B*, outlines the terminologies, the principles and the debates on the financial and economic issues that are of most importance in understanding cost recovery in the water and sanitation sector. These are:

- Understanding demand;
- Financial costs and levels of recovery ;
- Economic costs;
- Capturing costs through tariffs and subsidies;
- Using cost benefit analysis.

2.2 UNDERSTANDING DEMAND

Since the 1990s there has been a broad consensus among sector professionals of the usefulness of measuring peoples demand for WATSAN investments, and a broad awareness of the sorts of tools on offer to make a programme "demand-focused".[11] However, there seems to be little agreement on exactly what demand or a demand assessment is, when to do it, or how to use it (especially with respect to addressing issues of financial sustainability).

This section aims to improve an understanding of demand.

[11] For example see DFID (1998) Guidance Manual on Water Supply and Sanitation Programmes; DFID (1999) Guidance Notes for DFID Economists on Demand Assessment in the Water and Sanitation Sector; World Bank Water Demand Research Team (1993) The Demand for Water in Rural Areas; Determinants and Policy Implications World Bank Research Observer 8(1) pp 47-70; and World Bank-UNDP (1999) Making Rural Water Supply Sustainable: Recommendations from a Global Study.

2.2.1 Supply side approaches

Historically, (i.e., in the post-war Bretton-Woods Development context) WATSAN projects and programmes have been implemented using a supply side approach, with a focus on heath improvements providing the main rationale. This methodology tended to seek a one-size-fits-all, technical delivery solution to a perceived WATSAN supply problem. [12]

Commonly, the steps in a supply side orientated design process would be as follows:

- Identify an unmet need.
- Forecast approximate demand or capacity based on population and consumption patterns.
- Evaluate supply costs for the design.
- Estimate a level of affordability for the recipient population – five percent of income?
- Estimate a range of tariff scenarios that relate to possible solutions for capturing affordable levels of payment.
- Seek subsidies from elsewhere to cover the remaining supply costs
- Present the technical option to potential consumers - including costs and tariff implications.

This approach has generally been unsuccessful in terms of long run financial sustainability. Numerous examples demonstrate the reality of supply-side WATSAN services failing when communities have not maintained or replaced assets.[13] This may be because some projects were over-designed for their target population or were simply too expensive to maintain.[14] Or, in some cases, failure may be due to a local culture of non-payment, possibly exacerbated by the refusal to accept an inappropriate technology.[15]

Consequently, while the delivery of a reliable supply of WATSAN services may have been the engineering objective (using a technologically appropriate solution), a failure to undertake a comprehensive evaluation of community preferences has often resulted in inappropriate solutions. This in turn leads to low use and low buy in. It inevitably compromises cost recovery as users do not pay, opt out of the new supply and/or revert to their previous supply options when the technology breaks down or wears out. Hence, the problem of WATSAN infrastructure being over-designed, inappropriate, or not

[12] Black M (1998) 1978-1998 Learning What works: A 20 year retrospective view on International Water and Sanitation Cooperation. UNDP-World Bank Water and Sanitation Programme, Washington DC.

[13] For an excellent overview of these problems see Brookshire and Whittington (1993) Water Resource Issues in the Developing Countries. Water Resources Research Vol 29 No.7 pp 1883-1888.

[14] ibid.

[15] ibid.

matching the preferences of its intended users has been a common conclusion on the shortcomings of the supply side approach to WATSAN in the past.[16]

During the 1980s, the engineering literature increasingly recognised the limitations of technology-centric approaches to WATSAN services, and stressed the role of using more appropriate technology.[17] At the same time, there emerged a parallel emphasis on matching these appropriate technological options with community preferences for supply. These ideas emerged, particularly as a result of many lessons learned during the International Decade for Drinking Water and Sanitation (1981-1990). Creating a "demand-focused" project has become the nomenclature to use for this process; and "assessing demand" has been seen as the way to do this.

Commonly, the steps in a "demand focused" design process would be as follows:

- Identify an unmet need.
- Forecast approximate demand or capacity based on population and consumption patterns.
- Estimate a level of affordability for the recipient population – five percent of income?
- Evaluate supply costs for a range of (appropriate technology) designs that can help meet these needs
- Estimate a range of tariff scenarios that relate to possible solutions for capturing affordable levels of payment.
- Seek subsidies from elsewhere to cover the remaining supply costs
- Present the menu of appropriate technical options to potential consumers - including costs and tariff implications associated with each - often by matching lower quality or quantity service levels with lower tariff implications
- Estimate or elicit household willingness or ability to pay for their favoured option from this menu
- Identity, revisit and/or redesign an emerging option in the light of willingness to pay preferences

While useful, however, these appropriate technology approaches were (and are) effectively still taking a supply side approach towards service delivery. They remain rather poor in their understanding of the importance of what demand actually means in the wider policy and programme design process. They tend to de-emphasise the link between their "demand focused" designs (essentially a menu of technical solutions on offer, from which a choice can be made)[18] and the much wider, non-technical, bundle of preferences a user may

[16] For example, see Howe and Dixon (1993) Inefficiencies in Water Project Design and Operation in the Third World: An Economic Perspective. . Water Resources Research Vol 29 No.7 pp 1889-1894.

[17] An excellent reference list of appropriate technologies for WATSAN can be found via http://www.avalon.net/~cmissen/wellsprn/apptechstrat/atsbiblio.htm - a bibliography of appropriate Technology Strategies for Rural Water Development following the international decade of drinking water and sanitation.

[18] See for example http://www.itdg.org/html/water_and_sanitation/strategy.htm

have. These wider preferences may include the payment methods, the management systems, and the institutional arrangements on offer.

2.2.2 *Demand responsive approaches*

Economic thinking during the mid 1990s, mostly from within the World Bank, conceived of a "demand responsive approach" (DRA) for designing and implementing WATSAN services. This took the concept of designing for demand much further. The DRA approach suggested the need to match supply options more closely with the wider set of consumer preferences.[19] A fundamental element of the DRA is in understanding demand itself, and in unlocking some of the commitment and value that households place on appropriate methods of service delivery. DRA uses an iterative process to tailor the characteristics of supply options to user preferences. The process usually takes into account a wider number of options and characteristics about the investment than just technology, including the supply type, payment schedule, water volume allowances, local management, institutional arrangements, and price. Interestingly the question of how payment is collected includes the issue of who collects and the perceived end use of collected revenues. Thus, under the DRA approach, preferences are as much related to the acceptability of the prevailing institutional arrangements for water service provision, as they are to the technical option on offer.

Another key component of DRA was to suggest the linkage of people's willingness to pay to service charges, in an attempt to improve cost recovery:

"…the idea being that consumer preferences, including willingness to pay, should determine the level of service to be provided and charges set accordingly to recover actual costs" (Garn, 1998).

However, this aspect of DRA created some concern among rights-based proponents within the WATSAN sector.[20] DRA became seen as a (World Bank driven) approach that would potentially focus WATSAN project financing only on those communities who were willing and able to pay for it.[21]

This controversy overshadowed many of the useful observations contained within the DRA proposition. It helped to fuel a step away from the recognition of water as an economic good, established post-UNCED.[22]

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[19] See Garn 1998 and Jennifer Sara (1999) The demand responsive approach in rural water and sanitation. A background paper prepared for the Electronic Conference on DRA, May 17-July 2, 1999

[20] See for example http://www.jiscmail.ac.uk/cgi-bin/wa.exe?A2=ind9907&L=dra&T=0&F=&S=&P=1652. This is Water Aids initial summary of their perspective on the Electronic Conference on DRA, May 17-July 2, 1999.

[21] Ibid

[22] See for example http://www.worldwaterforum.net/index2.html, which is the Ministerial Declaration from the 2nd World Water Forum, March 2000 in the Hague, and includes the statement "to manage water in a way that reflects its economic, social, environmental and cultural values for all its uses" This compares to Principle 4 established pre UNCED in 1992 that 'Water has an economic value in all its competing uses and should be recognized as an economic good'" More information on the 2nd World Water Forum can be found at http://www.worldwaterforum.net/main.html

From an economic point of view however, DRA was a very positive step forward in the thinking about the WATSAN sector and cost recovery issues, linking all aspects of demand preferences to an iterative programme design process and to use charges. The weakness of the DRA debate was not its focus on linking willingness to pay to user charges, nor the fact that it suggested poor users will place a value on a broad range of the WATSAN investment's attributes (not just on the technical options); instead, its key weakness was to suggest that willingness to pay should be limited to cash affordability. This ignored the demand, which poor WATSAN users often have, for a range of financial support options that can be offered to help them pay for the delivery systems they want. Many successful INGO WATSAN programmes have elements of community financing at the heart of their success (as the examples in *Section 3* indicate).

Hence, what both the supply-side (or rights based) proponents and the DRA champions within the WATSAN sector both overlooked to a degree was the need to

- Understand demand fully from an economic point of view;
- Understand demand from the user perspective; *and*
- Think about how this understanding could best be translated into enabling policies and programmes for WATSAN delivery, as well as simply within particular projects.

2.2.3 Understanding demand

Demand has a very specific interpretation by economists. Demand in economic terms is equivalent to willingness to pay (WTP), which is equivalent to economic value.[23]

If one can observe a downward sloping demand curve (relating WTP and quantity) for a good, then at once there is some understanding of the magnitudes of value associated with larger quantities of the good. Accurate demand information allows an understanding of how much of something to supply and allows a price to be determined.[24] Thus, the quantity supplied can be delivered at just the right amount if one knows the level of demand.[25] Equally, in a fully functioning market, an efficient supply will be forthcoming

[23] It is clear that the demand-focused WATSAN debate is not universally built on this interpretation As an example of the "alternative" interpretations of demand, see Parry-Jones (1999) which shows an engineering interpretation of demand that is, in fact, very close to a definition of supply.

[24] Price can be set somewhere between the cost of supply and the WTP.

[25] Reasonable estimates on the shape of the demand curves for water exist. See Dale Whittington and Venkateswarlu Swarna "The Economic Benefits of Potable Water Supply Programmes to Households In developing Countries. Asian Development Bank, Economics and Development Resource Centre. January 1994. They recommend that a Power (Log linear) functional form for the water demand relationship is assumed, where $Q = a P^{-b}$; and where Q is water consumption, P is the price of water and a and b are constants.

if costs are fully recovered - i.e., if people face the economically correct price for the good. [26]

Hence, supplying too much of something relative to demand, or supplying a commodity that has different attributes to the ones demanded, are both inefficient uses of resources. This issue lies at the heart of the problem with a supply driven approach to WATSAN services.

Demand focused approaches to WATSAN service design, as currently practiced, rarely adhere rigidly to the economic understanding of demand as described above. There are good reasons for this. For example, technology constrains the WATSAN interventions that can be offered. The perfect demand and supply scenario also assumes a fluid world of perfectly divisible units that are independently demanded by, and supplied to, individuals who respond to market signals. But, WATSAN interventions tend to be lumpy and communities tend to be heterogeneous in their range of income sources and other socio-economic characteristics. This means that matching supply with demand is a real challenge for WATSAN practitioners and, as a result, cost recovery potential is often compromised.

Furthermore, in the context of assessing demand for WATSAN, the price/ product relationship for an intervention cannot always be observed. The location of the demand curve for each and every potential intervention cannot be exactly known. Instead, the relevant clues to an interventions' value have to be elicited by surveying communities in order to reveal their preferences for it, or by asking them to state their preferences (see *Annex B; Section 4)*. One has to design for demand properly, however, by combining ranges of scheme attributes (quantity, institutional arrangements, payment schedules etc) *and* prices, to encourage maximum buy-in by a target community. This is quite different from asking consumers to select (or value) one of a given range of WATSAN technical options.

Thus, although it is more difficult than asking users to choose one from a number of discrete WATSAN products, injecting the economic interpretation of demand for new WATSAN schemes or upgrades into practice, amounts effectively to the iterative design of a "new good" that the community either accepts or rejects; or gradually accepts over time and after a series of iterations. This is essentially a marketing approach to new product design. Rejection of a scheme is not tantamount to saying that the technology is not appropriate. Instead, it should be taken as a signal that more information on one or more of its attributes (nature of supply, price, tariff structure, etc.), needs to be elicited from the target community in order to get the design bundle right.

So, although it may not be possible to approximate a truly demand responsive world of fluid options for WATSAN investments, it should be possible to iteratively work through the basket of preferences users have, responding to

[26] A price that fully represents the scarcity value, or opportunity cost, of the good

their demands and pinpointing the best WATSAN service system to meet their needs. The challenge, however, is to move WATSAN investment planning in this direction. This is central to the cost recovery debate, as studies show users *are* willing to pay for water, with less concern solely about its price or their income than may be thought.[27] Again, their WTP reflects *preferences that are as much related to the acceptability of the institutional arrangements on offer for enhanced WATSAN provision, as they are to the technical option on offer*.

It is important to understand these demand related issues when thinking about how to interpret user demands for WATSAN, or when stating that a programme is demand focused.

2.2.4 Interpreting demand

As well as understanding what demand means in economic terms, it is also important to interpret the findings from any demand assessment surveys properly.

In general, when assessing demand, two approaches can be taken:

- An affordability analysis; or
- A willingness to pay study.

An analysis of affordability estimates households' current incomes and assesses what type of WATSAN service they could pay for or could be undertaken relative to their (cash) income. An analysis of willingness to pay estimates households' desire for improved WATSAN services.

These two approaches are not the same thing, though both are often called, inter-changeably, "affordability", "willingness to pay", or "demand assessment" studies. The difference between them can be seen as to whether the study assesses either a household's effective demand (their affordability of a service on offer), or their notional demand (their willingness to pay for a service they want).

These terminologies and the difference between them are explained below.

Many studies have shown that in rural and peri-urban areas, the marginal utility of money is high (people value hard cash highly), that incomes tend to be low or insecure, and that often people pursue a wide range of livelihoods whereby their wealth is tied up in a number of assets, and not just in disposable income.[28] This complexity of livelihoods means that households frequently have diverse strategies for accessing income to satisfy basic needs and that observed affordability (how would you spend the cash you have?)

[27] See Section 3 and *Annexes C and E* to this report.

[28] A good overview can be found in Carney D (ed) 1998 Sustainable Rural Livelihoods: What Difference Can We Make? DFID.

does not necessarily provide a good indication of preferences for appropriate service delivery.

Further, many studies have also shown that water is an inelastic good in relation to income or price (i.e., demand, or WTP, for water does not really change significantly in relation to its price or people's income) and that innovative ways of paying for water such as through savings groups, revolving funds, etc., can be useful.[29]

These studies seem to be contradictory. On the one hand, rural/ peri urban people are poor and value their cash greatly. They have to pursue many strategies to survive. And yet on the other hand they will still pay (or are currently paying) quite a lot for water in relation to their income, and will find ways to pay for it. How do these two observations stack up?

A key area of the demand literature, which may help explain this contradiction, is an identification of a difference between notional and effective demand. Sen (1981) in *Poverty and Famines*, illustrates effective demand by considering a shop selling food in a famine area, where many people cannot afford to buy the food. The need for food is great, but only a few people can buy it, therefore, effective demand for food is small. Pearce (1981) defines effective demand as the "*aggregate demand for goods and services which is backed up with the resources to pay for them.....*distinguishable from …… " *'notional demand', which refers to a desire for goods and services*".[30]

Hence, credit or other financial assistance and the type of payment structure on offer in a WATSAN product, can help to translate a person's notional into effective demand, rendering affordability assumptions less useful.[31] Given the economic understanding of demand, these differences may be of central importance to the WATSAN debate on financial sustainability.

For example, although many public sector policies have historically focused on the issue that poor people cannot or should not pay for WATSAN services, based upon the notion that they simply cannot afford to,[32] many research studies have also shown that poor people do in fact, often pay a high price to access WATSAN services and that they are willing to pay for improved WATSAN services.[33] There are also many examples of WATSAN projects, which have found that innovative ways of paying for water such as through savings groups, revolving funds etc can be useful.[34] In short, the way payments and support structures for payments are designed can also influence how much people will pay, even if they are extremely poor.

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[29] S*ee Section 3 and Annexes C and E to this report.*

[30] Pearce DW (1981) Cost-Benefit Analysis, 2nd ed., MacMillan.

[31] See for example, McPhail, A.A. (1993a) The Five Percent Rule" For Improved Water Service: Can Households Afford More? *World Development*, 21(6), pp963-973.

[32]As in India and South Africa (see Annexes F and G)

[33] For example, World Bank 1993

[34] Such as the Mvula Trust in South Africa and WaterAid in India (see Annexes F and G)

Hence, the affordability (or effective demand) of the consumer can be fixed, but if they have access to other assets (labour, livestock, credit, savings schemes) or if the overall design of the WATSAN scheme particularly suits them, then their notional demand may be quite high. If the right mechanism can be designed and implemented to translate their notional into effective demand for WATSAN services therefore, and it is part of the WATSAN product on offer, then they may be willing and able to pay beyond their observed and immediate income constraint.[35]

The supply and price balance is also of interest here. The higher WTP, accessed by tapping into the poor user's notional demand via financial support and a well-designed scheme, is usually associated with a volumetric fee, or a flat rate charge for an improved service. It is unlikely that this higher WTP for water services expressed by the very poor would be translated into a significantly higher level of water consumption, with demand not managed by price or quantity constraints. Thus, the notional demand for the scheme may translate into a higher WTP for the more convenient or reliable service, rather than for (a lot) more water. Quantity will still be constrained either by price, or by other systems of supply control, built into the scheme's design.

With a better understanding of the context of demand (what poor WATSAN users may want, in all aspects of programme design), it becomes easier to look at the financial and economic issues (and misunderstandings) surrounding costs; and how aspirations for cost recovery could be raised, if these demands were met.

2.3 *FINANCIAL AND ECONOMIC INTERPRETATIONS OF COST RECOVERY*

Real economic constraints on central government funding have led to the consensus view that communities themselves have to carry some of the costs of WATSAN service provision.[36] However, the definition of cost recovery has become confused as disciplines - principally engineers and economists - talk at cross-purposes, mixing financial and economic interpretations of cost recovery and not fully understanding the components of either.
There is a subtle distinction between financial or economic cost recovery, which gives different perspectives on how one views the sustainability of WATSAN investments.

- It is possible to discuss cost recovery in relation to the setting of prices/tariffs according to financial costs for a given project or programme.

[35] The analogue may be to ask someone in the UK how much they would be willing to pay per month for their child's education at a specified, good quality, fee paying school. I can't afford it even though I would like to, may well be the common response, unless you offer me some form of savings scheme or other specific credit facility to help pay for it. Anyhow, the preference may not be for that particular school, but instead for another (and even then boarding for some, day school for others etc etc). After a number of iterations it could be reasonably expected to have identified a product the parents would be interested in and willing to pay for.

[36] See for example, Garn, 1998; Katz and Sara, 1998; Mvula, 1998; 2000; Rall, 1998; Sara, 1998; Breslin, 1999; DWAF, 1999a; Goldblatt, 1999; Jackson, 1999; International Research Centre (IRC), 2000.

This is the common point of reference for most WATSAN stakeholders in the cost recovery debate; however

- The economic value of water however is also important. This implies a broader assessment to society of the cost of supply and the value of water in its competing uses. It is possible to consider both tariffs and economic appraisal using this broader set of prices, or values. More economists take this viewpoint when talking about cost recovery.[37]

While it is possible to talk about cost recovery in a project, programmatic or policy sense that isolates the financial investment from the wider water resource environment, in doing so there is a risk that the project may be financially sustainable without necessarily being economically so (i.e. it recovers its financial costs, but uses up groundwater too fast, without paying for the cost to society that this incurs). Strictly speaking, therefore, cost recovery should be inextricably linked to the idea of treating water as an economic good.

We take a detailed look at the issues of recovering the financial and economic costs for WATSAN below.

2.4 *RECOVERING THE FINANCIAL COST OF WATER*

2.4.1 *Introduction*

In its simplest terms, cost recovery can be equated with financial sustainability. Water supply is not free and WATSAN programmes that raise revenue from users to cover operation and maintenance costs are likely to be financially autonomous in the short run. Further, WATSAN programmes that can derive a suitable rate of return or surplus from their assets are likely to be financially sustainable in the longer term. Plainly speaking, a WATSAN investment will not be financially viable if costs are not recovered somehow, at least to pay fuel bills and to operate and maintain the pipes and equipment the scheme relies upon to function.

It is then a question of defining the different types of financial cost that need to be recovered.

2.4.2 *Defining financial costs for WATSAN*

In order to create clarity of understanding, it is helpful to group together financial cost categories while noting that much of the financial discussion assumes a level of accountancy understanding that may be currently lacking in some communities or local WATSAN implementers.

[37] The distinction between these two interpretations has been further complicated by the simultaneous and related debates about treating water as an economic good and the meaning of a rights based approaches to WATSAN supply.

A useful benchmark for the clarification of financial costs of WATSAN service delivery has been made by OFWAT - the UK price regulator for water. OFWAT groups together WATSAN service delivery costs into three categories:

- Costs of Operations;
- Costs of Capital Maintenance charges;
- Costs of Servicing Capital (the return on capital)

An adaptation of OFWAT's definition of these financial cost categories follows, focusing on the costs of WATSAN programmes in developing countries.[38]

Costs of Operations.

Operating costs include employment costs, power costs, costs of materials and hired and contracted services. They exclude the costs of third party services and exceptional costs such as restructuring (as these can vary considerably from year to year and distort underlying trends). Costs related to assets such as depreciation and infrastructure renewals are excluded from operating costs. Capital spending and the costs of financing capital are also excluded.

Adapted from OFWAT, operating costs for WATSAN programmes can be broken down in two complimentary ways for reporting purposes – by function and by activity.

Table 2.1 Suggested Breakdown of Operating Costs

Function	**Water Service**	•Water resources and treatment •Water distribution •Programme Management Activities
	Sewerage (sanitation) services	•Sanitation Treatment and disposal •Programme Management activities

[38] OFWAT produces both a glossary of terms and definitions for water related accountancy; and an annual report on water and sewerage unit costs and the relative efficiencies of water companies in England and Wales. The following definitions are drawn from these reports. Refs:
http://www.ofwat.gov.uk/pdffiles/finaldets99pgloss.pdf+ofwat+cost+definitions&hl=en&ie=UTF-8 and
http://www.ofwat.gov.uk/aptrix/ofwat/publish.nsf/AttachmentsByTitle/opex2001-02.pdf/$FILE/opex2001-02.pdf

Activity	**Direct Costs**	• Employment • Power • Hired and contracted services • Agencies • Materials and consumables • Bulk Imports (water form a bulk supplier) • Other
	General and support	
	Programme Management operating expenditure	• Community services • Associated research or dissemination services • Any national taxes etc • Doubtful debts • Other

Costs of Capital Maintenance Charges

WATSAN service deliverers also incur capital maintenance costs to maintain the capability of their asset systems to ensure continuity of service for current and for future customers. Adapted from OFWAT, WATSAN programmes can break down their capital maintenance costs in two complimentary ways for reporting purposes. These are by operational asset classification and by accounting asset clarification.

- Operational assets mean mostly the above ground assets (well heads, surface distribution systems, water treatment works, local pumping stations, etc.). A current cost depreciation charge is applied to these assets, based on their expected economic life.

- Accounting assets mean mostly the below-ground, or long-term assets (water mains and sewers and also dams and reservoirs that last a long time). They are most relevant if the WATSAN programme contains large-scale capital works. For these assets an infrastructure renewals charge can be applied. This is an annual accounting provision for expenditure on the renewal of infrastructure assets, charged to the profit and loss account.

The distinction is drawn between these two ways of reporting capital maintenance charges, because of the way above ground (or shorter term) and below ground (or long term) assets are generally managed, operated and maintained. This can often cause confusion (especially in relation to the use of replacement or depreciation charges) and clarification is important.

A current cost depreciation charge means that the (above ground) assets are shown at their current cost (their replacement cost) at the time of producing the financial accounts for the WATSAN programme each year, rather than at their historic cost (their original purchase price) less depreciation where

appropriate (depreciation is a measure of the consumption, use or wearing out of an asset over it's the period of its useful economic life). Current cost depreciation charges are used for the above ground assets in order to help deal with the problem of showing the effect of inflation. This is due to the extensive nature of capital assets required for WATSAN programmes; and that historic costs (the original purchase price minus depreciation) often do not reflect the asset's true worth.

In short, to calculate costs of capital maintenance charges for programme infrastructure, long-term (big, immovable, high sunk cost assets) are gradually depreciated on a historical cost basis - the costs of their maintenance reflected via a depreciation charge; for shorter-term (smaller, more portable, lower cost assets), replacement costs should be calculated to reflect the costs of their capital maintenance charges.

Non-infrastructure assets related to the WATSAN programme can be depreciated on a historical cost basis.

Table 2.2 suggests a way of distinguishing between these capital maintenance costs charges for a WATSAN programme.

Table 2.2 Suggested Breakdown of Capital Maintenance Costs

Operational asset classification **(Current replacement costs used to value assets)**	**Water Service**	• Water resource facilities Water treatment works • Water distribution mains • Pumping stations • Management and general
	Sanitation service	• Sanitation treatment works • Sludge disposal works • Pumping stations • Management and general
Accounting asset clarification **(Original purchase price) minus deprecation charge used to value assets)**	**Infrastructure assets**	• Underground systems • Reservoirs • Dams
	Non infrastructure assets: **- Operational assets**	• Boreholes • Operational Land • Offices, depots and workshops • Residential properties directly connected to the programme • Land held for the purpose of protecting the wholesomeness of water supplies • Non operational plant machinery
	- other tangible assets	• Vehicles

Costs of Servicing Capital (the return on capital)

The return on capital is the difference between the income generated from WATSAN provision (via user charges, etc.) and the costs of the programme - both the operating costs and the capital maintenance charges. This is the minimum return that:

1. Providers of capital (usually Development Banks or Government lenders) require to pay for their investment in or loan to a WATSAN programme given its perceived risks. In this case, it is a cost the WATSAN service provider has to cover as it represents the level of remuneration the programme has to pay back to the providers of capital for the programme (a probable combination of a donor, a development bank and/or the Government). The cost of servicing capital may cover the interest repayments owed on a loan; repayments of both the interest and the principle of the loan, or a return in the form of profits delivered to equity shareholders.

2. Generates an adequate surplus to upgrade or extend the programme over time. The return on capital should also aim to accumulate a fund that can be re-invested in expanding or improving the project in the future, on top of replacing the existing capital assets (covered by the costs of maintaining capital charges). Hence, the rate of return to providers of capital may also be affected by the requirement for internal funds to be put aside to finance future investments.

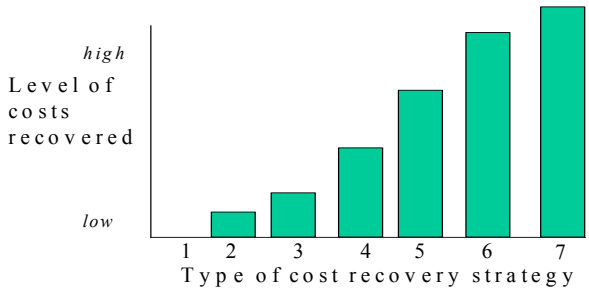
The return on capital can also be influenced by the level of charges set and amounts recouped; by differing costs of capital to start with; by any gains from increased cost efficiencies that can be made; and by the timing of previous capital expenditures within the programme.

2.4.3 Recovering Financial Costs

Interpretations of financial cost-recovery can be based on different policy objectives as to the degree to which the three "groups" of cost are to be recovered. If the policy objective is to meet social goals with the WATSAN programme, then often decisions are made with less consideration of a recovery of any costs, such that none or only some costs of operations are considered for recovery. This will prevent a system's long-term financial sustainability. On the other hand, if the policy objective is for the programme to ensure it can pay for itself partially (maybe as its start up capital costs were grant financed by ODA) or fully (if, as a result of a loan the costs of servicing capital are also to be paid back); then more of the programmes costs must be identified at the design stage, and considered and accounted for in a cost recovery strategy.

Figure 2.1 outlines some of the possible gradations of financial cost recovery that can be achieved within a WATSAN programme

Figure 2.1 Graduations of Financial Cost Recovery



The different types of cost recovery strategy can be described as follows.

1. None, or very few, costs are recovered and revenue is less than the cost of operations. The WATSAN programme is financially unsustainable, but it may need to be implemented for short-term emergency assistance purposes. Users may face a zero cost tariff, via free or un-metered water subsidised through other means.

2. Some costs of operations are recovered. Here, water charges may be set on an assumed low ability to pay or some other socio-economic factor or rule of thumb. These charges may be quite unrelated to the actual cost of supplying the water. This strategy is often used in WATSAN programmes, where affordability is perceived to be very low and other, equity or poverty focused issues, take precedence.

3. All costs of operations are recovered. Both levels 2 and 3 are not financially sustainable, but there may be a more pressing social need for WATSAN ODA assistance that dictates only costs of operations can realistically be recovered by the programme from its user population. Continued grants or cross subsidies will be required to sustain the programme.

4. As above, plus some costs of capital maintenance charges are recovered. This level ensures a limited degree of financial sustainability. It assumes that ODA or other grant-based assistance will be forthcoming every time assets need major repairs or replacing. Many WATSAN programmes operate at this level of cost recovery.

5. All costs of operations are recovered and all costs of capital maintenance charges are recovered. Achieving a cost recovery strategy at this level ensures a degree of financial sustainability. This is the minimum level of cost recovery that ODA or Government based WATSAN financing should be aiming for. It assumes however, that costs of capital are free, and no

programme will have to generate a return on capital, either to pay back loans or to expand/ upgrade services in the future.

6. As above, plus all (required) costs of servicing capital are recovered. This level is equivalent to long run marginal cost or full cost recovery. At this stage the WATSAN programme can be considered to be financially sustainable. Even if costs of finance are not being serviced for a lender, a return on capital can be calculated and accounted for, in order to accumulate funds for expansion or upgrade. The water charge may be calculated on the basis of an average incremental costing (AIC). This is a charge based on the forward-looking requirements for replacement and incremental upgrading (and is a proxy for a long run marginal cost). [39]

7. Long run marginal cost plus (marginal) environmental costs (most likely reflected in the scarcity or opportunity costs of water) are recovered – full cost recovery plus.

It is up to the policy maker to decide on the level of cost recovery to be attained, on whether the required level of cost recovery can be progressively achieved over time, and on whether scope exists for charges to be levied differentially on different sectors of the population (e.g. cross-subsidies to protect those unable to pay).

Our analysis of WATSAN programmes[40] suggests that covering most to all costs of operations and some costs of capital maintenance charges is the primary cost recovery objective of public sector or donor agencies involved in rural WATSAN service delivery (somewhere between 2 and 4 in *Figure 2.1*). Very few WATSAN programmes with ODA financing begin to recoup all costs of capital maintenance costs or any costs of servicing capital.

2.5 THE ECONOMIC VALUE OF WATER

2.5.1 What is the economic value of water?

In relation to *Figure 2.1*, the economic value of water concerns cost recovery level 7 – the environmental or more commonly, the scarcity cost of water.

Whilst capturing some of the recurrent financial cost of WATSAN projects is the primary focus of most programme managers, thinking about the economic

[39] Calculation of the Long Run Marginal Cost is controversial in water economics; hence in practical terms the measure is often substituted by a more convenient approximation know as the Average Incremental Cost. This defines the unit cost of water service $/m3 equal to the net present value of annual costs to implement project /discounted change in quantity of water consumption due to project (m3).

The concept of the long run marginal cost (or its short hand approximation of Average Incremental Cost) sets the tariff decision in the context of the whole project life. This means that the calculation has to undertake some form of time discounting so that current prices can account for future costs although factoring the future into current payment decisions is quite difficult to conceptualise.

[40] See Section 3.

value of water, which a programme is abstracting/ using/ discharging is also important. The economic value of water is attracting increasing attention, as water resource policies with a river basin management component begin to be implemented (for example the Water Framework Directive; the EU Water Initiative; the Nile Basin Initiative). Within a context of increasing water scarcity and competition for secure water supplies, the issue of economic pricing and efficient allocation will only increase over the coming years.

The Dublin Declaration (resulting from the 1992 International Conference on Water and the Environment in Dublin) is a useful starting point for a discussion of water as an economic good.[41]

"Water has an economic value in all its competing uses and should be recognized as an economic good. 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. Past failure to recognize the economic value of water led to wasteful and damaging uses of the resource. Managing water as an economic good is an important way of achieving efficient and equitable use, and of encouraging conservation and protection of water resource".

To paraphrase, whatever we do with water has a value. If we drink it then it has a value and, were we asked to express our willingness to pay for this value, all of us might express some positive amount. Similarly, were the water used to irrigate crops then its value can be inferred as part of the output value of the same crops. But water is scarce and there is competition between uses such as human consumption and agriculture. In general, society does best by allocating water to its highest value uses.

An economic value must also imply a net value – a value of the use of consumption (a benefit) minus the (wider) cost of supply. The Dublin Declaration implies that water is rarely costless to access or supply. This means that the cost of supply must be assessed in order to derive fully the highest net value uses on offer. As well as the different financial costs of supply, therefore, some uses may have higher environmental costs than others, and some of the wider benefits of supply may have higher value than others (human health, for example). If these economic costs and benefits are taken into account, in addition to financial costs, then the use of large volumes of subsidised water for agriculture, for example, may not look so attractive relative to using water for drinking water supplies.

On the other hand, were water allocated to domestic use over agricultural use, and were the agricultural value of water higher than domestic willingness to pay, we would say that each unit allocated to domestic use incurs an opportunity cost. That is, the loss in value incurred as a result of allocating the last unit to one use rather than another. Opportunity cost ultimately dictates whether a society has allocated its water to its highest value uses.

[41] The text of the Dublin Declaration can be found via http://www.wmo.ch/web/homs/documents/english/icwedece.html#introduction. More information on the Dublin Conference can be found at http://www.wmo.ch/web/homs/documents/english/icwedece.html

Thus, the full value of water as an economic good is built up by a consideration of financial costs plus (usually) environmental (externality) costs and opportunity (scarcity) costs. By advocating an *economic* good approach the Dublin Declaration sets a general "first best" principle for how water should be allocated in society. In essence, the point is that allocating water to the highest net value uses is a way to maximise net social welfare from water use. Moving towards an economic approach to valuing water and water pricing based on these economic values is one way to attempt to maximise social welfare. This holds whether we are undertaking cost-benefit analysis of water projects and attempting to value the benefits, or simply setting economically efficient tariffs.[42]

This discussion on economic cost recovery is very much more pertinent as an objective at the policy level - it abstracts from the individual project or programme, which in most cases will be struggling with more limited but more immediately relevant financial cost recovery issues. For many non-economists this focus on an abstract concept of aggregate welfare is simply a distraction, therefore, that complicates a delivery agenda. However, as water scarcity increases, the distinction is worth highlighting as a first best WATSAN policy pricing benchmark.

2.5.2 *Implementing the concept of opportunity cost in practice*

How likely is it that a price for water incorporating financial and economic costs, as shown in level 7 of *Figure 2.1* will prevail as the cost recovery strategy? The answer is that in practice, it is very unlikely.

As Pearce (1999) explains, this is because the water sector is characterised by various *property rights regimes,* which severely inhibit the ability of different, competing water users to trade, in circumstances of scarcity – where there are opportunity costs of using water.[43]

Opportunity costs arise when there are competing uses for water within a region (a river basin, for example). A unit of water abstracted for a new rural WATSAN scheme, may have been diverted from a higher value use – from consumption in an urban setting, for example, where users would have paid more for the same unit, for example. Pearce suggests that the most efficient way to allocate water resources within a region when this situation occurs (in order to achieve a so-called equi-marginal valuation of water) is to allow the trading of water rights.

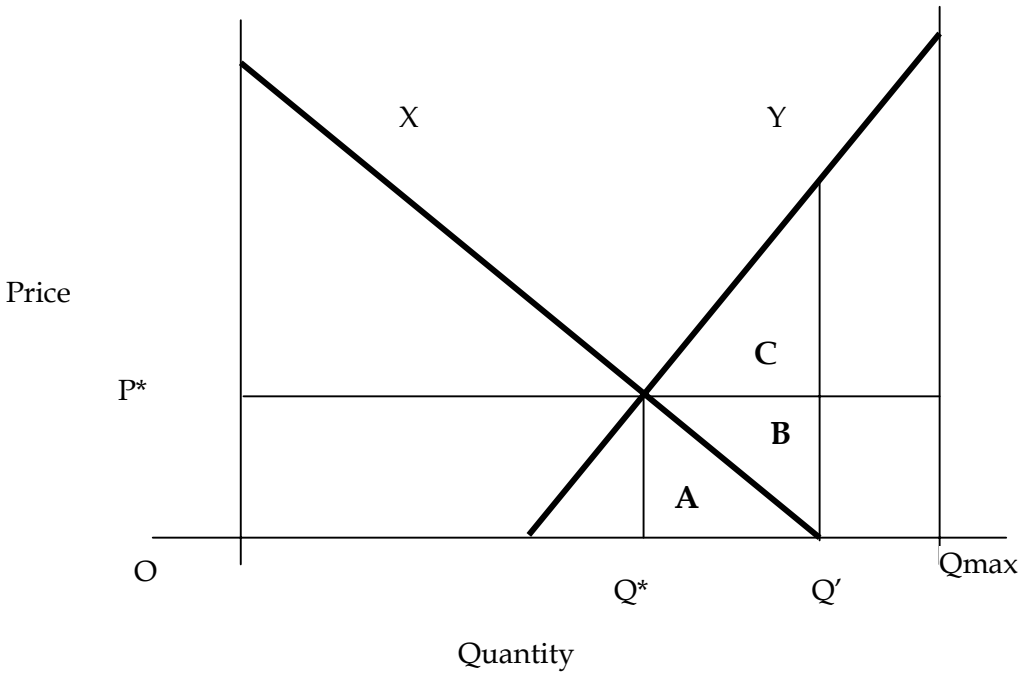
The inefficient point Q' in *Figure 2.2* overleaf illustrates this very important concept. The downward sloping line (X) represents demand and the upward

[42] Note that these objectives are related. A technically correct economic appraisal of a water scheme will use economic values for the main output (water). A financial appraisal for a village scheme on the other hand may be based on a tariff that does not necessarily have to relate to the correct economic price.

[43] David Pearce (1999) *Water Pricing: Conceptual and Theoretical Issues.* Paper for European Commission and Instituto da Água, Portuguese Ministry of Environment Conference on Pricing Water: Economics, Environment and Society. Sintra, Portugal, September 6-7, 1999. CSERGE, University College London.

sloping line (Y) represents supply. The point where the two cross, Q*, is the equilibrium point.

Figure 2.2 ***Equi-Marginal Valuation***



If user X has the *prior right* to water, (i.e., X is given the right to the water, perhaps because he or she was the first person to use the water, and must use the water or lose the right), then it is highly likely that X will use the water up to the point where his or her marginal benefits go to zero, i.e., up to point Q'. Between Q* and Q', however, the *opportunity cost* of the water exceeds the value of the water to X at price P* - someone else (Y) would pay more for it. The optimal amount of water for X to use at price P* is Q*. Beyond that, Y would be willing to pay more for its use (there is a scarcity cost).

In theory, a fairly simple institutional change would ensure that the allocation of water use comes closer to Q* than Q'. What is required is that X and Y be able to *trade the rights to water*. If there was trade, then, regardless of the fact that X may have prior rights, he or she would be willing to sell the rights to Q*Q' of water provided the revenues from the sale exceed area A. On the other hand, Y will be willing to buy the rights to Q*Q' water from X provided he/she spends less than area A+B+C. Since [A+B+C] > A, there are clearly some potential gains to be had from this trade.

As Pearce (1997) suggests, while the example is extremely simplistic, it does establish the very important principle that marginal economic values for water are very unlikely to turn into prices unless water rights are tradable.

Furthermore, as there are three general groups of financial cost which, if each is paid for, can increase the level of cost recovery; so there can be progressive gradations of water trading allowed within a region, which allow increasing

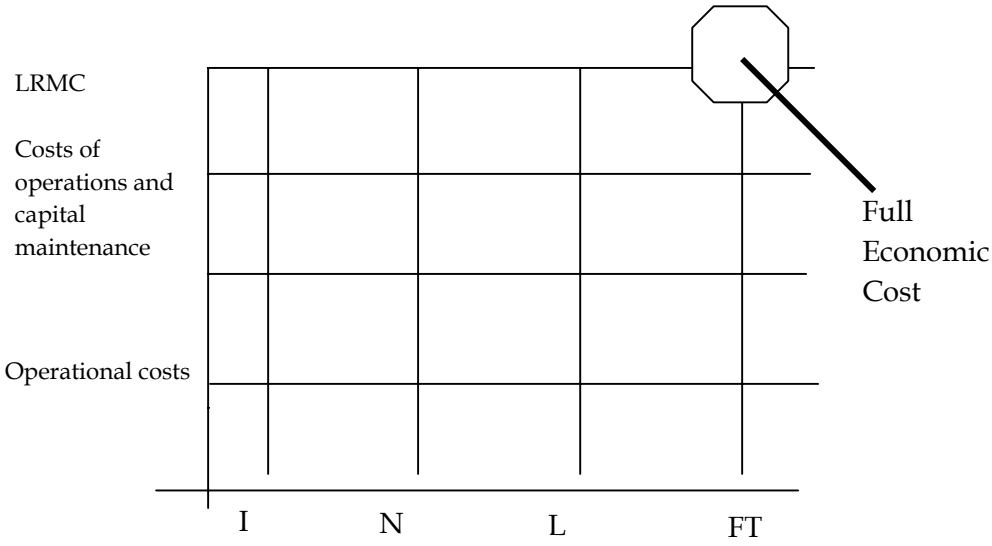
levels of the full opportunity costs of water to be realised. One user could use the water exclusively; or it could be sold to immediate neighbours; or it could be sold generally within a local area; or full trading within the whole region could be allowed.

Clearly, however, implementing a fully cost recovering financial water pricing/ opportunity cost water-trading policy is extremely difficult to do in practice. In a helpful clarification of the discussion, Briscoe (1996, 1997) adopts a useful schema to illustrate the best *combination* of (usually) financial supply costs (levels 1 through 6 in *Figure 2.1)* and opportunity costs (gradations of scarcity cost captured within level 7 of *Figure 2.1*), to ensure the most efficient allocation of water within a region. An adaptation of this schema is shown in *Figure 2.3* below.[44]

Supply cost is on the vertical axis and the most relevant cost is shown as long run marginal costs (LRMC). Other cost concepts are shown, such as costs of operations and costs of operations plus capital maintenance charges. The horizontal axis shows a range of opportunity costs. Again there is a gradation up to the point where water is fully tradable.

The 'full economic cost' point is shown to be where both the LRMC *and* the opportunity costs are taken into account.

Figure 2.3 Adaptation of Briscoe's cost scheme



- LRMC: long run marginal cost
- I = situation when water is exclusively used by one user
- N = situation when water can be sold to neighbours
- L = situation when water can be sold within a local area
- FT = full trading.

[44] Adapted from J.Briscoe, 1997. Managing water as an economic good, in M.Kay, T Franks and L Smith (eds), *Water: Economics, Management and Demand*, E and FN Spon, London, 1997, 339-361. and J Briscoe, 1996. Water as an economic good: the idea and what is means in practice, in International Commission on Irrigation and Drainage, *Sixteenth Congress*, Cairo, 1996 (available from John Briscoe at the World Bank, Washington DC).

2.5.3 Summary

In terms of (this simplified introduction to) an *economic*-based approach to water pricing, a number of points become apparent.

An economic pricing policy is not just theoretical – it is important. Where there are competing demands for water within a region, environmental or scarcity (opportunity) costs can be quite high, even if the financial cost of supplying water within the WATSAN programme itself is low. These costs should be included if the aim is to achieve full cost recovery.

The most effective way to account for environmental or opportunity costs is to allow rights to water to be traded within the region, or the river basin in question. As the gradation of allowable water trading with the region increases, this will reflect the degree to which the full economic cost is being covered.

Whatever degree of economic cost is included, however, such an *economic* approach to pricing can only be implemented at the regional or river basin level; it cannot realistically be done at the project or programme level alone. Economic water pricing is a policy issue. This is because a WATSAN project or programme can at best only aim to implement a fully cost recovering financial charge (equating price to the long run cost of supply) for its own services; it cannot implement a fully flexible trading policy for water between its own and other WATSAN programmes or other water users (in the agricultural sector, for example). This has to be a policy decision affecting all water users.

The concept of water as an economic good, however, is admittedly rather abstract in the sense of focussing on an outcome that is socially optimal yet consistent with welfare declining for some members of society. As a simple example, economic prices for water may equate to higher tariffs (or trading prices for water) than some can afford.

Accordingly, the Ministerial Statement of the Second World Water Forum adds to the Dublin Declaration by making reference to the need to address social issues too, in the price of water. It is important to note that this does not mean that an economic good and a "rights based" approach are mutually exclusive. Rather, ways should be found that reconcile the first best pricing policy approach (applying scarcity pricing) with providing access to the poorest at an affordable price. Enacting a rights based approach to water within the context of a policy based on economic cost recovery is therefore perfectly possible, but is likely to require some form of cross subsidy, or access to financial support or grants, for the very poorest.

Hence, while accurate economic pricing represents what economists call a theoretical first best, pricing in practice is likely to be an approximation. Different pricing regimes should simply be seen within the context of how close to "first-best" they are; not all consumers need face these prices.

Finally, there are clearly multiple policy components, which must be represented in an economic cost recovery strategy for water resources, such as financial sustainability, social equity, environmental sustainability, profit (if the private sector is involved) etc., as well as scarcity. These issues must be balanced against each other in reality and there are trade-offs. The balance must also be set in the context of the fact that WATSAN user charges and tariffs are perhaps the only form of instrument a policy can use to address these competing objectives. Thinking about the type of tariff or subsidy mixes on offer to poor people, and the costs they can be geared to capture, therefore becomes important.

2.6 *CAPTURING COSTS*

The goal of any tariff (also known as a user fee) is to capture as much of a person or household's willingness to pay for the service as possible without being so high as to drive consumers to unsafe alternatives.

Tariffs are generally calculated with guidance from a national or state policy, although the public or private sector can also calculate them for an individual programme. Whether designed by the public or private sector, tariffs can be designed within a pro-poor policy framework. Importantly, user fees are generally focused on covering the ongoing costs of supply, while connection fees (to a network, or installation costs for pumps) are charged separately.[45]

Although tariffs and subsidies can be used to improve cost recovery *and* raise consumer awareness of the economic and financial values within the water and sanitation services sector, tariffs are often set much below cost-recovery levels and publicly-run water utilities are often under political pressure to keep them down. Therefore *tariff reforms* could prove a critical element for increasing contributions to the sector.

Some of the benefits of tariff reform in relation to cost recovery include:

- Funding comes from water users themselves, reducing dependence on public funds or ODA;
- Any increase in water demand could generate associated revenues to finance expansion (although this depends on the level of tariffs when compared to long-run marginal costs);
- Cost-recovery tariffs make the service attractive for private sector participation and can therefore help to attract additional forms of private finance.

[45] It is useful to distinguish between **charges and tariffs. A c**harge is amount set for a given amount (of water and sanitation service in this case); for example, the charge could be US$3 per m^3 of water. A tariff, however, is a schedule of prices for (for water and sanitation services) set by an institution (the Government). So the overall tariff may be an increasing block tariff, but the charge for water per m^3 within each of these blocks may be different.

Below are some descriptions of common types of tariffs and subsidies within the water and sanitation services sector that could be implemented if a reform process were to take place.

2.6.1 *Tariffs*

The most common types of tariffs include:

- Single Tariff
- Increasing Block Tariff
- Lifeline Tariff (also known as a Social Block Tariff)
- Output-Based Tariff

Some commentators also advocate the use of a so-called two-part tariff.

Single Tariff

Single tariffs can also be known as a uniform volumetric charge. Under a single tariff structure, consumers pay a certain amount per m^3 (or other volumetric measure), sometimes differentiated by type of user (residential, commercial, agricultural). The benefits of the single tariff are in its simplicity; however, there are no incentives for conservation, and rates may not be high enough to recover the costs of supply. A way of measuring consumption is required.

Increasing Block Tariffs

Increasing block tariffs are by far the most common tariffs for water services. Under a block tariff scheme, users pay increasing amounts as level of consumption rises. For example, an increasing block tariff's scheme may be that consumption from 0-15 litres/day costs $1, consumption from 15-30 litres/day costs $5, and consumption from 30 litres and up/day costs $10.

The number of blocks can vary, although most block tariffs range from between 3 and 10 blocks. In theory, block tariffs allow the poor to benefit from water services at low prices. However, this is not necessarily the case. If many poor consumers share a single water connection under a block tariff, this drives prices much higher than if they each had a private connection (because absolute consumption is higher due to consolidation of per capita consumption in one water connection). Further, most block tariffs often include such a large initial block that the poor and non-poor both benefit, minimising the pro-poor impact of the subsidy and reducing the viability for effective cost recovery.[46] A way of measuring consumption is required for the tariff to operate.

[46] Boland, John and Dale Whittington. 2000. "The Political Economy of Water Tariff Design in Developing Countries." *In* The Political Economy of Water Pricing Reforms. Oxford University. http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2000/08/14/000094946_00072705342983/Rendered/PDF/multi_page.pdf

Lifeline Tariffs (also known as social block tariffs)

A lifeline tariff aims to address the needs of the poor by providing a basic level of consumption (for example, using the WHO guidelines of 20 litres per person per day for basic needs) either for free or at very low cost, with a form of block tariff for consumption above the lifeline level. The goal is to provide basic services for the poorest of the poor. The South African Free Basic Water Policy can be viewed as a kind of social block tariff policy (see *Section 3* and *Annex G*) While this tariff works for those poor who have network connections, the poorest of the poor are often not served by networked services and do not benefit from the lifeline tariff. A way of measuring consumption is required for the tariff to operate.

Output-based Tariffs

With an output-based tariff, users pay tariffs in exchange for an improved service and based on a schedule of improvements promised by the water supplier. This system is fairly simple to implement and readily understandable by consumers, who can literally see the results of their payments. While output-based tariffs represent an innovative and perhaps the most progressive approach to tariff design, they are not yet widely used.

Two Part Tariffs

Some commentators advocate the use of a two-part tariff.[47] This consists of either a fixed monthly credit (or rebate) paid below a volumetric cut off point for small water users; or a single volumetric charge set equal to the marginal cost, which is payable above a certain level of water usage, for higher water users, plus a minimum monthly charge paid by all customers to avoid zero or negative bills.

The fixed monthly credit amount payable by lower water users under the two-part tariff can be chosen so that it would produce the same total revenue, when applied to a water use distribution model similar to that which would be anticipated under a rising block tariff. Above the cut off point the full marginal cost of water is paid for; and the monthly credit rebated. The minimum monthly charge is paid throughout.

Hence, the very poor would probably receive lower bills than under the rising block tariff, and higher water users would face the correct economic price to influence their water consumption accordingly.

2.6.2 *Subsidies*

The need for subsidies to help provide WATSAN services to the poor is understood and widely accepted. It is generally agreed that while tariffs

[47] ibid.

should cover the costs of supplying water, subsidies are necessary to ensure that the poor are able to afford connection charges or to help pay their bills.

Different types of subsidies achieve different purposes. Some types of subsidies are better than others, depending on the type of project, and the level of public capacity to manage and administer subsidies. In this way, subsidies and tariffs are highly interrelated.

Direct subsidies

Direct subsidies aim to target the poor through government payment of a portion of poor consumers' water bills. Direct subsidies are used in Chile and Colombia[48], and have been effective to varying degrees. One drawback to direct subsidies is their high administrative costs, which may be prohibitive for governments experiencing budget constraints, or lacking public administrative capacity. In Chile, for example, subsidy recipients are determined through a national socio-economic survey that provides information on households to multiple government agencies offering subsidies for many different public services.

Cross subsidies

Within a networked system, cross subsidies are used to assist lower-income consumers through surcharges either from wealthier consumers, or from commercial and industrial users. Here, the lower income consumers are effectively undercharged for water, while the higher-income consumers are overcharged. Cross subsidies can also be used to expand access to water services, if the customer base is large enough to absorb the extra connection costs. Some West African countries structure their cross subsidies like this, cross subsidising access for rural users from the urban centres. Under this type of cross subsidy, a portion of existing customers' bills would go towards expansion costs for a utility. In this way, existing customers subsidize new customers. This latter use of cross-subsidisation is more sustainable from a cost recovery perspective, as recurrent cross subsidies for usage tend to target the poor ineffectively, while providing incentives for the higher-paying users to seek other sources of supply, constraining the system.[49]

Cross subsidies therefore can work, but require a lot of monitoring and regulation. They may not be the first-best solution to help subside the poor (or help reduce their poverty), within a WATSAN programme.

[48] Foster, Vivien, Andres Gomez-Lobo, and Jonathan Halpern. 2000. "Designing Direct Subsidies for the Poor: A Water and Sanitation Case Study." Public Policy for the Private Sector, Note No. 211. World Bank, Washington, D.C. http://www.worldbank.org/html/fpd/notes/211/211foste.pdf

[49] Yepes, Guillermo. 1999. "Do Cross-Subsidies Help the Poor to Benefit from Water and Wastewater Services? Lessons from Guayaquil." Water and Sanitation Program, Washington D.C. http://www.wsp.org/pdfs/working_subsidy.pdf

Output-based subsidies

Similar to output-based tariff structures under an output-based subsidy operators are provided with subsidies from the government to address gaps in cost recovery based on the service delivery levels and other factors that are specified as benchmarks to pro poor development. Some applications of output-based subsidies include subsidies for expanding coverage (where increasing connections in poor areas are emphasised); to support a transition from an existing tariff structure to a more cost-recovering tariff level (with benchmarks including increased collection rate)[50]; and subsidising wastewater treatment by awarding a company for the level of pollution removed (or prevented). In countries or regions where connection is not an issue, output-based subsidies may be used for consumption.[51]

Significant research on subsidies and their effectiveness has been conducted over the last several years, with the conclusion that subsidies should be provided only as part of a pro-poor framework, and should be used, generally, to promote access to basic water and sanitation services rather than to provide ongoing support for consumption. Reasons cited include the high administrative costs of providing effective subsidies, and meeting the needs of the poor who are not connected to a network.

Credit

In addition to subsidies, it is important to note that credit programmes can complement or replace subsidies. Some research suggests that better access to micro-credit should reduce the gap between service affordability and consumer's WTP, thus helping low-income households to be able to afford basic services (Sanda and Oya, 1998). Thus a credit scheme can have the same desired effect as a subsidy programme.

Some practitioners in the water and sanitation sector believe that sustainable financing strategies for WATSAN projects actually require the complementary development of micro-credit and savings mechanisms to build a source of financing to pay for the improved levels of services and operations and maintenance. Credit binds people to repayment and can lead to growth and sustainability of the system (World Bank/ UNDP 1999). However, credit schemes in practice have had mixed results, and therefore the design and use of credit schemes requires careful attention to be effective.

[50] Brook, Penelope J. and Alain Locussol. 2002. "Easing tariff increases: Financing the transition to cost-covering water tariffs in Guinea." In, Contracting for public services: Output-based aid and its applications, Penelope J. Brook and Suzanne M. Smith, Editors. World Bank, Washington, D.C. http://rru.worldbank.org/Documents/08ch3.pdf

[51] Gomez-Lobo, Andres. 2002. "Making Water Affordable: Output-based consumption subsidies in Chile." In, Contracting for public services: Output-based aid and its applications, Penelope J. Brook and Suzanne M. Smith, Editors. World Bank, Washington, D.C. http://rru.worldbank.org/Documents/07ch2.pdf

2.6.3 Tariff and Subsidy choices for different WATSAN programmes

Clearly, the most effective mix of tariff and subsidy choices to maximise the chances of capturing costs, will differ between and within programmes. Different sorts of technology (wells, boreholes, gravity fed systems, private taps, sewerage systems, sceptic tanks) will require different packages (or ladders) of connection charges and recurrent payments. The issue of whether the scheme can be metered or not will arise, and this will affect the design of tariffs and subsidies. Schemes in peri-urban areas may have slightly more cash-rich users than those in rural areas, or at least users who have some cash throughout the year.

This study has not focused on the issue of optimal tariff and subsidy choices in detail, but more on what the level of costs are that these instruments should cover. In general, however the following guidance seems to hold:

- A first best financial pricing strategy will aim for coverage of long run marginal costs (all three financial cost categories), probably calculated via an Average Incremental Cost approach;

- A volumetric approach, however simple, is the best way forward to form the basis of a tariff;

- An increasing block, lifeline or two-part tariff has the most poverty focus. The aim, however, is to keep the tariff simple, easy to calculate and easily understood;

- An output-based element to the tariff could be useful to get first time payees on board, by matching proven performance from the WATSAN programme to a stated commitment from users to pay once those improvements come on stream;

- The use of credit to smooth lumpy connection payments or to provide assistance to the poorest to ease access to improved WATSAN opportunities can be extremely useful. Credit, rather than subsidies, can help lock people into a repayment process. Cross-subsidisation from rich to poor within a WATSAN programme, can be complex to monitor and regulate, and ongoing direct subsidies to help with payments can be difficult to target. Neither type of subsidy actively helps to reduce poverty. Instead, subsidies to help provide access may be more useful from a poverty reduction perspective;

- For chronically poor potential customers, *Section 4* to this report looks at implementing WATSAN programmes that have a much more explicit poverty reduction focus to them. This can be a useful strategy to take within the programme for the very poorest, where large subsidies are considered necessary to help them pay.

2.7 THE USEFULNESS OF COST BENEFIT ANALYSIS

2.7.1 Cost Effectiveness Analysis

As mentioned earlier in this section, must of the focus on WATSAN programmes and projects' costs is financial. Hence, most investments are evaluated in financial terms using some form of cost-effectiveness analysis (CEA). This means that a public policy or water supply target is set (for example, supply *x%* of households with improved services by a certain date, or increase supplies to y m^3 per year within 5 years) and the financial cost of meeting this objective (preferably based upon an aggregation of the financial costs set out above) is sought.[52]

A good policy example of where a financial form of CEA may be applied is the Millennium Development Goal to *"halve, by 2015, the proportion of people without sustainable access to safe drinking water"*. Donors, INGOs and (particularly within the context of direct budgetary assistance) national governments may well be tempted to use CEA to compare different options for enhanced WATSAN coverage in order to meet this Goal or some other poverty reduction strategy target; they may subsequently select various programmes on this basis –i.e. what's the cheapest way financially to reach the MDG for water and sanitation?

Although financial CEA is a practical and commonly used method for WATSAN evaluation, it does suffer from three key weaknesses, however.

Firstly, under CEA only an indirect evaluation of project *benefits* is made, if at all.[53] This is a particular problem for WATSAN projects in very poor areas, as benefits (such as cost or time savings, income generation or environmental and heath benefits) are often difficult to quantify and can be left out of the financial evaluation process. Instead, an *economic* approach to appraisal may be better as this can capture the value of many more of the WATSAN programme benefits (and costs). As discussed, identifying the economic costs and benefits of the programme is also (and increasingly) important.

Secondly, financial CEA tends to retain a design focus on evaluating just the financial start up costs of different programme options. Less design attention in the CEA is paid to the challenge of recouping the programmes' long-term recurrent costs, other than perhaps using some rule of thumb affordability assumptions about user payment flows. Again, as discussed, it is often the long run costs, their size and how best to capture them that remains a key but less well addressed part of WATSAN programme evaluation. Weighing up the long run costs against the benefits the investment is offering its users, can better help to guide and justify charging decisions.

Thirdly, using financial CEA alone for WATSAN appraisal means that attempts

[52]A common additional component within the CEA process, which has emerged over the last few years, is to identify how best to use any public or ODA finance for the programme to attract or catalyse further private sector finance into the sector.

[53] Hanley and Spash 1993.

to identify the particular set of WATSAN service options, or combinations of options, which would benefit *different* sets of customers within the population, are rare. Usually, CEA helps to find the lowest cost "generic" programme option; perhaps calculated on an average cost per connection basis for example. As a result, the least cost option to achieve the WATSAN strategy targets may deliver much lower net benefits to society than, say, an option, which is only slightly more costly to implement, but which includes a range of service delivery choices at different costs. Consequently the least cost option may be of less interest to many of its users, and they will be less interested in paying for its services.

We argue that using economic (or social) cost benefit analysis in WATSAN programme evaluation could help to better focus the evaluation process on the three key issues mentioned above, thus strengthening the chances of long-term sustainability.

2.7.2 Social Cost Benefit Analysis

Social cost benefit analysis (SCBA) seeks to compare the economic benefits of a programme with its economic costs.[54] The aim of SCBA is to find the programme, which maximises benefits and minimises costs, thereby selecting the investment which society would most prefer (and its users will prefer to pay for). In SCBA it is the *ratio* of costs to benefits (especially over time), which becomes important. This ratio can be measured as the net (present) value of the programme; allowing options for different programmes to be compared, even if their costs and benefit flows are quite different. SCBA is therefore a useful tool that can be used at many stages in the project cycle (eg, to help guide iterations of technical and financial design toward an optimum, and in monitoring and evaluation).

SCBA also allows a range of non-financial costs and benefits (the social impacts) of the programme to be included (such as health and time savings benefits; environmental and sustainability impacts). The challenge, however, is to find robust and accepted methods of monetary valuation for these non-market costs and benefits. [55]

Thus, while SCBA may have the identification of a net value of all of the programme's costs and benefits as its general aim, it is often difficult to value *all* of the associated costs and benefits. Many practitioners highlight this problem as the key reason not to use SCBA, but to rely instead on a (mostly) financial CEA.

[54] An economic benefit can be defined as anything that increases human well-being and an economic cost as anything that decreases human well-being. Human well-being is determined by what people prefer.

[55] There are a range of approaches to estimating benefits in monetary terms (see Annex B), and it is useful to note that for some benefit streams (eg health), revealed preference studies may be more useful to undertake the WTP or stated preference studies.

This monetary valuation problem, however, does not mean that SCBA exercises for WATSAN programmes should be foregone. Instead, it is practical to simply take the monetary valuation component as far as is credible and to leave the remaining potential benefits of the WATSAN programme in non-monetary terms. For example, estimates of cash savings can be included quantitatively in the benefits stream; and potentially difficult-to-measure benefits such as relative environmental improvements or enhanced water resources sustainability can be taken into account through detailed qualitative assessments and where possible using physical units of measurements.[56]

Annex B provides a step-by-step guide on undertaking a cost-benefit analysis for a WATSAN programme. *Section 4* looks at the particular usefulness of following the SBCA framework in helping to design programmes for the chronically poor.

2.8 CONCLUSION

There has been a growing awareness, especially since the conception of demand responsive approaches by the World Bank in the mid 1990s, of making WATSAN interventions more focused to the demands of their users and more focused on recovering costs. It is generally recognised that a focus on supply-side projects does note provide long-term solutions.

However, differing interpretations about issues such as demand and cost recovery and their various components (affordability, willingness to pay, financial costs, economic costs, tariffs, cost-benefit analysis, etc.) have made the promotion of truly demand-focused investments slow.

An important point in the demand debate has often been missed. Cash-based affordability (or the effective demand) of the poor consumer can be fixed, but if they have access to other assets (labour, livestock, credit, savings schemes), or if the overall design of the WATSAN investment particularly suits them, then their desire for its services (their notional demand) may be quite high. If the right support mechanisms (financing systems, for example) can be designed and implemented to translate their notional into effective demand, then they may be willing *and* able to pay for the improvement beyond their observed and immediate income constraint. Affordability, therefore, becomes less of an immediate constraint to designing demand responsive, cost-recovering WATSAN programmes.

This point illustrates that understanding and interpreting demand for WATSAN, therefore, means thinking about a much wider number of options and characteristics for the investment than just technology, including payment mechanisms and schedules, water volume allowances, local management systems, institutional arrangements, pricing structures and financial assistance

[56] In the case of a "do-nothing" economic evaluation, of course, the costs of doing nothing (continued and worsening WATSAN supply conditions) will be listed as the intangibles, next to the cost savings benefits of not investing in the project.

frameworks. All of these components are important to designing and delivering truly demand responsive, cost recovering WATSAN initiatives for the poorest and they affect the content of both policies and projects.

Hence, injecting a more *economic* interpretation of demand for new WATSAN schemes into practice, amounts effectively to the iterative design of a "new good" that users gradually accept over time and after a series of (usually local) iterations. This is essentially a marketing approach to new product design. For example, rejection of a programme's design is not tantamount to saying that the technology is not appropriate. Instead, it should be taken as a signal that more information on one or more attributes (nature of supply, price, tariff structure, etc.), needs to be elicited from the target population in order to get the design bundle right.

Also, when thinking about the costs of a WATSAN programme, it is important to distinguish between its financial and economic costs, and to understand the costs within each of these two categories properly.

Financial costs are the common point of reference for most WATSAN stakeholders in the cost recovery debate. These costs should be broken down into the costs of operations; the costs of capital maintenance charges; and the costs of servicing capital (the return on capital). Cost-recovery can then be based on a clearly understood policy objective, as to the degree to which these three "groups" of cost are to be recovered.

If costs of operations are recovered and all costs of capital maintenance are recovered, then this ensures a degree of financial sustainability. This is the very minimum level of cost recovery that ODA or Government based WATSAN financing policies should be aiming for, as it assumes money for capital investment is free. It is up to the policy maker, however, to decide on the level of cost recovery to be attained, on whether the required level of cost recovery can be progressively achieved over time, and on whether scope exists for charges to be levied differentially on different sectors of the population.

The economic value of water implies a broader assessment to society of the value of water in its competing uses, usually within the context of scarcity or sustainability issues. Although it is possible to talk about cost recovery in a purely financial manner, this runs the risk that a particular programme may be financially sustainable without necessarily being economically so (for example it recovers its financial costs, but uses up groundwater too fast, without paying for the cost to wider society that this incurs). Strictly speaking, therefore, cost recovery is inextricably linked to the idea of treating water as an economic good. More economists take this viewpoint when talking about cost recovery.

While accurate economic pricing represents what economists call a theoretical first best, pricing in practice is likely to be an approximation. Different pricing regimes should simply be seen within the context of how close to "first-best" they are - not all consumers need face these prices. Ways can be found that try

to balance this first best approach, while providing access to others at an affordable price. This is likely to require some form of cross subsidy, or access to financial support or grants, for the very poorest. However, economic cost recovery is very much more pertinent as an efficient allocation objective at the policy level - it abstracts from the individual project or programme, which in most cases will be struggling with more immediately relevant financial cost recovery issues. Hence, in the first instance polices should focus on establishing the principles of "first-best" economic prices for allocating water between sectors and the transfers of resources that will be needed to help the poorest users in different sectors cope with the transition; WATSAN programmes should be encouraged to at the very least recover operating costs and all costs of capital maintenance charges.

The main mechanism for capturing costs is through tariffs. Understanding and thinking about the type of tariff or subsidy mixes on offer to poor people, and the costs they can be geared to capture is therefore important. Output based tariffs and subsidies seem like useful mechanisms to raise the financial levels of cost recovery slowly upward.

Finally, in terms of evaluating different WATSAN programme designs, social cost benefit analysis should be used more widely as tool for seeing how the (economic) benefits of a WATSAN investment can be maximised in relation to its costs. This approach is preferable to more commonly used financial cost effectiveness analyses, because it can help decision makers to:

- Focus the design on what the economic benefits are from the WATSAN service (and compare them to what poor people want);

- Study the net costs and benefits to users in the long term, and better focus attention on the costs that need to be recovered, where they might come from and how they might be justified;

- Think about how to provide different WATSAN services (and different payment levels for these services) for different consumers within the programme, while achieving (or maximising) an acceptable cost-benefit ratio, or internal rate or return, overall.

3 COST RECOVERY – WHAT SEEMS TO BE IMPORTANT?

3.1 INTRODUCTION

This section summarises our findings from an exploration of what seems to be important in relation to implementing practical cost recovery strategies for rural and peri-urban WATSAN projects. It draws on a range of evidence from our research investigations, conducted over the duration of this project. These investigations included:

- A literature review of the demand assessment and cost recovery debate in WATSAN;
- A survey sent to WATSAN agencies, practitioners (NGOs, the private sector) and IFIs, asking about their thoughts and experiences on demand assessment and cost recovery;
- A meta-analysis of previous WTP papers on WATSAN;
- Field study findings from WATSAN programme and project visits to both South Africa and India.

Annexes C through *F* contain the details on each of these investigations. They can be found in a separate volume to this Report.

3.2 THE LITERATURE REVIEW

3.2.1 Introduction

A literature review was undertaken at project start, October 1999. This concentrated on two areas:

- A review of papers, reports, overviews and conference proceedings about demand assessment, willingness to pay and cost recovery, focusing particularly on the debate about whether or not to use demand responsive approaches (DRA), and the application of the "water as an economic good" concept to WATSAN projects and programmes. Much of the WATSAN literature of the mid 1990s addressed these debates;
- A review of work since the mid 1990s, particularly from the Work Bank, on issues relating to investments in infrastructure services, regulatory polices, private sector participation and their combined effect on the poor, especially in peri-urban and rural areas. These sorts of financing, investment and regulatory policy (management model) themes are now often at the forefront of the WATSAN debate.

There has also been a review of some of the output and follow up to the 2nd World Water Summit in the Hague, September 2000, which heralded the beginning of a return to a discussion about social entitlements and subsidy in the WATSAN provision debate. Other issues, such as water supply within a livelihoods context, and the emergence of the concept of output-based aid, and its relevance to WATSAN delivery in rural areas, have also emerged during the research period.

Each of these issues is reflected in the literature review, which can be found in *Annex C* to this report. Some of the highlights are synthesised here. It should be stressed, however, that we do not consider our literature review to be comprehensive, but rather an overview of the key issues in the cost recovery debate in WATSAN projects.

3.2.2 Interpretations of Cost Recovery

Three core issues emerged from the range of interpretations on cost recovery.

1. At a minimum, costs of operations and costs of capital maintenance charges should be recovered in order for the programme to be financially sustainable, but ideally part-payment of the costs of servicing capital should take place too. One off subsidies are tolerable.

2. Local institutions, policies and a people-focus are as important as the level of charge in order to achieve cost recovery in a WATSAN project.

3. Some form of user focused demand assessment and financial support framework can help in the setting and repayment of the service charge.

3.2.3 Demand Responsive Approach

In terms of assessing demand, a demand responsive approach (DRA) has been a key concept. The term first appeared subsequent to the Dublin Declarations, in 1998, in a World Bank note from the Water Demand Research Team.[57]

In this note, the concept of a DRA was put forward. DRA was an approach to WATSAN that attempted to respond to consumer demands and which aimed at making projects more sustainable than supply-driven approaches. The following were listed as key characteristics of DRA:

- Community members make informed choices about:
  - Whether to participate in the project;
  - Levels of service, based on willingness to pay;
  - When and how their services are delivered; and
  - Financial management and management of question and maintenance;

- Governments play a facilitative role;

[57] Garn M (1998) Managing Water as an Economic Good – the transition from supply orientated to demand responsive services. World Bank Water Demand Research Team.

- An environment enabling private (and NGO) participation is created; and;

- An adequate flow of information is provided to the community.

Another important aspect of the DRA approach was the suggestion that communities compete for funds for WATSAN projects, in order to help the agency decide whether to provide support to a particular community and what type of system and level of service to provide. This was a controversial idea.

The research conducted by The World Bank between 1987 and 1990 was used to back up the DRA model.[58] This study found that household income, though often important, was not the overriding determinant of demand for improved WATSAN services. The following three factors (in no order of importance) were found to be significant:

- Socio-economic characteristics: household income, gender, education, occupation and assets, among other local demographic characteristics;

- Characteristics of supply: the relative merits of the proposed water supply (over the existing source), particularly relating to cost, quantity, quality and reliability; and

- Household attitudes towards government policy in the sector and towards other organisational representatives with whom local citizens deal.

For many NGOs, however, the DRA debate was fundamentally flawed – how could poor communities compete and pay for WATSAN projects? The DRA model was also contiguous with the problems of the contingent valuation survey – how could you realistically ask a poor community what they would be willing to pay for a WATSAN project?

Partly as a result of some of these problems with the DRA model, there was a shift away from the DRA agenda in the statements from The Hague, toward a more rights based approach for WATSAN delivery.

3.2.4 Methodologies for Demand Assessment

DFID's 1998 Guidelines on Water and Sanitation Projects are broadly representative of the range of methods for assessing demand, and suggest the following:

- Participatory Rapid Appraisal (PRA) facilitated by community members (for low cost, low-tech options);

[58] Demand for Water in Rural Areas: Determinants and Policy Implications. Briscoe et al, World Bank Research Observer, January 1993.

- PRA facilitated by a trained researcher (suitable for most technologies and can be complemented with other approaches);

- Revealed preference approaches (suitable where substantial water problems exist, in conjunction with PRA models);

- Contingent valuation studies (for informal strategic decisions on level of service; cost recovery policy and large investment programmes);

- The 'Benefits transfer' approach, under which results in one location are used to estimate benefits in a 'similar' location is *not* recommended.

Although there is a broad consensus of the usefulness of measuring peoples demand for WATSAN projects, and the sorts of options of offer to do so, there seems to be little agreement on how to implement a demand focused policy in practice, so as to design financially sustainable projects, in a cost-effective manner.

3.2.5 Using Demand Assessment to Design Cost Recovering Projects

The key issues that determine whether demand assessment leads to sustainable financial projects seem to broadly consist of the following:

- Tackling affordability and associated income generation issues, as well as identifying demand;

- The methodology used to elicit willingness to pay values and the translation of demand assessment information into design and tariff decisions;

- Demand variances within the community; and

- The financial management capacity of the community.

3.2.6 Occurrence of Demand Assessment in the Project Cycle

At the earliest stage in the project cycle, most agencies identify their WATSAN projects from country sectoral strategy and country programmes, or more recently from Poverty Reduction Strategies.

Many development agencies agree that the identification of specific communities for water and sanitation provision may be the most important step in project design.[59] However, the issue of identifying demand to ensure financial sustainability tends to be sidestepped slightly, and instead agencies identify appropriate communities that they can work with, early in the project cycle-perhaps at the pre feasibility stage. For example, indicators that can

[59] Rahardjo et al, 1994

often influence the selection of communities are leadership, organisation capability, and successful completion of other community projects.

In general, although there is a consensus as to the usefulness of measuring peoples demand for WATSAN projects, there seems to be little agreement on how and where in the project cycle demand assessment techniques should be used.

3.2.7 Affordability

A range of references suggests that the 3-5% rule of thumb is misleading.[60] For example, the World Bank, the UNDP-World Bank Water and Sanitation Programme, the Asian Development Bank and DFID recognise that the assumption that people would be willing to pay 3 to 5 per cent of their income on water is arbitrary. They generally recommend that affordability studies are put in the context of consumer coping mechanisms and water payments.

In general, the literature shows that WTP has proven to be a more successful indicator of demand than ability to pay. Some studies have shown higher WTP for poorer households, compared to a standard of around 2 to 3% spent on water services among high-income households. These results indicate that rural communities may prefer service levels above the minimum often prescribed and that rural or peri-urban water and sanitation projects may not actually require extensive government subsidies.

DFID's 1998 WATSAN Guidance Manual is slightly contradictory in relation to its encouragement, on the one hand, to assess demand and its approach, on the other, to affordability. Although the manual agrees that affordability "rules of thumb" have been shown to be a poor guide to WTP for WATSAN service improvements, the guidelines do suggest that affordability should be interpreted on a case-by-case basis. Hence, the identification of notional demand for WATSAN services is potentially subsumed by the recommendation to explore cheaper, more affordable (and therefore supply oriented) options for the community.

Designing an appropriate incentive compatible form of credit scheme seems to be instrumental in stimulating disadvantaged groups to initiate income generation activities and to enhance their group solidarity. Some practitioners in the water and sanitation sector believe that sustainable financing strategies for WATSAN projects actually require the complementary development of micro-credit and savings mechanisms to build a source of financing to pay for improved levels of services and operation and maintenance - that the financing issue should be considered in the wider context of poverty eradication, for both sanitation and water services. These practitioners feel that credit binds people to repayment and leads to growth and sustainability of the system.

[60] See for example, McPhail, A.A. (1993a) The Five Percent Rule" For Improved Water Service: Can Households Afford More? *World Development*, 21(6), pp963-973.

This seems to be a centrally important point that potentially links the issue of capturing notional demand to the design of a reasonable standard of WATSAN service supply that can become financially sustainable.

DFID's position on this area is relatively weak, however. The 1998 Guidance Manual suggests that demand assessment studies can help in the design of payment mechanisms that are appropriate for poor people. They can identify, for example, people's preferences for weekly as against monthly payments, or for credit arrangements to spread over time the capital casts of connection fees. However, it does not make explicit the link between designing a WATSAN project and designing a complementary financing mechanism alongside.

3.2.8 Approaches for Recovering costs

Tariffs

The literature agrees that an efficient tariff policy should be one that reflects the marginal economic costs of supply. Since most water is consumed by a relatively small number of consumer groups (large residential, commercial and industrial users) a marginal cost based price for all consumption other than required for basic health purposes would generally be an efficient, equitable and financially viable policy.

In order to satisfy equity and financial objectives, it is generally recommended that communal standpipe users be charged a tariff linked to the operation and maintenance of a basic level of service (also considering affordability) and individual connections be charged the average incremental cost of the operation and maintenance, depreciation and capital cost of supply.

The literature agrees, however, that tariffs can also be used as instruments of social policy, such as for the redistribution of income based on equity concerns. A commonly observed approach is to use a tariff schedule that consists of a low subsidised "lifeline" rate for the first 6-8 m^3 used per month, and a higher rate for all additional consumption. The lifeline rationale underlies the Free Water Policy introduced in South Africa. However, it is important to understand how such policies can compromise cost recovery when the 'free' block is at or near the average household use for smaller schemes.

Where metering is possible, the literature seems to concur that a two-part tariff is an improvement on increasing block tariffs as it can achieve the intended income distribution element required and eliminate the within-block regressivity of an increasing block tariff. The first part is a capacity charge that determines a user's maximum usage during periods of excess demand plus any other fixed costs The second part is a usage price equal to marginal cost.

The two-part tariff confronts most households with the full marginal cost of supply.

Subsidies and Microfinance

In peri-urban areas, the review found that cross-subsidisation policies can fail to provide incentives to the service provider to bill or collect from many poor users, thus aggravating cash flow problems. In fact, social tariffs may create disincentives for these providers to expand their services to low-income areas. Unrealistically high rates to industrial and commercial users can force them to look for alternative supplies, thus reducing market share and, in the process, exacerbating the cross subsidy problem.

Alternatives to subsidising water tariffs in peri-urban areas, therefore, could be the use of marginal cost pricing for water plus a cash subsidy for the poorest, which is unrelated to water use, or a form of credit given to the user, to help pay back a loan for a WATSAN connection or investment. It is usually preferable to subsidise access to a service rather than consumption.

DFID's approach to subsidies for water supply schemes is that they should be justified on income redistribution grounds, and not on direct health benefits. DFID suggests that subsidies for sanitation may be needed to correct for 'market failures', which arise because inherent demand does not lead to the level of investment in those sanitation services which would be most efficient for the economy and society.

It is also suggested that better access to microcredit should reduce the gap between service affordability and consumer's WTP, and therefore help low income households afford longer term options. Thus the issue of capturing notional demand is linked to the design of a reasonable standard of WATSAN service supply, leading to financial sustainability.

Decentralisation

Policy, legal and regulatory frameworks that mandate and support both the decentralisation of, and increased participation in, WATSAN service delivery by the private sector and community groups, are seen to be vital for the success of financially sustainable projects.

There is an increasing realisation that governments must make the transition from being a 'provider' of services to becoming a 'facilitator'. National agencies should be responsible for finance, long term planning, standard setting and technical assistance. Private sector participation can assist in the provision of demand driven services, but specific attention should be given to the needs of demand driven services for poor people from the outset of contract and regulatory framework design. If this does not happen, then there is a risk that the resulting regime actually creates further barriers to the provision of such services.

For rural areas, many water sector studies recommend that the only sustainable manner of managing water supply and sanitation is for community management models to manage their own water and sanitation supply systems. However, this can be difficult in cases where the legal and

regulatory frameworks have not formalised the status of such organisations. This can create very practical difficulties for such organisations, especially if they are tasked with collection of tariffs and financing of maintenance, without a clear legal entity allowing them, for example, to open a bank account.

The particular management model adopted for water and sanitation projects seems to impact significantly on the level of demand. Communities may distrust a national government's capacity to manage the operation and maintenance of water and sanitation projects efficiently, and consequently their demand for such projects decreases. Willingness to pay for investment costs has been found to increase dramatically when communities, rather than government agencies, have control over how funds are spent. Here again, however, community cohesion around a community–based service authority requires a degree of transparency in relation to funds management. Distrust and non-compliance with otherwise successful projects can be minimised by the addition of training support to community managers.

The review found that the main types of support needed by communities to help sustain their own WATSAN project management services are:

- Legal and institutional frameworks that recognise community water management groups and provide a clear division of responsibilities;
- Training to develop community capacity for operation, maintenance and financial management;
- A strong system for the provision of technical backup.

Regulation[61]

Specifically in relation to this study, two key questions on regulation include:

- Does independent regulation have a role to play in the improved provision of demand driven WATSAN services for the poor?
- What is the potential of pro-poor regulation for cost recovery?

In relation to the first question, the review found that independent regulation is most often introduced with large-scale private sector participation, when the potential for monopoly abuse is perceived to be high. However, such independent regulation also provides an opportunity for increasing the demand responsive nature of service provision for the poor.

However, to date most independent regulatory agencies do not have a clear pro-poor remit, nor do they possess capacity to understand the demands of

[61] A key reference here is Tremolet and Browning (2002) The Interface between Regulatory Frameworks and Tri-Sector Partnerships, Business Partners for Development Water & Sanitation Cluster Research and Surveys Series

poor customers. Current research is therefore focused on developing the concept of pro-poor regulation and overcoming the challenges of its implementation, particularly in three key areas that affect the poor - economic, environmental and public health. Also, tri-sector partnerships have been identified as a potential mechanism for allowing regulatory institutions to interact with other agencies and the poor, without jeopardising their independence and transparency

The literature also suggests that independent regulation has the potential to improve the long-term success of cost recovery policies, in a number of different ways:

- Firstly, an independent regulator provides the institutional means to effectively implement and monitor the progress of a cost-recovery policy, shielded from political interference;

- Secondly, competition regulation can establish a level-playing field for the main utility and alternative providers. The entry of such alternative providers can extend coverage to new areas, or increase collection rates, thus aiding cost-recovery objectives;

- Thirdly, price regulation can develop price and tariff structures that maximise cost-recovery, minimise subsidies and maximise provision of services to the poor;

- Fourthly, quality regulation can allow for service level differentiation between categories of providers and/or consumers. Allowance for different standards can increase cost-recovery levels, by reducing the costs of service provision.

Private Sector Participation[62]

The literature is generally agreed that public utilities do not have the financial or political autonomy to set tariffs at levels that recover costs. An element of private sector participation in WATSAN projects and programmes is therefore seen as a way of helping to ensure financially sustainable pricing policies.

Current research on how regulatory and legal frameworks can be formed so that large-scale private providers of water and sanitation services can effectively deliver water services to the poor, whilst ensuring that the sector's financial viability is assured, points to the following key issues:

- The needs of the poor should be central to any private sector reform process;

[62] An interesting reference on the role of the private sector in water and sanitation service delivery for the poor is Lyonnaise des Eaux's report entitled Alternative Solutions for Water Supply and Sanitation In Areas With Limited Financial Assistance.

- The assumption that poor customers are high risk, low return customers should be challenged, which may require a significant information gathering exercise;

- The problems of informal settlements should be directly addressed;

- Innovative ways to address technical problems should be actively encouraged;

- The distance between the provider and poor customers should be reduced.

Many commentators feel that small-scale or currently informal private sector actors (rather than large scale private sector inputs) can play a key role in resolving some of these issues. If these operators are responding to expressed and identified demand, then in doing so, cost recovery will be *de facto.* For example, recent studies suggest that entrepreneurs in water and sanitation, responding to local conditions and competing for market niches, can offer a wide and flexible range of water supply options, such as residential re-sales.

In general, the most viable private sector participation options for rural and peri-urban communities are seen as the following:

- *Community contractors.* They can help foster community empowerment and ownership of the project, but do require social development and technical support;

- *Small-scale contractors and suppliers.* These agents can help develop private enterprise in the water sector;

- *Water and sanitation related NGOs.* These organisations can provide social development assistance and the small-scale management contracting of systems. With decentralisation of service authority, the former role is likely to be more important than the latter.

However, it may be difficult to combine the short time scales within which the private sector operator may be required to work, with the longer time-scales that demand led approaches take. One solution is to formalise the relationships between these small-scale suppliers and the main supplier in the form of partnership, a solution that the *NGO, Building Partnerships for Development*[63] has been investigating. In practice, partnerships have shown to offer significant potential, but a range of problems are still to be resolved if such partnerships are to meet their potential. Instead, locally established partnerships might offer alternatives.

[63] BPD was originally called Business Partners for Development. In 2002, the organisation changed its name to more accurately reflect the partnerships aspect of their work.

3.2.9 Output-based aid

In relation to the better use of local partners in financially sustainable WATSAN service delivery, "output-based aid" maybe helpful. Output based aid seeks to delegate service delivery to a third party (such as a private company or non-governmental organization) under contracts that link the payment of public (or donor) funds to the outputs or results actually delivered to target beneficiaries. This approach is intended to provide a sharper focus on objectives, improve incentives for efficiency and innovation, enhance accountability for the use of public resources, and create opportunities for mobilizing private financing.

It is suggested that output based aid approaches can provide clearer thinking about the use of the subsidy, perhaps directing the funds to the one-time costs of service connection – typically the main impediment to expanded access to services – rather than the ongoing costs of consumption. This may be particularly pertinent to WATSAN service delivery, cost recovery, and implementation projects by donor agencies, especially as small-scale local entrepreneurs, community groups, or local NGOs, could be important suppliers.

Within this context the use of output based tariffs and subsidies seems of interest (see *Section 2).*

3.2.10 Livelihoods approach

Taking a livelihoods approach toward WATSAN investments can help to show how water and sanitation projects can be seen as key assets which if created or strengthened can help to move people out of poverty, rather than simply being a (public health or rights-based focused) end in themselves.

This is because water and sanitation interventions can be viewed strategically (as income generators, money savers, livestock waterers, land investments, dwelling/ lifestyle improvements, etc.) - as things that can add value to people's livelihoods, help to alleviate poverty and facilitate longer term planning. By encouraging payments in kind towards their development and payments for the coverage into the future of their recurrent costs, and through a sympathetic participatory design process (which may include the building of an extended household or group network for management), the investment can become part of people's (and communities) asset base, and therefore one that they will seek to sustain and use themselves to their best advantage.

In this way, WATSAN investments can be seen as a turning point, or a catalyst to improving poor people's livelihoods. This framework may help to understand how best to design financially sustainable WATSAN projects especially for the chronically poor.

3.3 THE COST RECOVERY SURVEY

A cost recovery survey was designed as a part of this project. Following review by Water Aid and DFID, the survey was distributed during August-October 2000 to 722 actors in the water and sanitation sector globally, and also disseminated via several WATSAN e-discussion groups.

At its core, the survey attempted to identify:

- What WATSAN organisations understood by the term 'cost recovery' and 'demand assessment'?
- What WATSAN organisations were doing about cost recovery in rural and peri-urban areas?
- In the experience of WATSAN projects, what approaches to cost recovery seem to work?

Over 100 responses were received as well as accompanying notes and papers. 55 survey forms were completed in enough numeric detail to be input to a database, allowing a comparative analysis to take place.

The survey grouped its respondents into:

- Private sector companies/consultancies;
- NGOs;
- Development agencies;
- Development Banks/ IFIs; and
- Research/ academic bodies.

Out of the 100 or so replies, more private sector organisations responded to the survey than any other group – indicating perhaps a demand for knowledge among these actors.

A copy of the survey form and a detailed analysis of the responses to it are presented in *Annex D* to this report. The key findings of the survey are presented below.[64]

[64] It should be noted that the survey was *not* sent to any representatives of National Government or Parastatal Agencies with interests in water and sanitation service delivery. Hence, the survey did not seek to gauge how these Agencies could become more engaged in cost recovery issues. The aim of limiting the survey to NGOs, Development Agencies and Banks, the Research Community and the Private Sector, was to focus on ascertaining the level of agreement or difference within the "policy influencing international community" about issues of cost recovery. In hindsight, this may have been a weakness. It would have been advantageous to also include National Government Agencies in developing countries in the survey process to find out their views. Nevertheless, it is hoped that the case study reviews of India and South Africa pick out two Government Policy and Agency approaches to cost recovery issues in detail.

3.3.1 Scope of Projects

The development agencies and NGOs who replied were more involved in WATSAN projects with households in rural /peri-urban areas at the bottom of the income range (less than US$200 pp pa) when compared with those replies from development banks and the private sector. This perhaps indicates evidence for the "cherry picking" tendency, whereby private finance in WATSAN tends towards the lower risk urban consumer.

Also of interest was the fact that development agencies tended to incorporate WATSAN as part of a wider, or more integrated, development project more so than the NGOs, development banks and the private sector who replied.

3.3.2 Cost Recovery

The NGOs and donor agencies who responded tended to consider WATSAN projects to be financially sustainable if they recover costs of operation and costs of capital maintenance charges. Development banks/IFIs and the private sector however, felt that financial sustainability occurred if costs of operation, costs of capital maintenance charges, and costs of servicing capital are covered. The difference in outlook on this issue between the NGOs and development agencies (public sector), and the private sector and development banks/ IFIs (private sector) that replied was quite noticeable. These differences may occur for the following reasons.

For the public sector (NGO/development agency), the financial objective for a WATSAN project is often to:

- Meet basic needs as stipulated in their own or recipient government policies;
- Ensure an equitable use of the grant or subsidies they have to offer;
- At best, reach break-even, i.e., revenue generated equals the cost of supply.

For private companies, their remit is to:

- Generate a profit or surplus;
- Ensure a return on fixed assets.

Only a few WATSAN actors outside of the private sector saw the recouping of long run costs, as the only yardstick of cost recovery. Also inherent in most thinking here, was the necessity of subsidy at some point.

3.3.3 Complications to Cost Recovery

Although many organisations that replied have the intention to make their WATSAN projects and programmes financially sustainable through adequate cost recovery (according to their particular definition of cost recovery), there

are often factors that were said to complicate this process. The most prevalent of these tend to be political factors, such as inappropriate public policy or a lack of political willingness to institute cost recovery mechanisms. For sanitation, failure of other agencies to recover costs, are also important.

Table 3.1 ranks the complications to cost recovery as reported by respondents.

Table 3.1 Complications to Cost Recovery in WATSAN Projects (Ranked In order of the issues most often stated by organisations working on WATSAN projects)

	Water		Sanitation
1	Political Interference	1	Political Interference
2	Low/ Variable Incomes	2	Insufficient Willingness to Pay
3	Distrust of Cost Collection System	3	Low/ Variable Incomes
4	Insufficient Willingness to Pay	4	Lack of Management Transparency
5	Lack of Management Transparency	5	Distrust of Cost Collection Systems
6	Inappropriate Project Design	6	Failure of Other Agencies to Cost Recover
7	Failure of Other Agencies to Recover Cost	7	Inappropriate Project Design
8	Expense of Project	8	Cultural/ Religious Reasons
9	Social Exclusion Issues	9	Social Exclusion Issues
10	Land Tenure Issues	10	Land Tenure Issues
11	Cultural/ Religious Issues	11	Expense of Project
12	Flux of Population Size	12	Flux of Population Size

It is interesting to note that political interference ranked top of the replies in both instances, above low income or unwillingness to pay. Furthermore, this is exactly the same finding about obstacles to cost recovery as identified by another review - the Building Partnerships For Development review of cost recovery in their Partnership projects in the water cluster. [65]

3.3.4 Measuring Affordability

Nearly a third of those who responded (across all types of groups) still use the 3-5% rule of thumb for assessing affordability, commonly stating that as an *initial* tool it can be useful (the rule of thumb indicating that a household can afford a WATSAN service if it costs between 3 and 5% of their income). However, there was also recognition that this rule can be too simplistic.

Other methods for measuring affordability suggested in the survey responses included:

- PRA techniques including wealth ranking and community self-assessments of individual's ability to pay;
- WTP surveys (Contingent Valuation questionnaires);
- Community financial surveys;
- Use of past experience in other villages;

[65] Komives K and Stalker-Prokopy L (2000) Cost Recovery in the Focus Projects: Results, Attitudes, Lessons and Strategies. Business Partners for Development Research and Surveys Series.

- Cost of current coping strategies; and

- Use of wealth indicators such as transport and purchasing habits.

It seems that assumptions about levels of affordability may still be quite prevalent in the field, before any demand assessment takes place and this could affect what are seen as the realistic design parameters for WATSAN options.

3.3.5 Demand Assessment

Most respondents saw demand assessment techniques, of one form or another, as a useful tool in helping to achieve financial sustainability in a WATSAN project or programme. However, while a number of the survey respondents explicitly stated that it is essential to assess demand prior to the start of a project, 73% of the respondents stated that they determine people's preferences for different levels of service *at some stage* during the project, i.e., once the investment has been designed, or technical options have been selected.

Hence, understandings about what "assessing demand" really means are still quite broad. Specific comments from respondents reflect this (See *Annex D*).

The survey found that, from respondents' experiences of demand assessments, the three most important factors for programme viability and financial sustainability were:

- An interest and demand from the consumers;

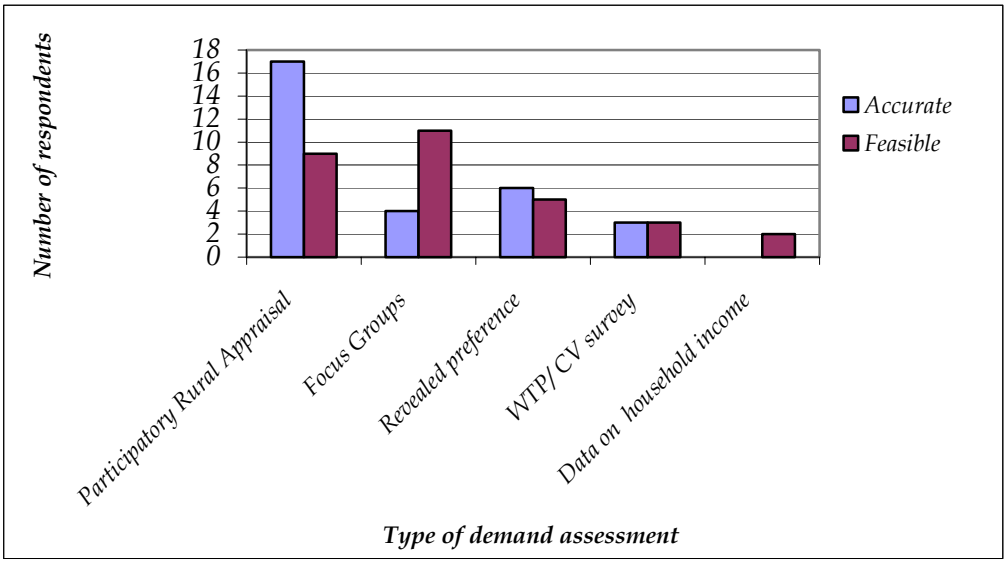
- Meeting the consumer's needs; and

- The affordability of the service.

It is interesting to note that, to design a programme that actually works, practitioners suggested that the need to find an interest from, and meet the (notional) demand of, the consumer for the service, are more important than affordability.

The preferred demand assessment techniques used by respondents, in terms of accuracy and feasibility, are shown below.

Figure 3.2 ***Most preferred demand assessment techniques in terms of accuracy and feasibility***



It seems that less accurate, but more feasible methods for assessing demand, such as focus groups, take prevalence in the field. More technical or resource intensive types of demand assessment studies such as contingent valuation are used less often. Responses to the use of PRA were interesting. Though it is considered accurate by many respondents, its feasibility, though strong, is less than that of focus groups. Again, perhaps time and resource constraints are an issue here.

3.3.6 Charging for WATSAN services

Respondents felt that customers should pay for their water connections, even poor people in rural areas. Free connections to water services were not considered to be the best form of sustainable water and sanitation provision. In fact, 42% of respondents felt that users should pay equal amounts for their water connections, while 37% considered a connection charge, which reflected the user's level of income, was more appropriate.

For both water and sanitation provision, once the connection charge is established, the majority of organisations who replied believed that users should be charged in relation to the volume of water that they use. Lifeline tariffs for the lowest income households and increasing block tariffs were considered to be the most useful charging structures. Free blocks in the tariff were the least popular option.

The development agencies, private sector companies and NGOs who responded felt that these tariffs should reflect *some* of the financial costs of supply. The development banks tended to feel that prices should reflect the long run marginal costs of supply.

3.3.7 *What works*

Finally, WATSAN practitioners were asked simply what tended to work best to ensure cost recovery and financial sustainability among poor WATSAN users. The most common answers tended to follow the following themes:

- Small scale, local projects;
- The use of participatory assessment and focus groups to assess demand;
- People-based systems of fund collection, management, utilisation and maintenance;
- Transparency and a high level of public awareness and availability of relevant information;
- Availability of flexible payment systems;

3.4 *THE META-ANALYSIS*

3.4.1 *Introduction*

As part of the research process a meta-analysis was undertaken of the willingness to pay evidence drawn from a collection of 25 published contingent valuation studies.[66] The objective was to pool together and analyse data from a range of contingent valuation surveys to see what in general affects people's willingness to pay for WATSAN services.

A key aim was to see if a commonly held contention that appears in many individual WTP studies, held true when data from a range of contingent valuation studies was pooled together; that is that while income is indeed a significant factor in determining households' demand for water services, it is not the sole determinant of demand. Rather, WTP should be seen as a function of several variables that reflect the socio-economic, demographic and physical environmental characteristics of households that may vary according to season and location. [67]

A secondary aim was to explore the relationship between these wider variables and WTP.

[66] Meta analysis is a means of providing a statistical review of existing studies. It permits a systematic investigation of the magnitude and direction that selected variables across a range of studies may have on demand. A function was derived in order to find a generic model that can explain the relationship between WTP and key variables and that can assess the likely WTP levels needed for cost recovery.

[67] For example, see Whittington *et al*, 1990b; Altaf *et al*, 1992; Altaf *et al*, 1993; Bohm *et al*, 1993; Brookshire and Whittington, 1993; Fass. 1993; Howe and Dixon, 1993; McPhail, 1993a, b; 1994; Singh *et al*, 1993; Griffin *et al*, 1993; World Bank Water Demand Research Team, 1993; Briscoe *et al*, 1995; Nyong and Kanaroglou, 1999.

It was of interest to undertake the meta-analytical study, as it is rare that the data from a range of WTP studies has been pooled together to undertake a systematic comparison of their findings, either to look for commonalities or general patterns, or indeed to model their data for significant statistical relationships between WTP and similar household characteristics. Undertaking the meta-analysis, allowed this research project to analyse for itself various premises, without having to undertake its own contingent valuation study.

Annex E to the report explains the background and methodology of the meta-analysis and presents its results in detail. This main text summary highlights its key findings

3.4.2 Key Findings

There was a significant degree of variability in the mean WTP estimates across the studies, possibly attributable to the particular methodologies that were used to solicit responses, or to the wide variation in income levels and other socio-economic characteristics prevalent within and between the studies. Across the 25 studies 91 mean WTP estimates were derived. The mean monthly WTP for a WATSAN improvement across all of the studies was US$2.1 (1995 prices), with some samples willing to contribute as little as US$0.03 per month towards the proposed service and others as much as US$21.62 per month, more than twice the mean income levels of some samples. (The wide range of inter- and intra-study sample sizes is likely to have generated a significant amount of the apparent variability in the WTP bids).[68]

The analysis first looked at how key variables (location, income, particular characteristics of the WATSAN improvement) within the pooled data sets related to this pool of WTP bids and it found the following.

Mean WTP as a percentage of mean monthly household income was around 4%, but the variation was so large in incomes across the studies as to render a mean value not useful to focus upon. For example, the range of monthly household incomes across the studies ranges from US$8 per month (constant 1995 prices) to US$213, with a standard deviation of US$60. Reported monthly household incomes of household samples within studies are also wide-ranging. In India, for example, household income varied from US$10 in Kerala

[68] An important conceptual point in the meta analysis is to be aware of what the pooled WTP bids actually represent. This is partly complicated by the inconsistent definition of the WATSAN improvement" across the different studies. Some studies imply that the quantity is a binary connection decision (do you want more/ better quality water at this price – yes or no) while other studies are more specific about volumetric allowances. This distinction about the "good" in question also includes how payment is to be made. In short WTP relates to varying quantity variables and we have to be cautious in our interpretation of the results. Strictly speaking it is safer to interpret our analysis as attempting to derive an *income elasticity of WTP* for an improvement in WATSAN services, of some description. This is distinct from a specific income/ price - quantity relationship that is normally associated with elasticity calculations. In the latter case, the location on the demand curve (i.e. the initial quantity endowment) influences the elasticity calculation. In our case we are forced to make a crude distinctions about the start and end points of quantity (worse and better) and we can test how WTP changes by using dummy explanatory variables. We are simply clarifying what the data seems to say about the percentage change in WTP for a largely unspecified improvement in WATSAN services as income rises. This is a theoretically different relationship, but one that is no less useful.

district to US$213 in Punjab and both of the studies were conducted in rural areas.[69]

The relationship between income and WTP showed a generally positive, but poorly fitting relationship (R^2 is 12.8% and this fit is significant at the 5% level). This suggests that there may be other issues apart from income alone affecting WTP across these studies.

The income elasticity of demand for a WATSAN improvement (the rate of change of WTP with respect to income) was determined by logging the relationship between WTP and household income. The log specification of the relationship yields the equation:

$$\ln Y = -2.22709 + 0.5403629 \ln X$$

Where Y is WTP (in US$) and X is household income (in US$)

It shows that for every one percent increase in income, WTP increases by 0.54 percent. Thus, if income were to increase by 100% from, say, US$10 per month to US$20 per month, then WTP would only increase by 54 percent (from, say, US$0.05 to US$0.077, *ceteris paribus)*. This suggests that water is a relatively income inelastic normal good

The variability in stated WTP about the best-fit line appeared to increase with income, also suggested that demand for water might be more income elastic at higher levels of income.

The WTP bids were also significantly different depending on the location of the proposed project (higher for urban as opposed to rural; higher for humid as opposed to arid locations; and higher for middle as opposed to lower income countries); and for the design options the project was offering (higher for a private than for a communal charge; higher for a flat rate charge rather than a volumetric charge; and lower when a connection charge was offered as part of the package).

Secondly, the meta-analysis undertook a regression equation, involving all of these characteristics (and others), to see how, when combined, all of the variables in the cross sectional data together influenced the pooled WTP bids for improved WATSAN services.

The regression equation show a surprisingly high adjusted R-squared for cross sectional data of 51.3%.[70] The model F-statistic was significant below the one per cent level. Six of the explanatory variables were significant at the

[69] It is possible that some of this divergence arises as a result of measurement error. Some of the studies reported income levels based on proxy indicators such as the number of visible assets (such as radios, refrigerators and television) observed in the homestead. In rural areas, wealth is not necessarily measured in this way especially where the infrastructure necessary to operate consumer durables is not accessible. Households may also have given incorrect estimates of their income levels where these fluctuate with seasons (being highest immediately after the harvest season *ceteris paribus*).

[70] As a guide, the adjusted R squared statistic for many published meta analysis studies is rarely above 30%.

five percent level and a further two at the ten percent level. It was interesting to note, however, that not all the variables behaved as anticipated and that the study location and the design features of the bidding game are the most significant factors in explaining stated WTP.

In relation to income, the regression outputs confirmed that WTP for WATSAN improvements is relatively income inelastic – that is the WTP for improvements does not increase in percentage terms by the same amount as income. When placed with all other variables, the regressions findings suggest that for every 100% rise in income, WTP for a WATSAN service improvement will increase by 34 percent. In other words, if household income were to increase by 100% from, say, US$10 per month to US$20 per month, then WTP would only increase by 34 percent (from, say, US$0.05 to US$0.067, *ceteris paribus)*.

The regression confirmed that the type of connection option was also important. WTP was significantly higher for a private than for a communal charge and for a flat rate charge rather than a volumetric charge and WTP was significantly lower when a connection charge was offered as part of the package.

Other factors in the regression, which appeared more important than income in influencing WTP included:

- Being in an urban setting (this raised WTP);
- Being in an arid environment (this lowered WTP);
- Operating a "robust" WTP survey (this lowered WTP);
- Being educated (this lowered WTP)

Clearly, the variables of location and education provided counter intuitive results – WTP was lower in more arid areas, and lower for more educated people. There may be some weaknesses in the codification process or in the interpretation or collation of the datasets, therefore, and these results should be treated cautiously.

Nevertheless, while controlling for the effects of systematic error as far as possible, it does seem clear from the meta-analysis that the driver of WTP for WATSAN improvements is more than income on its own.

For example, the higher income people are found in the urban studies; and people in the urban studies are WTP more for WATSAN service improvements than those in the rural studies; hence it seems easy to suggest that urban people are WTP more, because they have higher incomes. But, WTP is generally income inelastic, so people of all incomes in urban (and rural areas) are WTP roughly the same for the WATSAN improvement. Factors other than income must also be contributing toward urban people being WTP

more. Maybe these are a better awareness of the potential improvements of WATSAN; a better knowledge of other successful projects; more ready access to cash on a monthly basis; or perhaps it is the result of being in a less sanitary urban surrounding than their rural counterparts.

3.4.3 Conclusion

The meta-analysis suggests that WTP for WATSAN service improvements does seem to be generally income inelastic, despite the wide range of incomes contained within the 25 studies. The findings suggest that for every 100% rise in income, WTP for a WATSAN service improvement will increase by between 34 and 54 percent. There does seem to be an indication, however, that towards the higher end of the income scale, WTP for improvements may become more elastic (i.e., more related to income). Hence, although richer people may pay more for a WATSAN improvement, in relation to their income, it doesn't follow on a linear scale that poorer people will pay less.

While it is clear that income is an important factor in explaining WTP for WATSAN service improvements, it is not the only – or the major – factor, especially for poorer people. For example, a range of other factors seem to contribute toward WTP for service improvements, including the way the payment is offered in the survey (i.e., the style of the WTP survey itself) and whether the improvement is taking place within an urban setting. Some other variables, however (climate and degree of education, for example), yielded counter-intuitive results, indicating the caution that must be attributed to the outputs of the meta-analysis regression.

Thus, it is clear that a meta analysis can be an important tool to help understand the range of estimates of WTP in already existing studies, and to help act as a benchmark for new studies. However, it is also important to note that meta analysis can also be used as a form of benefit transfer approach, but that great caution must be used in this application, due to the high levels of uncertainty involved in assuming that different locations are comparable.

3.5 THE FIELD TRIP TO INDIA

3.5.1 Introduction

Cost recovery and financial sustainability in WATSAN programmes in India are important to DFID. Working mostly via direct budgetary assistance with key partner states, DFID's budget for water and sanitation in India for 2001/02 was planned to be about US$17 million. As well as increasing its expenditure, primarily through direct budgetary assistance, DFID's aim is also to make these investments in water and sanitation more effective and more demand-led.

In November 2001 as part of this KAR project, ERM met with key WATSAN stakeholders in India to discuss the research themes of the project and the issue of cost recovery in water and sanitation projects, more generally, in India. A wide range of stakeholders was met, from both a policy and project

perspective. These included representatives from the World Bank Water and Sanitation Programme, South Asia, DFID India and Water Aid India, as well as community representatives from projects in Kerela and Tamil Nadu.

Project visits were also made to DFID, World Bank, Water Aid and community run projects in Andhra Pradesh, Kerela and Tamil Nadu. *Annex F* to this report provides a more detailed visit report.

3.5.2 General Background to WATSAN Cost recovery in India

There is a long and complex policy history to rural water supply and sanitation in India, and an attempt has been made to summarise the key policy and institutional issues in *Annex F*. In short, there has been a (arguably unsuccessful) history of State level provision of WATSAN services since independence, backed up with extra Federal funding for rural areas since the 1970s. This is now giving way to a much more decentralised and community-focused model of implementation, especially since constitutional amendments in the early 1990s created the policy framework within which decentralisation could take place. Cost recovery, partly of the costs of servicing capital and mostly of (some) costs of operations and costs of capital maintenance charges, now plays a significant part in this decentralisation process. The private sector, however, is less prevalent as a service deliverer, especially in rural areas.

The UNDP/ World Bank Water and Sanitation Programme (WSP) South Asia have usefully encapsulated the payment and cost recovery debate on WATSAN in India, which remains problematic.

The WSP suggest that, politically, water supply has remained a state responsibility since independence and that political promises on state supplied WATSAN centre on the following four conceptual points:

- The poor cannot afford safe water and sanitation and should not have to pay for it;
- Public subsidies are provided to help the poor pay for water and sanitation;
- The Government of India can solve the problem of water supply by running water and sanitation programmes itself;
- The Government of India can raise the financial resources needed for water supply and sanitation;

However, the WSP suggest that the reality is more akin to the following:

- The poor in India actually do pay for water supply and sanitation, often far more than their fair share;

- The subsidies for water supply and sanitation benefit mainly those who are not poor;

- Public provision on water supply is inefficient and ineffective;

- The investment requirements for water supply and sanitation in India are far too great for the Government of India to afford.

Hence the situation in India is of great pertinence to this research study, both in terms of the size of the problem and because the key issues identified by the WSP in India reflect some of the findings of this study, namely:

- It may be important to think less about absolute incomes (whether people can afford water supply and sanitation services or not) and more about designing convenient ways of helping people to pay for the water supply and sanitation services they want;

- The key issue that seems to makes cost recovery of WATSAN investments less straightforward was found to be political interference. Below are summaries of the six case study projects examined.

3.5.3 Case Studies

i. The World Bank Swajal Project, Utttar Pradesh.

The Swajal Rural Water Supply and Sanitation Project is a US$63 million project covering about 1,200 villages in 19 districts in the Hill and Bundelkhand regions of Uttar Pradesh. Central to the project's design have been two major polices:

- Partial capital cost recovery (10%, with upfront cash contributions varying from 1% to 5%); 100% operational costs and costs of capital maintenance charges, recovered from user communities; and about 60% cost sharing for individual latrines;[71]

- The creation of an alternative service delivery mechanism for rural water supply and sanitation, involving a partnership between the village water and sanitation committee, NGOs and a Project Management Unit (PMU) in the form of a tripartite agreement.

The Swajal project has undoubtedly been very influential in India's rural water supply sector. The cost recovery objectives it set are now part of key recommendations for India's national water supply policy.

[71] Although the exact definition of what project costs are included in costs of capital maintenance charges is not as comprehensive as outlined in *Section 2*.

ii. Village Level Water Supply Schemes in Olevanna, Kerela.

Olevanna is a Gram Panchayat (GP) with twenty wards located on the eastern side of Calicut,North Kerela. The GP covers 21.5 km^2, with a total population of about 50,000 people or 10,100 households (as of 1998).

Since 1987, and resulting from a crisis situation of both drought and a lack of State funding, a network of privately run water supply schemes in Olevanna has been established. Between 1987 and 1995, 26 privately registered schemes arose across the Olevanna GP. In general, each household put in between 4,500-12,000 rupees for the capital costs of the scheme and then paid 5-10 rupees per month for operation and maintenance costs.

The GP played a facilitatory and regulatory role in this process, rather than acting as a supplier. It also provided a review and audit procedure for each co-operative's accounts, and it developed some rules of supply – limiting supply to 400 litres a day and encouraging water meter installation to ensure these limits were adhered to, or that extra costs for the additional supply (20 rupees per 1,000 litres) were paid.

The official state water supplier – the Kerela Water Authority (KWA) - was not helpful in the early days, as the schemes challenged their remit. However, since the decentralisation process for water supply and sanitation began in earnest in Kerela in 1995, the KWA have been much more supportive.

Since 1995 a further 34 schemes have been created in Olevanna (which means a total of about 10,000 households now benefit from these private schemes), but the approach has changed slightly. Now, the GP can provide 50% of the costs of servicing capital for the scheme and uses this, if required, to help with payments, for instance if the households cannot pay the full 100% of capital costs. User charges have increased to 30-40 rupees per month, due to increased electricity costs for pumping. Many schemes are now operating at a surplus.

Of the participating households, it was estimated that 25% were below the urban poverty line of 22,000 rupees per annum (Olevanna can be counted as a peri-urban rather than rural GP). The start up costs to join the scheme represented 3-4% of household income (and in some cases up to 20%). To help the poorest with the repayment process and monthly charges, monies are collected "little and often" (a rupee a day) for those who prefer.

However, there have been some problems. Due to the level of water extraction on the GP, issues of water resource management are now important. Water harvesting has been encouraged as a substitute to pumping and the GP has seen price signals to do this. Also, the GP admits that support in developing its pricing policy to cover long run costs would have been extremely useful. This is interesting as it illustrates the practical importance of introducing economic (or scarcity) pricing into a cost recovery strategy, to avoid such over pumping crises.

Nevertheless, the Olevanna schemes show that full cost recovery can be achieved in peri-urban areas (with reasonable levels of poverty) for water

iii. The Kerela Rural Water Supply and Environmental Sanitation Project (KRWESP)

The KRWSESP is a US$80 million project, supported by an IBRD loan of US$60 million, with the balance financed by beneficiaries (US$8 million), the GP's (US$6.5 million) and the Government of Kerela (GoK) (US$5.5 million). The project will provide WATSAN in four districts in Kerela. About 80 GPs from these four districts, out of a potential 358 have been identified for project implementation. A limit of 30,000,000 rupees per GP is set. Within each GP, there will be about 25 beneficiary groups. The project emerged partly after a World Bank representative had visited the Olevanna Schemes.

International Bank for Reconstruction and Development (IBRD) loan funds are passed on from the State Water Authority to District level PMUs. Funds from the DPMU, the GP and the beneficiaries then flow into the same bank account, to support each scheme within the district. The KRWSESP is expected to directly benefit about 1.5 million people or 5% of the state population. On average, capital costs for water supply are 6930 rupees per household and annual costs of operations and costs of capital maintenance charges are 180 rupees per household. In cost recovery terms, the aim is that 15% of the capital cost of each scheme is to be paid by the beneficiaries (of which at least 7.5% of payment must be in cash). The beneficiaries should meet 100% of the schemes operation and maintenance costs.

Kunnummel Panchayat is one GP implementing the KRWSESP. It has 10 Wards and a total population of 17,365, or 3,868 households, of which 35% are below the rural poverty line of 18,000 rupees per household pa. The project is covering 970 out of the 3868 households in the GP. There are 27 beneficiary groups in total, with about 36 households per group.

For the water supply component, the project will aim for 70 litres pp pd, 8 hours pumping pd, with a 4 hour am and a 4 hour pm slot to pump water. For the environmental sanitation programme, low cost latrines are envisaged for those households below the poverty line only, and these households are expected to meet additional costs over and above the 2,000 rupees provided by the Project.

As per the project design, the Kunnummel Panchayat will contribute 10% of the capital costs of the project, the beneficiaries will contribute 15% (7.5% in cash and up to 7.5% in kind) and the remainder will come via the Government of Kerela (GoK) (5%) and the District Project Management Unit (DPMU) for the project (70%). NASRAD, a local NGO is the support organisation for the project within this District and will help the DPMU to provide community facilitation and participation expertise.

The project is proceeding well, although the DPMU thinks beneficiary groups could pay a lot more towards the capital cost of the schemes than the 15% they are currently asked for. Also, the project is not necessarily easily replicable by other user groups, without another loan to the DPMU, given the low level of beneficiary contribution required. The payback of the loan for the project by the GoK is another issue that may question the replicability of the project.

iv. The Andhra Pradesh Urban Services for the Poor Project (APUSP)

The State Government of Andhra Pradesh, is working in partnership with DFID to assist poor communities in 32 towns of Andhra Pradesh. The towns involved are between 100,000 and 1 million in population and hence have a reasonable degree of peri-urban, or slum, related issues to tackle, especially in relation to water and sanitation services.

Project assistance by DFID is £94.4 million. The entire assistance is a grant to the Government of Andhra Pradesh. About 71% of the assistance from DFID will be in the form of financial aid for services, and 29% is Technical Assistance such as training for councillors, officials, civil society organisations and communities. APUSP comprises of three main components – municipal reform, improvements to environmental services (including water supply and sanitation) and work with community-based organisations. To administer the project, two new units have been established in the State Government

In relation to WATSAN, the project's main focus for cost recovery is on collecting people's dues on water supply tariffs, rather than on working to design and set a more appropriate level of the tariff. This is because there is a feeling that people can only pay up to 3% of their income on a water/ wastewater tariff; and that bigger gains can be made on reducing the supply costs of water/ wastewater services (especially in relation to energy) than on trying to increase charges, which the Government is reluctant to do.

The project adopts a process-based approach and so did not have any fixed ideas about reasonable levels of cost recovery to aim for at the outset. Instead, the aim has been to make the Municipalities more aware of the recurrent costs of their WATSAN services and how best to both reduce the operational costs and the costs of capital maintenance charges and fund these services sustainably. With regards to charges, the project follows state tariffs for water supply, which were only 30-40 rupees per month, but have been increased to 60. The project would like to see them increased to 70. At present, slum dwellers are obliged to pay only 50% of the tariff.

v. The Urban Slums Health and Sanitation Improvement Programme, Tiruchirappalli, Tamil Nadu.

This project involved the Tiruchirappalli Corporation, the Tiruchirappalli District Administration, Water Aid India and three local NGOs as implementing agencies.

Tiruchirappalli City is in the heart of Tamil Nadu, southern India and has a population of 668,000. The city has 155 slum areas containing about 115,000 people. The Municipal Water Corporation had built community latrines in the slums in the mid 1980s, but these latrines fell into in a state of decay and were abandoned by local residents. The key problem was a lack of a sense of ownership over the latrine blocks by local residents.

The NGO Gramalaya sat with local Women's Self Help Groups from within these slum areas and discussed possibilities for sanitation improvements. There was a clear local need for improved sanitation and washing facilities in each neighbourhood and plenty of thought as to how such a facility could be managed. One group came up with the idea of paying to use the toilet – fifty paisa a time, which would include the purchase of cleaning materials and the wages for cleaners and a watchman cum ticket issuer.

Water Aid provided Gramalya with a grant of 380,000 rupees to build the "pay and use" latrine block and a child friendly toilet block for those less than 6 years old. The charging system was then introduced in one scheme, the first of its kind.

A women's group looks after the upkeep and maintenance of the community toilet block constructed in their slum. Every user is issued a 50 paise token allowing him/ her to use the toilet, from a ticket issuer, employed bythe women's group. A woman from the self-help group collects the money from the ticket issuer and closes the account every 12 hours. The accounts (a ledger) contain details on the number of users and money collected. During nights a watchman cum ticket issuer is appointed.

An average of 300-600 people use the community toilet every 24 hours, totalling 150-300 rupees a day. People prefer to pay their 50 paise and use the "pay and use" toilet blocks because they are reliably secure and clean, compared to other Municipal Corporation blocks or other options available for defecation. The first pay and use latrine has collected 168,500 rupees gross since it began in mid 2000.

The money collected is deposited in a Bank Account each week. At the end of every month the particular Women's self help group from that slum convenes a meeting and details to members the income and expenditure for a particular community toilet. The balance, after meeting various expenses such as salaries and purchases of cleaning materials is kept in the bank account. It is pooled as a common fund for that particular slum towards health and sanitation related promotional activities including extension of street taps, construction of community halls, renovation of other damaged community toilets, construction of domestic drains, rubbish bins and provision of street lights. As the knowledge of these latrines has spread, loans have been made from the surplus and advice given to other slum communities to help construct their own "pay and use" latrines.

Visitors to the schemes have included state level decision makers and some high level WATSAN officials from elsewhere, such as Chennai. However, without an official policy change at State level, the local Municipal Corporation tasked with providing WATSAN services in the slums won't approve or promote the pay and use system.

In summary, the pay and use latrines are being utilised by very poor slum dwellers and although the first schemes relied on 100% subsidy for the capital cost, the schemes are more than 100% recovering their recurrent costs. The capital cost could be paid back over a number of years. However, the surpluses these schemes have built up as a result, are instead being used to help wider WATSAN developments in the neighbourhood, or as loans to part-pay for other slum self help groups to renovate their systems. As the schemes are starting to self-replicate, less and less grant funding will be required over time. No PMU is involved – a local NGO is the implementing agency. An INGO coordinates the quality control (QC) of the NGO's delivery. The "seeing is believing" impact of these schemes is strong, both within and beyond the slum communities. However, policy changes are required to allow the State supplier of WATSAN to also "buy into" this approach to service delivery.[72]

vi. Scope/Water Aid Rural Water and Sanitation Programme, Tamil Nadu

Scope is an NGO based in Tamil Nadu, which focuses on the conservation and best use of water supplies. It is a local partner of Water Aid India.

Although SCOPE gets 60% of its funds from the State Government, in terms of WATSAN issue in rural areas, it recognises that NGOs are a "drop in the ocean", but seeks to obtain replication and uptake of its successes from the Tamil Nadu Water Authority. A key achievement of the SCOPE - Water Aid partnership has been to encourage the first village in Tamil Nadu (and possibly in India) to develop 100% sanitation coverage for themselves.

Kattukulam village in Tamil Nadu is a typical southern Indian village in a very rural area. It has 110 households, or about 612 people, 90% of who are below the rural poverty line of 18,000 rupees per household per year. SCOPE and Water Aid started work in Kattukulam in 1996. They responded to the key demand of the community in Kattukulam for improved water supplies, and drilled three new tube-wells in 1996, 1997 and 1999, installing one hand-pump on each. The community were asked for a cash contribution towards the capital cost of these tube-wells of 10% in each case. Each household was asked to pay 2 rupees per month for costs of operations and costs of capital maintenance charges. Hence 220 rupees per month were collected (2,640 per year). A surplus was accumulated because these costs were low (60 rupees a year) and replacement/extension costs (a new set of piping – cost 3,900 rupees) have only occurred once.

[72] (There are several other pay-as-you-use latrine schemes in operation in India. Further information about another interesting cases studies (the Sulabh NGO can be found at: http://www.tcdcwide.net/tcdcweb/experiences/social/cases/15-sanitation.htm)

At the same time as installing the first tube well, SCOPE also set up self-help and savings groups for women. 25,000 rupees were put into each group by SCOPE to kick start them. Each member paid 25 rupees a month as savings into the group and 2 rupees subscriptions. Then, on a revolving basis, women could draw loans from the fund at a 2% interest rate per month (24% per year).

With regards to latrines, however, the community remained unconvinced at the project start. SCOPE asked the village leaders to put forward households to be involved in the construction of ten "model" toilets. The setting up of the savings groups and the drilling of the tube-well were conditional on this issue. Each volunteer was given a 40% subsidy per toilet to help build the latrine pit safely up to a plinth level (the total cost being up to 1500 rupees to build the whole toilet structure). There was also technical guidance to help build the superstructure, and the possibility of a further loan from SCOPE if needed. The toilets were constructed with a bathroom and attached to a kitchen garden in order to use wastewater productively. Focus groups also discussed health issues with the community and established the high costs (up to 2,000 rupees per year) that people incurred as a result of paying for transport and medicine for those in their family who became sick due to diarrhoea.

Once the first 10 model toilets were built, they became very popular, especially among the women, due to their convenience, and more households requested a latrine. By the end of 1996, SCOPE had helped to build 68 toilets for 96 families. By the end of 1997, every household had built a toilet. SCOPE continued to offer loans of up to 650 rupees to those who could not afford to meet all of their construction contributions. With a 650 loan and a 650 subsidy, only 200 rupees maximum would be required to build the latrine. 39 out of the 110 households took on these loans. The self-help groups also offered further financial assistance.

The income from the kitchen gardens helped to pay back the loan for the toilets, producing on average 30–90 kilos of fruit and vegetables a year, net of personal consumption, which was sold in local markets for up to 400 rupees in total.

By 1997, 75-80% of the women in the village were using the toilets, and by 1998, 85% of women and up to 72% of the men were. By 1999 almost everyone was using a toilet. In 1999 a follow up participatory survey found that no single case of diarrhoea had lasted longer than 2 days, and very few people were spending any time or money in the clinics. As a result the saved money was being spent on replacing roof tiles and buying more animals. By the end of 2001, latrine uptake was also occurring in up to 40 neighbouring villages, with people willing to pay, or take loans, for the full costs of the latrines. Households in other villages had seen the economic benefits the latrines were bringing to their owners in Kattukulam.

Importantly, SCOPE has also run sessions in hygiene awareness and education in parallel to the latrine building process. They have installed a

latrine mini-mart in a central location, selling all of the spare parts, building materials, soaps and disinfectants that latrine owners need, as well as being a source of advice to new latrine owners. There is also a compound which displays the range of latrine models a household can choose from. As a result of both the goods it sells and the staff it requires, the shop has provided jobs for local rural people. Furthermore, each village is encouraged to take on and pay for a water and sanitation caretaker, from a scheduled (lower) caste. Although the wage is not significant, the strong role in the community provided by these jobs is often of great personal importance.
No PMU is involved – a local NGO is the implementing agency. An INGO coordinates the QC of the NGO's delivery. Also, the "seeing is believing" impact of these schemes is strong, both within and beyond the rural communities. However, policy changes are required to allow the State supplier of WATSAN to also "buy into" this approach to service delivery and to allow the NGO to capacity build with the state supplier to take on this kind of role.

3.6 THE FIELD TRIP TO SOUTH AFRICA

3.6.1 Introduction

Cost recovery and financial sustainability of WATSAN projects in South Africa are important to DFID. Rather than direct project financing, DFID has chosen to concentrate on supporting capacity building projects, particularly working though the Department for Water Affairs and Forestry (DWAF) to strengthen capacity for managing WATSAN projects at local government level.[73]

This sector wide approach must be considered in the context of the decentralisation efforts carried out in South Africa, which aim at transferring responsibilities for water and sanitation from the Ministry of Water Resources to local governments and particularly, municipal governments. The reforms create an unusually fertile space for testing alternative models of service delivery with new opportunities for partnerships in provision.

DFID has indeed adapted its approach to an overall context for WATSAN projects that is substantially different from that in India. South Africa is the richest country in Africa, enjoying considerable wealth from natural resources, even though there is an extremely high disparity in wealth between rich and poor. As a result of its relative overall wealth, donors' involvement has been relatively limited in the water and sanitation sectors, the projects being financed and implemented directly by the central or local administration. Thus, in sharp contrast to the situation described in India, none of the projects we investigated were predominantly donor-led, and NGO roles were defined predominantly in terms of training and capacity building.

[73] Constitutionally in South Africa, water affairs are a national mandate that cannot be transferred to the provincial or the local level: only operational tasks may be transferred with DWAF control. Hence, there are no provincial departments of DWAF.

3.6.2 *General Background to cost-recovery for WATSAN in South Africa*

Water and sanitation services have accomplished remarkable progress in South Africa since the end of Apartheid in 1994. The first post-Apartheid government made provision of basic services to disadvantaged people one of its top priorities, particularly in rural areas and former townships. A 1994 White Paper estimated the necessity to provide adequate water supply to 12 million people and adequate sanitation to 21 million people. Since then, at least 7 million have benefited from substantially improved water services.[74] One key element for ensuring long-term sustainability of water and sanitation services was the introduction of radical institutional reforms, which involved devolution of powers to local governments and modification of their boundaries, in an attempt to integrate affluent white areas with black townships and deprived rural areas. Institutional reforms also introduced a clear demarcation between water service authorities (local government) and water service providers. Water service authorities can choose between providing services by themselves or through agreement with other types of operators, including public and private operators, or even NGOs.

3.6.3 *Cost-recovery*

Cost recovery raises specific and acute challenges in South Africa:

- Historically, cost-recovery records have been particularly low due to attitudes to paying for water services inherited from the Apartheid era, during which non-payment of infrastructure services was used as an instrument for resistance against the regime.[75] In fact, this is reflected in the common understanding of the term "cost-recovery" in South Africa, which is taken to mean the percentage of bills recovered rather than the percentage of total costs covered through revenues;

- This non-payment culture has recently been reinforced by the adoption of a "free basic water policy", whereby the Central Government has committed to providing free water entitlements to all citizens by July 2001. The entitlement equates to 6000 litres per family of 8 per month (or 25 litres per person per day);

[74] This creates an interesting threshold however. Of the first 7 million people to be addressed by WATSAN programmes since 1994, they were arguably the "easiest" (i.e. where reticulation and networking were possible) and the "wealthiest (i.e. they were mostly in peri-urban areas). From now on, things will be more challenging both technically (in more remote locations technical adaptations and innovations will be required) and financially (these will be the poorer, more intransigent customers).

[75] Things are rather complicated in this respect. Apartheid was basically a system that organised dependency of homeland areas, through paternalism and the promotion of local patronage, as well as via large subsidies. All services, including water and sanitation were paid for (and controlled) by central Government and numerous delocalised parastatals. Resistance to service payments as a form of protest occurred mostly in the more anti-apartheid conscious peri-urban communities. In the very rural Bantustans, however, people never paid for services and never really protested by withholding payment. Hence, many people in these areas now complain about service charges and the new South Africa, and suggest (as do many of the poorest former soviet citizens) that the old regime was better. To an extent, these complexities can help to understand the political thinking behind the Free Basic Water Policy.

- The challenges of providing water and sanitation to all are substantial, even though considerable investment efforts have been accomplished in the years since the end of Apartheid. These new investments are currently mostly financed through national government subsidies, but this situation does not appear to be sustainable, particularly with economic difficulties looming on the horizon;

  Based on these circumstances, South Africa has developed innovative approaches to providing services to poor and marginalized consumers that generate interesting lessons for cost-recovery of WATSAN programmes:

- At the national level, DWAF has displayed a great capacity for developing new and innovative contractual forms for involving the private sector. In particular, the Build Operate Train and Transfer (BOTT) programme has been efficient for developing water services in rural areas in a fast and integrated manner, despite its own limitations;

- There has been a big emphasis placed on managing demand in order to minimise costs, particularly through the use of pre-payment metering devices. The incentive for controlling water uses is particularly strong because bulk water is generally sold at cost to retail providers, who then need to cover those costs. Following successful experiences in the electricity sector in South Africa, these technologies have been adopted in a variety of institutional settings. Although they have not been completely successful (particularly due to some technical difficulties), these technologies have been instrumental in providing focus on cost recovery issues;

- Many water sector actors, including development engineers and private sector companies, use community and demand-led approaches as they are very well aware of the high risks of failure of WATSAN projects if local communities are not involved;

3.6.4 Case Studies

Given the ability for local governments to contract with various types of operators, ERM selected projects for visit in order to cover a broad spectrum of potential contractual arrangements. Many of these projects are carried out in a peri-urban setting rather than in a purely rural one, because this is where many of the acute problems with cost-recovery have materialised, particularly in township areas. Despite all their good efforts, however, few of the projects visited had reached acceptable levels of cost recovery and the consolidation of any of these small successes was made very difficult by the introduction of the Free Water Policy. Projects visited included:

- ***ODI retail:*** where responsibilities for retail water services have been entrusted to a public Water Board, Rand Water, which has mainly focused its actions on the use of pre-payment metering devices;

- ***Krugersdop municipal water services:*** where a municipal utility has to face the challenge of a considerable expansion in its area of coverage following the municipal reform and attempts to meet this challenge through a heavy use of pre-payment metering devices;

- ***Durban water:*** where a municipal utility has adopted an innovative approach by establishing a tri-sector partnership (between the public, private and civil society sectors) in order to solve cost-recovery issues in peri-urban township areas;

- ***Kwazulu Natal rural services:*** where a development engineer has adopted a community-based approach for developing rural water projects, with interesting lessons for how to run and manage those projects in an efficient manner;

- ***Peddie South within the Eastern Cape BOTT project:*** where DWAF has adopted an innovative contractual approach (the BOTT) to harness the capacities of the private sector, in order to transfer responsibilities for water and sanitation services to local municipalities as quickly as possible.

In addition, although no specific projects were visited, ERM had extended exchanges with two organisations that are important actors of the WATSAN sector in South Africa and have developed innovative approaches to improving cost-recovery:

- ***The Mvula Trust:*** a specialist NGO working on the provision of water services in rural areas, which recently expanded its activities to the provision of sanitation services but still mostly in rural areas;

- ***PSU International:*** a private company specialising in delivering improvements in their cost-recovery records (by which they mean bill and debt collection records) for water utilities;

Below are brief summaries of the projects examined during the field visits. More detailed information about the overall institutional framework and the projects visited is presented in *Annex G* to this report.

i. Rand Water and ODI Retail

Rand Water is the bulk water supplier for the region of Johannesburg. Following DWAF's initiative, it has signed a contract with municipalities in the ODI region for provision of retail services in former township areas. Given that the cost-recovery record is particularly poor in these areas, Rand Water has put considerable effort into the development and installation of pre-payment meters, for both individual and standpipe connections. Pre-paid meters are seen as a way of keeping down costs through reducing losses from uncontrolled use.

ii. Krugersdorp municipal water services

Krugersdorp is a municipality lying West of Johannesburg. Water services are provided through a municipal water company, which is ring-fenced from other municipal services but still falls short of being corporatised. Krugersdorp is typical of formerly white municipalities whose boundaries have recently been extended in order to incorporate black townships. However, management quality appears to be significantly higher than in other municipalities: it is akin to the success story of municipal water and sanitation service management. Krugersdorp municipality has also been experimenting on a large scale with pre-paid metering devices, in a variety of socio-economic environments. Its payment record has significantly improved since the start of these experimentations. This has been matched with particularly good budgeting practices. The municipality is currently considering a possible corporatisation of the municipal services, which should be made possible thanks to the relatively good payment records.

iii. Durban Metro water and the BPD initiative

In 1998, Durban Metro water (and the city of Pietermaritzburg) initiated the creation of two partnerships between themselves (public providers of water and sanitation services in Durban and Pietermaritzburg respectively), a private operator (Vivendi), a local NGO (the Mvula Trust), the Water Research Commission and the local bulk water supplier (Umgeni Water). The objective of these partnerships was to improve water services for the poor in Durban and Pietermaritzburg, particularly through the development of innovative approaches to water services provision. The partnerships were created through two co-operation agreements, with one for each city, which outline roles, responsibilities and financial commitment for these partnerships. Powers in the partnership are equally shared, and financial contributions do not imply more weight in decision-making. [76]

New approaches to service provision developed by these partnerships did largely focus on addressing the cost-recovery challenge. The free water policy was first introduced in Durban, but this policy was largely seen as a cost-limitation mechanism. Durban Water established that it would be cheaper to provide 6 cubic metres of water for free to everyone in Durban rather than to try and recover bills in areas difficult to access (and may be dangerous) or try and target subsidies for poor consumers. In many township areas around Durban, payment records have traditionally been very low: there is either a "culture of non-payment" (inherited from the Apartheid era when boycott of services provided by the white rulers was a commonly used weapon) or a "non-payment" culture (which means that people have never paid for a service that was provided for free and do not see why they should start paying from now). In order to increase the financial viability of this policy, they have introduced a number of innovations on flexing service levels, with

[76] Note that these partnerships received considerable support and attention from the Business Partners for Development initiative, for which the Kwa Zulu Natal projects are one out of eight pilot projects.

for example the introduction of restricted services (roof tanks are provided with just a daily allowance every day).

Durban Water, however, is one of the most efficient water utilities in the country. It is therefore a special case, as it can easily recoup the costs of this policy through cross-subsidisation from a relatively rich household and industrial customer base.

iv. Kwazulu Natal rural services: Nkwambase

ERM visited the Nkwambase project, in a rural area North of Durban in the Kwazulu Natal province. The project serves a total of 800 households. For this project, the development engineering firm Dynacon works as sub-contractor to Umgeni Water, which is the bulk water supplier in the region of Durban. Umgeni has installed conventional meters (with a lock to prevent tampering). Project operation was initially to be entrusted to a local Water Committee, with elected representatives from the community. However, this committee was disbanded once they ran out of money and had to be replaced by a small Task Team, with more competent and responsible team members. This Task Team hopes that a more conventional business unit would be put in place in order to manage the business. In financial terms, most people are not paying, and have never paid their bill for bulk water to Umgeni. Arrears on bulk water payments have been amounting, but Umgeni, the Project Implementation Unit has not cut them off so far. They are hoping that the municipal council will settle the accumulated debt. The cashier, representative of the task team, displayed some relatively good knowledge of the business. He said that they could not connect anyone who wanted to because costs can be particularly high, so they would need to increase the connection fee in order to cover those costs. In addition, he believed that they would need to increase the tariffs given that two increases in bulk water prices had not been reflected into their retail tariffs. However, they are dependent on the local municipality for agreeing tariff increases.

v. Peddie South and the Eastern Cape BOTT project

In 1997, DWAF signed BOTT contracts with "Project Implementing Agencies" (PIA) in each of South Africa's four poorest provinces (Kwazulu Natal, Eastern Cape, North West Province and Limpopo [formally Northern Province]). Each PIA is a consortium between private sector actors and NGOs: for example, both the Northern Province (Metsico) and the Eastern Cape (Amanz'abantu) consortia are led by WASS (a subsidiary of Northumbrian Water) and are partnered with the Mvula Trust, a nation-wide NGO specialising in providing water services to the rural poor, for institutional and social development aspects.

The rationale for designing this type of contract was to accompany the municipal service reform and to allow a quick transfer of responsibilities for water and sanitation from central government (DWAF) to local governments. Given that in many poor rural areas, local governments did not have the capacity or the financial resources to take on such responsibilities in a short

period of time, DWAF developed the BOTT concept for accompanying and overseeing this transfer.

The contracts require the consortia to offer a "one-stop shop approach", covering five areas of skill: design, construction, operation and maintenance, on-site sanitation and institutional and social development. Community representatives work as partners on the project, as members of the Project Steering Committees and Village Water Committees.
These contracts are now coming to an end, as they were initially signed for two-years and renewed once. Both self-criticism (by DWAF, due to the high cost of the programme) and external criticism (by NGO partners, due to their limited ability to strategically orient the projects) are running strong. However, it is generally recognised that these project management structures have been successful at delivering rapid improvements in service delivery with appropriate attention paid to the long-term sustainability of the schemes established in such a way. Private sector operators have been quick in recognising the interest of such an approach, and are trying to win more projects outside the BOTT structure directly with local governments. Indeed, following the experience, DWAF decided to develop an "improved" BOTT model contract, which could be used directly by local governments wanting to call on the private sector to develop their water services on the basis of this "one-stop shop" approach.

3.7 COMPARISON OF CASE STUDY FINDINGS

India has a (arguably unsuccessful) history of State level provision of WATSAN services, which has now given way to a much more decentralised and community-focused model of implementation. Constitutional amendments in the early 1990s created the policy framework within which decentralisation could take place, though it is being implemented far from perfectly, with funds often trapped at the State level. Cost recovery, partly of the costs of servicing capital and mostly of (some) costs of operations and costs of capital maintenance charges, plays a significant part in this decentralisation process. Politically there has been a culture of public service provision at all levels and as a result, the private sector is less prevalent as a service deliverer, especially in rural areas. In general, civil society (NGOs, local user groups, knowledge of savings groups, rights to matching funds) is strong, even among the very poor.

In South Africa, the history of apartheid creates a unique political backdrop to today's policies of WATSAN service delivery and payments. Decentralisation reforms transferred responsibilities for water and sanitation from the central line ministry to local governments and particularly, municipal governments. These reforms introduced a clear demarcation between water service authorities (local government) and water service providers. Water service authorities can choose between providing services by themselves or through agreement with other types of operators, including public and private operators, or even NGOs. As a result, a fertile space for testing alternative

models of service delivery with new opportunities for partnerships in provision has been created.

In both countries official policies are unwilling to charge the poor much for WATSAN services. In India, there is a political reluctance to charge much for water, based on rights-based arguments and backed up with subsidies for the poorest. In fact, services have been historically ineffective; the poor do tend to pay more than their fair share, and subsidies are poorly targeted. In South Africa, a historic non-payment culture among the poor has recently been reinforced by the adoption of a "free basic water policy", whereby the Central Government has committed to providing 6000 litres per family of 8 per month free to all citizens from July 2001. Through the modification of boundaries, a key aim has been for cross subsidisation between water user sectors and the rich and poor to help pay for water services, backed up with specify Government subsidies; however these approaches do not guarantee financial sustainability.

In India, large-scale ODA projects (DFID, World Bank) tend to create project-based institutions to assist in implementation; they do not charge beyond costs of operations, costs of capital maintenance charges, and a low percentage of costs of capital; but they do have significant policy impact in the States they operate in. Smaller scale NGO projects (Water Aid), tend to work with grassroots organisations, and deliver local solutions to water supply and sanitation for peri-urban and rural poor that can derive fully cost recovering revenue flows, which are managed and used by the community. These schemes tend to have had less policy influence.

In South Africa, there has been less of an ODA focus on WATSAN provision and more focus on the indigenous development of innovative approaches to providing services to poor and marginalized consumers. For example, innovative contractual mechanisms such as the Build Operate Train and Transfer (BOTT) programme have had some success in developing water services in rural areas in a fast and integrated manner. There has also been a strong emphasis placed on managing demand in order to minimise costs, particularly through the use of pre-payment metering devices; and on providing a range of potential service option choices for poorer consumers. The incentive for controlling water uses is particularly strong in South Africa because bulk water is generally sold at cost to retail providers, who then need to cover those costs. Hence, many retail providers use a range of community and demand-led approaches to ensure scheme sustainability and applicability, as they are commercially aware of the risks of failure if local communities are not involved. Despite the free basic water policy and the challenges it creates for financial sustainability, there is a range of interesting experiences to draw from South Africa.

To conclude, both countries have a decentralisation policy in operation, but do not have clear policy guidelines encouraging (financial) cost recovery. In both circumstances, civil society is strong. In India, more emphasis and investment is placed on large-scale ODA schemes working in partnership with State

delivery organisations. Innovation, mostly from NGOs, in financially sustainable WATSAN delivery, has occurred mostly outside of these arrangements and has depended on the demonstration effect for wider uptake. In South Africa, the wider prevalence of the private sector in water services delivery (both bulk and retail), combined with unique consumer challenges with respect to payments, has resulted in a wide degree of innovation and partnerships with Municipal Government and civil society taking place, in order to find ways of delivering services that cover their costs.

3.8 CONCLUSION

From across the range of our research investigations, the main recurring findings are as follows.

3.8.1 On the definition of cost recovery

- Differing uses of accounting terminologies for financial costs (operations, maintenance, replacement, depreciation, etc.) means that practitioners define cost recovery in many different ways. Recommending one standard definition (as per the OFWAT-based breakdown of financial costs into three categories outlined in *Section 2*) seems to be a useful step forward, to both improve the general understanding of financial terms and to allow better cost-recovery benchmarking between programmes;

- As a result, there is considerable variation in the understanding of what cost recovery actually entails. Most practitioners view it in financial terms relating to recouping some of all of operation and maintenance type costs. There is no consensus equating a cost recovery objective for WATSAN service delivery to either the issue of financial sustainability *in the long run*, or to economic issues, such as opportunity (scarcity) costs;

- A commonly held definition of cost recovery exists across many projects in India, whereby cost recovery is seen as equating to recovering from users 100% of costs of operation costs; the majority of costs of capital maintenance charges; and some (if any) costs of servicing capital. In South Africa, however, for many operators and WATSAN professionals, cost recovery is equated with payment rates – i.e. the percentage of billed households that actually paid. Clearly, this definition provides little information about the efficiency of the tariff in force.

3.8.2 On Demand

- Household income, though important, is not the overriding determinant of demand for improved WATSAN services. Poorer people see water as a relatively income inelastic good and are willing to pay for it. The way they are asked to pay for it, however, affects how much they are willing to pay;

- The demand responsive approach was an importance conceptual step developed by the World Bank, which helped move the debate on WATSAN

in poor communities, away from a supply focus and toward a demand orientated approach;

- There is now a broad consensus on the usefulness of measuring peoples' demand for WATSAN projects, and the sorts of options on offer to do so. However, there seems to be little agreement on exactly when to implement a demand assessment; or how to use its findings to help design financially sustainable projects;

- At the moment, less accurate, but more feasible methods for assessing demand, such as focus groups, take prevalence in the field, over more intensive approaches such as participatory rural appraisal or contingent valuation studies. Affordability studies tend to dominate the demand assessment domain;

- The use of credit or other methods of financial assistance and the type of payment structure on offer are also important variables that influence demand;

3.8.3 On Credit and Subsidies

- Cross-subsidisation policies can be intensive to monitor and may fail to provide incentives to the service provider to bill or collect from many poor users, thus aggravating cash flow and financial sustainability problems. Social tariffs may also create disincentives for urban providers to expand their services to low-income areas, and are difficult to implement in non-networked rural areas. For example, social tariff blocks such as the South African "Free Water' Policy" are extremely difficult to reconcile with first-best cost recovery principles;

- The use of long run cost pricing for water plus a cash subsidy or a form of credit given to the user, could be an alternative to subsidising water tariffs in peri-urban area. It could also be a way of helping to pay back a loan for a WATSAN connection or investment. Output based tariffs and subsidies could also be helpful;

- Field evidence suggests that sustainable financing strategies for WATSAN projects often require the inclusion of a source of finance to pay for improved levels of services and operation and maintenance. Credit can bind people to repayment and can lead to growth and sustainability of the system.

3.8.4 On Charges and tariffs

- Designing and charging for a WATSAN scheme on the basis of the 3-5% affordability rule of thumb is misleading, though in practice many practitioners use it;

- For connections, findings suggest that the poor should pay for their connection charge, either via a flat rate fee or a fee that relates to their income;

- For recurrent supply costs, communal standpipe users should be charged a tariff linked to the operation and maintenance of a basic level of service and individual connections be charged the average incremental cost of the operation and maintenance, depreciation and capital cost of supply;

- An efficient tariff policy should be one that reflects the marginal economic costs of supply;

- In practice, users are most often charged in relation to the volume of water that they use. Lifeline tariffs for the lowest income households and increasing block tariffs were the most popular charging structures. Free blocks in the tariff are the least popular;

- However, a two-part tariff could help to capture long run costs, while maintaining a more effective affordability focus for the poor than lifeline or increasing block tariffs;

- For cost recovery, public sector agencies (bilateral agencies and NGOs) tend to aim to recover costs of operations plus some costs of capital maintenance charges. Private sector agencies (development banks, IFIs, the private sector) tend to aim to recover costs of operations, costs of capital maintenance charges plus any relevant costs of servicing capital. The public sector aims reflect a desire to meet basic needs, ensure an equitable use of the subsidy or grant on offer and, at best, to break even. The private sector aims reflect a desire to obtain an operating surplus or a return on the assets. In general, the private sector aims are financially sustainable; the public sector aims are not.

3.8.5 On Governance, institutions and the private sector

- In practice the most prevalent obstacle to achieving cost recovery was said to be political interference, inappropriate public policy or a lack of political willingness to institute cost recovery mechanisms;

- (Local) Governments and their WATSAN agencies must make the transition from being a 'provider' of services to becoming a 'facilitator';

- Often the only sustainable manner of managing rural water supply and sanitation is for a community management model to take charge. However, this can be difficult in cases where the legal and regulatory frameworks cannot formalise the status of such organisations;

- People's willingness to pay for investment costs has been found to increase dramatically when communities, rather than government agencies, have control over how funds are spent;

- The most viable private sector participation options for rural and peri-urban communities are local. They are seen as the following:
  - *Community based organisations.*
  - *Small-scale contractors and local suppliers.*

- Local level NGOs can play a critical facilitation role;

- One solution is to formalise the relationships between these small-scale private sector suppliers and a larger WATSAN supplier is in the form of locally established partnerships. Sector reforms in South Africa demonstrate a range of permutations for such management arrangements;

- Taking an "output-based" approach can help the local supplier to deliver. It can provide clearer thinking about the use of any subsidy on offer; perhaps directing funds to the one-time costs of service connection, rather than the ongoing costs of consumption. This may be particularly pertinent to how donor agencies implement their projects, especially as small-scale local entrepreneurs, community groups, or local NGOs could be these local suppliers. Small scale, output-based WATSAN projects have been successful in India;

- The regulatory environment is important, in a number of ways. An independent regulator can implement and monitor the progress of a cost-recovery policy, shielded from political interference competition; regulation can establish a level-playing field to allow alternative providers to extend coverage to new areas, or increase collection rates; regulation can develop price and tariff structures that maximise cost-recovery, minimise subsidies and maximise provision of services to the poor; finally quality regulation can allow for service level differentiation between categories of providers and/or consumers. Allowance for different standards can increase cost-recovery levels, by reducing the costs of service provision.

3.8.6 What works

- Practitioners suggest the following are key to maximising the chances of financial sustainability:
  - *Small scale, local projects.*
  - *The use of participatory assessment and focus groups to assess demand.*
  - *People-based systems of fund collection, management, utilisation and maintenance.*
  - *Transparency and a high level of public awareness and availability of relevant information.*
  - *Availability of flexible payment systems and supporting finance.*

- The projects that are financially sustainable (and therefore cost recovering) seem to have tapped into people's notional demands then found ways to make the project derive a return from its assets that allows it to finance itself. They tend to be locally run, easily replicable, but dependant on a wider decentralisation policy within which to work. They have mostly

benefited from a "seed" grant and parallel financing mechanisms. The poverty of their participants does not seem to have been a constraint to their success;

- In India large donor led projects with a project management unit at state level, a budget of USD tens of millions and an NGO implementing agency to assist, seem to be less financially sustainable than smaller, more locally focused community run WATSAN projects, with budgets of USD hundreds or thousands;

  The larger projects aim for ballparks of 10-15% capital cost payments from users, with upfront cash contributions varying from 1% to 10%; 100% operation and maintenance cost recovery; and about 60% cost sharing for individual latrines. The smaller projects achieve cost recovery rates of 50 – 100% capital costs, 100% operation and maintenance, replacement costs and operate their local networks at a surplus, using extra funds for wider investments. Both are working with the poor;

  - *The larger projects tend to follow a financial framework for implementation, which does not necessarily change at the local level. Some beneficiary groups could pay more towards the capital cost of the schemes than the 15% they are currently asked for. Other user groups do not necessarily easily or willingly replicate the project without another grant arriving to help them, given the low level of beneficiary contribution required to start with.*

  - *The smaller projects, however, tend to look for organic replication following a first "seedcorn" investment. They use and support local suppliers, and develop local rules. A local body becomes a facilitator. The local owners tend to use the asset to generate a surplus (like the private sector) and use local employment to run it. These projects have tended to develop out of crisis, or in spite of the wider WATSAN policy environment. Parallel financing mechanisms and support networks also seem to be important.*

  - *A much more decentralised and community-focused model of implementation, especially since constitutional amendments in the early 1990s has created the policy framework within which these smaller projects can take place.*

  - *Interestingly, one project illustrated the need to incorporate scarcity pricing (or water trading) into a cost recovery policy.*

- In post Apartheid South Africa, low levels of cost recovery in the WATSAN sector have occurred for political and historic reasons, especially in poorer township or rural areas. As a result, most practitioners think that cost recovery levels equate to the returns on WATSAN bills sent out, rather than the pricing policy at work;

  The changing institutional and regulatory landscape for WATSAN delivery in South Africa, including the decentralisation process, together with the expanding role for private sector investment in an increasingly

liberalised WATSAN sector are consistent with the achievement of cost recovery targets and long term financial sustainability. However, the New Free Water Policy has created a great challenge to the implementation of cost recovery as a key part of this reform process. The Government and Water Service Agencies are therefore left with the dilemma of having to work round the free water commitment, and this is creating a general exercise in widespread cross-subsidisation.

Nevertheless, the new model structures for WATSAN service delivery in South Africa at work in some locations may yet give rise to innovative contracting and collection mechanism, particularly in cases where community-based organisations are taking the role of service providers and where they have financial autonomy (as opposed to simply paying revenues to the municipal service authority);

Other NGOs in South Africa such as the Mvula Trust, claim that many stand alone rural WATSAN projects do exist (kick-started through an NGO facilitation process), with local level community management and good rates of cost recovery. Interestingly, it seems that these projects will probably not avail themselves of the free water policy, as the NGOs who coordinate them believe that it is not consistent with their schemes working.

4 COST RECOVERY AND THE CHRONICALLY POOR

4.1 INTRODUCTION

Much of the discussion in *Section 3* focuses on the poor in rural and urban areas who are not necessarily in a crisis position. They generally have access to social networks, credit and information, or NGO assistance, however limited these may be.

However, there is another population group not yet discussed, who are also often interested in WATSAN improvements. This is the *chronically* poor - a target group which humanitarian or emergency assistance organisations cite as those who really cannot afford to pay anything at all for WATSAN services.[77]

It would be misleading to suggest that the findings and case studies in *Section 3* are representative of all the poorest people globally and their WATSAN problems and demands. Yet, among the very poorest, WATSAN services are often close to the top of the list of their demands. The need to create financially sustainable WATSAN investments for this group is no less pertinent than for others, and is perhaps even more so if an attempt to build this group away from either their chronic poverty or a dependency on grant based aid is to be propagated.

Thus it is important to include an analysis in this report of the issues related to developing cost recovery strategies for WATSAN programme design for the chronically poor.

4.2 WHERE ARE THE VERY POOREST?

The Table below is drawn from the UNDP World Development Report for 2000/2001. It ranks the lowest third of countries on the Human Development Index, and presents a range of other indicators of chronic poverty for them. [78]

[77] Hulme, David. Date. "What is Chronic Poverty and Who are the Chronically Poor?" Chronic Poverty Research Centre, Manchester. http://www.chronicpoverty.org/DI/launchpres.pdf

[78] Source: The Human Development Report for *2001/02*. The full dataset can be found at: http://undp.org/hdr2001/indicator/indic_29_2_1.html

Table 4.1 The Poorest Countries (Drawn from the UNDP World Development Report)

Country	*HDI Ranking 1999 (the lowest third out of 162)*	*GDP per capita (PPP US$ 1999)*	*% below US$1/ day*	*% of population not using improved water sources (1999)*
Sierra Leone	162	448	57 (1989)	72
Niger	161	753	61 (1995)	41
Burundi	160	578	-	-
Burkina Faso	159	965	61 (1994)	-
Ethiopia	158	628	31 (1995)	76
Mozambique	157	861	38 (1996)	40
Guinea-Bissau	156	678	-	51
Chad	155	850	19 (1998)	73
Central African Republic	154	1,116	67 (1993)	40
Mali	153	753	73 (1994)	35
Rwanda	152	885	36 (1985)	59
Guinea	151	1,934	-	52
Malawi	150	586	-	43
Gambia	149	1,580	-	38
Eritrea	148	880	-	54
Benin	147	933	-	37
Angola	146	3,179	-	62
Senegal	145	1,419	26 (1995)	(22)
Cote d'Ivoire	144	1,654	12 (1995)	23
Zambia	143	756	73 (1996)	36
Congo Dem. Rep.	142	801	-	55
Uganda	141	1,167	37 (1992)	50
Tanzania	140	501	20 (1993)	46
Mauritania	139	1,609	4 (1995)	63
Sudan	138	664	-	25
Dijibouti	137	2,377	-	(0)
Nigeria	136	853	70 (1997)	43
Madagascar	135	799	60 (1993)	53
Haiti	134	1,464	-	54
Yemen	133	806	5 (1998)	31
Bangladesh	132	1,483	30 (1996)	(3)
Lao PDR	131	1,471	-	(10)
Bhutan	130	1,341	-	38
Nepal	129	1,237	38 (1995)	(19)
Togo	128	1,410	-	46
Pakistan	127	1,834	31 (1996)	(10)
Congo	126	727	-	49
Cameroon	125	1,573		38
Comoros	124	1,429	-	(4)
Kenya	123	1,022	27 (1994)	51
Papua New Guinea	122	2,367	-	58
Lesotho	121	1,854	44 (1993)	(9)
Cambodia	120	1,361	-	70
Ghana	119	1,881		36
Zimbabwe	118	2,876	36 (1991)	(15)
Myanmar	117	1,027	-	31
Mongolia	116	1,711	14 (1995)	40

[79] Although the HDI index generally correlates to levels of water supply poverty as measured by the HPI index, there are some notable exceptions. Many formally centrally planned and transitional economies such as Turkmenistan, Romania, Georgia, Kyrgyzstan and Viet Nam have high levels of water supply degradation, but lie outside of the poorest countries as measured by income or the HDI. The same is similar for a range of Latin America or Caribbean countries such as Ecuador, Jamaica, El Salvador and Peru. Other notable exceptions where HDI is not ranked in the lowest third, but access to improved water supply is, include Oman, Fiji, Libya, Cape Verde, China and Indonesia. Conversely, there are several countries within the poorest third as ranked by the HDI, but who have a level of access to improved water supply for their population, which lifts them out of the bottom third of this HPI ranking. Brackets around the water coverage figure represent these countries. They include Senegal, Djibouti, Bangladesh, Lao, Nepal, Pakistan, Comoros, Lesotho, Zimbabwe, India and Morocco.

India	115	2,248	44 (1997)	(12)
Botswana	114	6,872	33 (1986)	-
Swaziland	113	3,987	-	-
Morocco	112	3,419	<2 (1991)	(18)
Namibia	111	5,468	35 (1993)	23
Equatorial Guinea	110	4,676	-	57
Gabon	109	6,024	-	30

In general terms (and with some Asian exceptions), it seems reasonable to suggest that a chronically poor customer base for WATSAN improvements will be mostly found in sub Saharan Africa.[80] [81] It can be envisaged that these people will usually be located in rural and/or the more remote areas of the country in question. They may be suffering from economic collapse, military conflict, post-conflict stagnation, extreme environmental stress, and political/cultural/ethnic biases in policy or society; or even combinations of these issues. They probably own no or few assets (they may have lost them all, or never had many to start with); they probably have no social networks to speak of (there may be social fissures within as well as between their communities); and they may have absolutely no cash or other savings, or access to formal or informal credit networks.

In short, these people may be perceived of as simply not being able to engage in, or pay for, the sorts of demand-driven WATSAN programmes described in the cases studies in *Section 3.* In these situations, can a financially sustainable WATSAN programme be introduced and if so, then how?

4.3 *DESIGNING WITH COST RECOVERY IN MIND FOR THE CHRONICALLY POOR*

4.3.1 *Take a strategic, livelihoods based approach*

Assuming grant-based emergency humanitarian assistance is not a long-term option, a slightly different starting position can be taken when designing WATSAN interventions that have a chance of lasting financially for the chronically poor. In these circumstances it is important to:

- Firstly examine *why* people in the region are so chronically poor (perhaps by using the findings of the PPA or PRS process); then

[80] In terms of the original focus countries for this study, South Africa has an HDI rank of 94 out of 162, and 14% of its population in 1999 did not have access to improved water supplies. This means it falls neither within the poorest third of countries ranked by the HDI, nor within the lowest third of countries whose percentage of population does not have access to improved water supplies, measured as a component of the HPI. However, it has one of the largest negative numbers when its HDI rank is compared to its GDP per capita rank, indicating great inequality within the country. India, however, has an HDI rank of 115 out of 162 and does lie within the poorest third of countries when measured in this way. In 1994, 37% of its rural population were below the national rural poverty line; in 1997, 44% if the population were living below 1 US$ a day. However, as 12% of its population in 1999 did not have access to improved water supplies, this means it does not fall within the lowest third of countries whose percentage of population does not have access to improved water supplies, measured as a component of the HPI. Thus, although much activity has been taking place to improve WATSAN supplies in India, it could be suggested that due to its high levels of poverty, especially in rural areas, the issue of finding ways for the very poorest to sustain these water investments is an important one.

[81] The Financing Component of the EU Water Initiative has highlighted the gaps in ODA funding between those African countries who get most ODA for WATSAN and those that get least, in relation to their poverty and (lack of) access to water and sanitation services.(ERM 2002).

- More specifically, assess which assets, if invested in, could best help in assisting to build them out of their deep poverty. In many cases (especially in semi-arid areas) a key asset will be water supply and, less obviously, sanitation.

By taking more of a strategic livelihoods approach towards poverty and identifying the WATSAN investments that, in these cases, can be a means to help people out of poverty, rather than simply an end in itself, an important shift in WATSAN implementation design occurs. Viewed in this way, water and sanitation interventions can be seen as *strategic* investments (as income generators, money savers, livestock waterers, land investments, dwelling/ lifestyle improvements, health creators etc) - i.e., as things that can add value to people's livelihoods, help to reduce poverty and facilitate longer term planning.

By encouraging payments in kind towards their development; and payments for coverage into the future of their recurrent costs (perhaps through an gradualist output-based set of tariffs and subsidies), and through a sympathetic participatory design process (which may include the building of an extended household or group network for management), the strategic WATSAN investment can gradually become part of people's, and communities' asset base, and therefore one that they will seek to sustain and use themselves to their best advantage.

In a sense, WATSAN interventions for the chronically poor can thus be seen as a potential turning point, or a catalyst, to improving these people's livelihoods. Their implementation could be viewed as step one in a process, which aims to develop the kinds of cost recovering initiatives mentioned in *Section 3*.

The core suggestion is that by developing WATSAN projects and programmes for the very poorest in a way that has a much more explicit poverty alleviation focus, people will gradually be able to pay for and sustain investments in the long run. It will also allow the WATSAN programme to become recognised as an explicit engine for local poverty reduction and wider economic growth.

(It is interesting to note, however, that often WATSAN programmes do not rank highly within PRSP's. This may be because the developmental or poverty reduction potential of livelihoods focused WATSAN programmes may not be well understood outside of some water sector professionals and plannners).

A useful process to develop the design of a strategic WATSAN programme for the chronically poor is to follow a cost-benefit framework.

4.3.2 Use a cost-benefit framework for design

In practical terms at the design stage, the WATSAN practitioner working with the very poor is likely to have some immediate financial and economic concerns, most probably along the following lines:

- How can the beneficiaries be expected to pay for recurrent costs, let alone the capital cost of any such scheme?

- How will further projects be funded without any external subsidy?

- Will people pay at all for a sanitation component?

The key to getting the chronically poor to (start to) pay for a WATSAN programme is to ensure that there is *a clear and tangible stream of benefits* which the investment will bring them. The programme has to therefore link itself closely to alleviating some of the key drivers of their poverty, thereby showing how it can improve their livelihoods.

Three practical steps can help to facilitate the issue of financial sustainability into the design process.

1. Firstly, the design process needs to focus on the potential economic and financial benefits to be derived from the WATSAN programme by its users (and how to measure them).

2. Secondly, the design process needs to focus on the costs, and the associated charges that will need to be paid by the users (and how to calculate them), to sustain the benefits created by the WATSAN programme into the longer term; and

3. Thirdly, a cost benefit analysis should be undertaken to assess the long-term viability of the programme and to identify the importance of key benefit and cost assumptions that have been made.

Essentially, this process is a variant on the cost-benefit analysis framework described in *Section 2* and *Annex B*. However, in this instance it is used very much more as a planning tool to inject economic rigour into the design of the WATSAN programme for the chronically poor, in order to better identify the poverty reduction hooks and incentives that can be built in to create long-term financial sustainability.

Through discussing these kinds of issues with user communities and refining WATSAN programme designs accordingly (i.e., by discussing and refining technologies, institutions and financial arrangements), the process can also more confidently be termed as taking a demand led approach.[82]

The next sections look at each of these three steps in more depth, with case study examples.

[82]A comprehensive set of guidelines, which combines the development of a WATSAN programme design with the process of undertaking discussions with the very poorest to ensure information is obtained and the right technical programme is developed, have been produced by The Water, Engineering and Development Centre (WEDC) at Loughborough University: *Designing Water supply and sanitation programmes to meet demand: Concept and Principles; Practice and Implications*. WEDC 2001. A reference copy of the guidelines can be found at http:// www.lboro.ac.uk/wedc/projects/d4d.htm

4.3.3 Identify the wider benefits – WATSAN programmes as a turning point asset

The first challenge is to design and "sell" the idea of a WATSAN programme as a turning point, or catalyst, that can improve livelihoods and help to alleviate the chronic poverty of its potential users.

Thus, rather than designing the WATSAN programme as a low cost health or hygiene related programme - an end in itself - it may be much more useful to think about how the programme can better be developed and presented as an asset that can contribute towards alleviating people's poverty in a tangible and long term way. For example, a well-designed WATSAN programme can be presented as an investment that can help the very poorest to:

- Save money (on water and health related costs)
- Save time
- Be more healthy and productive
- Increase the value of their land
- Diversify their livelihoods
- Create cash
- Lower risk in their decision making

(An important part of the consultation process is to identify and quantify the current coping strategies for obtaining WATSAN services and sustaining their livelihood activities. These cost savings can be highlighted as important benefits.)

Successful examples of incorporating the wider benefits into the WATSAN programme

The following boxes provide three examples of successful WATSAN programmes in very poor areas, which focused to a great extent on the benefits to be gained from each project by their very poor users.

Box 4.1 Productive Rural Water Points in Zimbabwe

In the communal lands of southern Zimbabwe, very poor rural people were found to have cash incomes of just over US$100 per person per year in 1994. In a drought stricken area, secure and reliable water points were valued greatly by local people, as they had many productive uses which they could put water towards within their livelihoods systems. However, mainstream WATSAN programmes were focusing on emergency coverage - implementing as many boreholes and hand-pumps as possible – rather than on the livelihoods benefits to be gained from water. Due to the geology of the region, and to poor management arrangements, these boreholes often broke down or dried up.

A small UK Official Development Assistance (ODA) programme established a pilot project and then a series of "productive" water points. These water points focused on providing domestic water supplies as well as splash irrigation for an associated vegetable garden and other livelihoods usages (brick-making, beer brewing etc), using a more expensive, but more reliable, well technology. These schemes created cash (an extra 27%, on average, to peoples incomes), revitalised traditional revolving fund savings schemes that had collapsed as a result of drought, and they also created a focal asset for the community within their village. Although they cost more to implement and maintain, local people were willing to pay for and maintain them because they saw and experienced tangible benefits. The water supply projects created cash, diversified poor peoples livelihoods, lowered risk in long-term decision-making and helped to increase the value of people's assets (as the membership fee to join the schemes and "buy" a plot in the garden rose considerably over time).

Reference: Productive Water Points in Dryland Areas: Guidelines on Integrated Planning for Rural Water Supply. C Lovell. ITDG 2000.

Box 4.2 Sanitation in Southern India

WaterAid has been assisting work on improving rural sanitation in a network of southern Indian villages since 1996. Typically these villages have about 100 households, or about 600 people, 90% of who are below the rural poverty line of 18,000 rupees (about US$370)/hh/year.

Participatory surveys of a pilot village found that diarrhoea was a key issue, especially among women and the young. People were spending up to 2,000 rupees a year on travel and medicine costs (as with the nearest clinic was about 40 km away). To obtain reliable water supplies, women were rising early in the morning and spending up to 2 hours a day travelling over a kilometre to draw water by hand from deep wells. The key community demand was for improved water supplies. New tube wells were drilled, and the community was asked for a cash contribution along with funds to operate and maintain them. Self-help and savings groups were also created with a seed-corn grant. However, the community was unconvinced about the benefits of a concurrent sanitation programme. Village leaders were thus asked to put forward 10 households to be involved in the construction of "model" toilets, as the savings groups and the drilling of the tube-well was conditional on this issue, and 10 volunteers were found.

Each volunteer was given a subsidy of 650 rupees (US$13) per toilet to help build the latrine pit safely up to a plinth level (the total cost was 1500 rupees for the whole toilet structure). Technical guidance was provided to help build the superstructure, with the possibility of a 650 rupees loan if needed. The toilets were constructed with a bathroom and attached to a kitchen garden in order to provide a use for the wastewater. Out of a range of standard designs, different people chose different toilets. Once the first 10 were built, they became very popular, especially among the women, due to their convenience, and more households requested a latrine. By the end of the first year 68 toilets had been built for 96 families. By the end of the second year, every household in the pilot village had built a toilet.

Loans of up to 650 rupees were available to those who could not afford a construction contribution. With a 650 loan and a 650 subsidy, only 200 rupees maximum was required to build the latrine. The poorest households in the village took on these loans. The self-help groups also offered further financial assistance. The income from the kitchen gardens helped to pay back the loan for the toilets, producing on average 30 –90 kgs of fruit and vegetables a year, net of personal consumption, which was sold in local markets for up to 400 rupees (US$8) in total.

A follow up participatory survey in 1999 found that no single case of diarrhoea had lasted longer than 2 days, and very few people were spending any time or money in the clinics. As a result, the saved money was being spent on replacing roof tiles and buying more animals, among other things. By the end of 2001, sanitation uptake was occurring in up to 40 neighbouring villages, with people willing to pay, or take loans, for the full costs of the latrine. Households had seen the economic benefits the latrines were bringing to owners in the first village. A subsidy is still provided on any new latrines, especially for the poorest, as they see the re-investment of any cost savings the latrine generates for the household as a better form of cost recovery. Self help groups also provide a range of financial assistance.

Importantly, sessions on hygiene awareness and education are run in parallel to the latrine building process. A latrine mini-mart has been created in a central location, selling all of the spare parts, building materials, soaps and disinfectants that latrine owners need, while being a source of advice to new latrine owners. The compound also displays the range of latrine models a household can choose from. Both the goods the shops sells and its staff have provided jobs for local rural people. Further, each village is encouraged to take on and pay for a WATSAN caretaker from a scheduled (lower) caste. Although the wage is not significant, the strong role in the community, which this provides for these people, is often of great personal importance.

The sanitation programme has saved and created money, increased local labour productivity and enhanced the value of the household assets which very poor people own.

Reference: SCOPE and WATER AID India. Rural Water and Sanitation Programme, Tamil Nadu.
http://www.wateraid.org.uk

Box 4.3 Improving Security and Access to Water and Sanitation in Southern West Bank

People living in rural areas in the southern West Bank are very poor. As well as the constant threat of drought, they suffer from erratic income, isolation and vulnerability due to the economic closures and the ongoing civil and military conflict. Average annual cash income per person is about US$448, but these income flows are very vulnerable. People are not allowed to drill boreholes and they rely mostly on harvesting rainwater and purchasing vended water, paying up to US$6 per m^3 in the summer months, which can often push them into debt.

Since 1998 a DFID programme has sought to improve rainwater-harvesting assets - specifically cisterns – and toilets, especially on poor peoples' land. The cost savings benefits to poor people are large in relation to their income (ranging from US$250 to US$580 per household per year) and they are encouraged to plan to make the most out of these savings streams, by re-investing in other aspects of their livelihoods systems. Further, by focusing minds on the future benefits of the project, people are given the choice to finance as much of the initial project construction themselves as possible, finding cheaper ways to construct by working with their neighbours, going into short term debt, etc., so that the grant allocation set aside for construction can be saved and used by the community to start a village fund for other development purposes. Following a successful pilot project, this approach has been scaled up. Household toilets are proving to be a popular component of the project, as the benefits of convenience become clear.

An important component of this project has been the investment in key assets on poor peoples land. With no cistern on their land, poor people have to rent land with a cistern, or pay for water and keep it in containers, at risk of vandalism or destruction. With a key asset now on their land, poor people are returning to their land and adding other investments to it (better roofs on buildings, nearby splash irrigation schemes, etc.), increasing their security and their ability to plan, and borrow, for the long term.

Reference: HWASP Project. Palestinian Hydrology Group www.phg.org

All of these projects were successful because they focused on the wider potential benefits of the interventions (rather than simply on the provision of low cost WATSAN technology to people on low or erratic incomes), and they sought to use the WATSAN intervention as a turning point to help alleviate chronic poverty. Through pilot projects ("seeing is believing" tactics), they showed, incrementally, how the WATSAN scheme could create savings, improve assets and provide secure income streams that helped to encourage diversification and lower risk in longer-term decision-making.

Where people were unsure of what they wanted - for example sanitation - the case studies demonstrate that, through the use of a combination of pilot projects, conditionality linkages and social marketing techniques, such hurdles can be overcome.[83] Once a pilot project is in place, it becomes easier to show and disseminate the tangible financial and economic benefit streams of the option.

[83]A good guide to developing a social marketing approach for WATSAN programmes, particularly for sanitation promotion can be found in *A social marketing approach to hygiene promotion and sanitation promotion* in the DFID Guidance Manual on Water Supply and Sanitation Programmes (1998); pp201-220.

4.3.4 Identify and quantify the costs

Once the benefits of a potential WATSAN programme to the chronically poor have been quantified, established and discussed, a discussion of costs can then be introduced to the design process. The aim is not necessarily to find the cheapest possible project design, but instead to maximise the cost to benefit ratio of the project. Importantly, this approach starts to move the financial and economic design process away from a focus solely on technical options and their perceived affordability and into issues of payment structures, financial support and institutional arrangements.

Cost discussions must be engaged in with the users as part of the WATSAN programme design process, in order to gain their buy-in to the project, and to maximise effectiveness of the WATSAN programme by aligning it with user's preferences. The user community should be encouraged to think about what they want from their WATSAN services and what they would have to realistically do (or pay) to maintain it. It will be useful to discuss the costs of the current coping strategy to put the new programme into perspective.

With a long-term view, discussions should be facilitated that allow the community to find innovative ways for the users to make a return on the programme to cover costs in the long run. Many communities will come up with innovative cost recovery ideas, especially if the benefits stream from the project is clear and tangible. One option may be to suggest output based charges, which initiate the process of user payments, only once tangible benefits from the intervention have started to accrue to the users. It may even be possible to discuss how these returns might be used to grow and sustain the WATSAN system into the future. For example, the surplus or supporting finance derived from the scheme might be used to help people both to move out from poverty (via savings clubs, revolving funds, community finance schemes, etc.) and/or to loan money to help expand or replicate the scheme for others.

However, the development of cost recovering charges will take time, and will only be possible for the very poorest, once the benefits of the project start to kick in. Therefore, a graduation of cost recovering charges, based upon the principles outlined in *Section 2* should also be considered. The donor or Government Agency should expect a longer-term timetable among these sorts of programmes before user payments will consolidate into meaningful levels of finance. As part of the initial capital cost, therefore, some future replacement funds may also need to be incorporated.

Further, the offer of mechanisms to help with particular short run co-financing needs, such as through credit or the use of any saved grant money for other community needs (rather than the provision of an inflexible grant for WATSAN only), can help to both increase their sense of livelihood security being related to the projects in the programme, and also bind users to repayment. This can particularly be the case if the programme contains a related cash-saving, or a cash generation, component.

Thus, cost discussions must be engaged in with the users as part of the WATSAN programme design process, and these discussions must focus on the longer run costs of sustaining the projects; ideally towards being able to derive a return on the investment, either to pay back to the donor, or to use as surplus capital to fund an additional project in the programme – allowing organic growth to slowly start.

Empowering poor people in the *wider* institutional design process, by discussing their preferences over how these technical WATSAN options are initially paid for, maintained, operated, charged for, owned and developed over time, and how their benefits can be captured and best used by them as project owners, can provide a much stronger foundation for a cost recovering WATSAN programme.

Successful examples

The following boxes provide two examples of local preferences and ingenuity about how to cover the costs (through charges) of WATSAN projects in very poor areas.

Box 4.4 A Local Idea to Covering the Cost of Toilets in an Urban Slum in Southern India

Tiruchirappalli City is in the heart of Tamil Nadu, southern India and has a population of 668,000. The city has 155 slum areas containing about 115,000 people. Most are well below the urban poverty line of 22,000 rupees (US$450) per person per year. The Municipal Water Corporation had originally built community latrines in the slums in the mid 1980s, but these latrines fell into in a state of decay and had been totally abandoned by local residents. This had meant that people were defecating in, around and nearby to the latrines and their environs, rather than using them as they had been meant.

The key problem was a lack of a sense of ownership over the latrine blocks. The blocks had been built by the state but were not properly maintained, cleaned or repaired. Users felt no sense of ownership and the infrastructure fell into decay. There was little interest in the construction of new community latrine blocks as people felt the same thing would happen again in time.

WaterAid coordinated a programme, which created local Women's Self Help Groups from within these slum areas and discussed possibilities. Could a new sanitation block be constructed? Was there a need for one? If so how could it best be run in the long term? There was a clear local need for improved sanitation and washing facilities in each neighbourhood and there was plenty of thought as to how such a facility could be managed.

The Project emphasised that people had to think about how to sustain the project in the long run, or no investment would go ahead. One group came up with the idea of paying to use the toilet – 50 paisa (1 US cent) a time, to incorporate the cost of cleaning materials, the wages for cleaners, and a watchman cum ticket issuer.

An initial grant of 380,000 (US$7,800) rupees was provided to build a 20-seat latrine block, decorated and finished in an attractive fashion. The charging system was then introduced in one scheme, the first of its kind. The self-help team looked after the upkeep and maintenance of the toilet block. Every user is issued a 50 paise token allowing him/ her to use the toilet. The self-help group collects the money from the paid ticket issuer and closes the account every 12 hours. The accounts (a ledger) contain details on the number of users and money collected. During nights a watchman cum ticket issuer is appointed.

An average of 300-600 people use each community toilet every 24 hours, totalling 150-300 rupees a day. Some in the community were against the idea at first, but now people prefer to pay their 50 paise and use the pay and use toilet blocks because they are secure and clean, compared to other options available for defecation.

There are now 5 such schemes in the slums. Since they have been in operation, the pay and use toilet schemes have grossed 964,500 rupees (US$19,500). With 120,250 rupees spent on their upkeep, 344,240 rupees have been spent on other development activities in the area, related to improving WATSAN services. The remainder has been banked and is used as a monthly fund to help the slum community on wider developmental activities. In theory, the capital costs of the project, paid as a grant by the project sponsor, could have mostly been repaid by now.

Reference: WATER AID India.. http://www.wateraid.org.uk

Box 4.5 Payment of Cost Recovering Local User Charges, Rural Zimbabwe

The rural WATSAN programme, which created "productive" water supply schemes for very poor communities in rural Zimbabwe, was referred to in *Box 4.1*.

Once installed, the productive water points allowed very poor people to derive an extra US$28 a year, gross, of income (which equated to about an extra 27% of their average annual income). With about 30 members per garden project, user committees each decided upon annual user charges to help finance their scheme into the long term. These annual charges (on top of one off membership fees which ranged from US$4 to US$25 at different schemes) derived from all members, summed to between US$50 to US$245 per scheme. An annual operation and maintenance charge, calculated by project staff on an average incremental cost basis, gauged the required costs of operation and the costs of maintenance for the schemes to be about US$90 per scheme per year. Hence, the user charges the committees had decided upon were in the most, therefore, already covering costs of operation and of capital maintenance. Two years after the benefit stream had been accruing to scheme users, however, a small contingent valuation survey was undertaken. The study showed that the community would actually be willing to pay fees of US $700 on average per scheme per year. This would be enough to pay for the operational costs, the costs of capital maintenance and much of the costs of capital of each scheme over a 20 year project lifetime.

The fact that people had decided to pay something towards repair and maintenance for these schemes stood in contrast to many other more conventional water and sanitation projects in the region. And although the *actual* payment regimes were wide-ranging and somewhat arbitrary, they were not insignificant. But, it was even more interesting to note that over time, a more ambitious level of user charge could gradually have been set, ensuring the financial sustainability of the schemes on the basis of cost-recovering user charges.

References: Waughray, DK and Moran, D. Water Benefits in Dryland Areas. In Pearce, D.W (ed.) Valuing the Environment in Developing Countries;. Edward Elgar, 2002 ISBN 1 84064 148 7; Waughray, DK., Mazhangara, EM., Lovell, CJ. 1998. Using Groundwater to Generate Economic Benefits: A Case Study from South East Zimbabwe. World Development. Vol. 26, No. 10.

4.3.5 Deriving a Cost-Benefit Ratio

With a calculation of the benefits stream in place and a good understanding of the costs that will be incurred and the funds that can be initially collected, a cost-benefit analysis (CBA) of the WATSAN programme can be developed. This does not have to be a complex or exhaustive procedure, and the key steps to carry out a CBA are outlined in *Annex B*.

The usefulness of a CBA in this context is that it can show both the users and the programme designers quite clearly:

- How valuable the benefits of the project are; and
- How large they are, when compared to its costs.

Again, the aim of developing a CBA in this context is not to show how affordable the WATSAN programme can be made for extremely poor users, but instead how it can be best designed to maximise the ratio between its costs and the tangible benefits it can deliver to the very poorest, thus enhancing the chances of a cost recovering project. With a tangible benefit flow (the marginal

impact of which will be great for very poor people), the users can more easily be encouraged to pay back into the programme to keep it going in perpetuity, in order to sustain the flow of benefits that improves their livelihoods.

For simplicity, a CBA that keeps all prices in financial terms may suffice.

As described above, payment methods can be diverse and innovative depending on the individual community. The cost and benefit calculation process simply provides a guide as to what size these payments should be in order to allow longer-term costs to be recovered (and to possibly make a return on the asset). The CBA can also be used to show that even with these charges in place, there will still be a net, and tangible, gain to the users.

The CBA can also help to inform decision making by showing key sensitivities. For example, if the benefits change by X%, or the costs by Y%, the CBA can be used to determine the resultant impact on the overall viability of the project. This will help in programme planning and in monitoring and evaluation, especially given that the very poorest will be living in marginal circumstances, where a small change in income or rainfall may be catastrophic to their livelihood strategy.

By default, this also makes the programme more demand focused, as an explicit focus is given to both highlighting and refining the benefits to the poor, as well as discussing and adapting cost structures. If designed well, users will see the potential in the investment, regardless of their personal situation, and will therefore support it. They will be aware of the benefit stream and (perhaps after a slow start) will be willing to start to pay for the services at a level that will recover costs and sustain the project the long run.

4.3.6 Ensure the Poor Capture the Benefits

A final key issue in the design of financially sustainable WATSAN programmes for the very poorest relates to the capture of the benefits stream.

How can those benefits that accrue from the programme help users in a tangible sense and how can the programme design process ensure that the users feed some of the benefit stream (in the form of cash and labour) back into the WATSAN asset to maintain, replace and grow it?

Economic and financial analyses can underpin this discussion. They can also identify where such costs and benefits can accrue, and how they can be best managed to minimise costs and maximise benefits.

However, much of the discussion about benefits capture now starts to merge with social development, community-based management and institutional issues. In a very general sense, it seems that if each community (or sets of extended households) feels that they own each project in the programme and are responsible for it, and if it has been designed in the way that they wanted and they are clear as to the tangible benefits they will derive from it, then they will most likely develop systems to sustain it.

Institutional devices such as community contracts and memoranda of understanding, whereby it is clear what roles and responsibilities the community are taking on, can be helpful in these instances. Undertaken in a transparent way, they can create a social pressure within the group to try and avoid default on payments or other agreed responsibilities.

Also, the use of a one-off small-scale subsidy to kick start or develop a credit system or some form of community loan or financing mechanism related to the WATSAN project can be extremely useful. This can help to create a framework whereby cash can be borrowed, collected, saved and distributed to cover both long run costs, and the capital costs of others who may want to join or copy the scheme, having seen the benefit stream that can accrue.[84]

It is important to recognise that cost-recovering payments will not start immediately, but that they will develop over time. However, the earlier analysis shows how one can work to pinpoint the size of the benefits stream that people can expect, and the level of cost they will need to pay, in order to maintain that stream of benefits over time.

The use of the initial grant allocation in an innovative manner can also help here. The more the community themselves co-finance the project, for example (having been made aware of the benefits they could gain from it), the more likely that any residual left in the grant or subsidy could be put into a village fund to help with any other works, or for the loaning on to further villages for replication of the scheme.

In this way, the overall objective of the WATSAN programme whose aim is to improve the level of financially sustainable services to the very poor could be to provide enough kick start financing, and enough of a tangible benefit stream from its portfolio of projects, such that its users gain economically from the investments and the surplus that builds up can be used to replicate or spread hybrids and locally adapted versions of the projects outward from the initial programme region.

Finally, it is assumed that other development professionals with skills in social development and community institution building will be interested in helping to develop this component of the programme.

4.4 THE SECUREWATER RESEARCH INITIATIVE

In relation to the issues described above, particularly in the recommendation of taking a livelihoods approach to WATSAN interventions, there is another

[84] Two useful references in relation to WATSAN and community financing approaches are Varley, RG. 1995. "Household Credit for Water and Sanitation." Financial Services and Environmental Health. Environmental Health Project. http://www.crosslink.net/~ehp/appstu2.htm and IRC, 1992. Paying the Piper: An Overview of Community Financing of Water and Sanitation. IRC International Water and Research Centre. http://www.irc.nl/products/publications/online/op18e/index.html

current DFID-supported research initiative which is picking up on these ideas and is therefore of great relevance to the cost recovery debate for the very poorest.

The SecureWater research programme involves ODI, ITDG and the Save the Children Fund. (www.securewater.org) It aims to increase understanding among interveners in the water sector of water-livelihood linkages, enhancing their capacity to eliminate poverty using DRA approaches.

SecureWater draws on the sustainable livelihoods framework and the household economy approach in order to understand the nature of water-livelihood changes at the household level and identify best practices for the elimination of poverty through water supply interventions. Principally it will seek to inform and assist in the development of more demand-responsive approaches to water supply development. It will examine how livelihood outcomes are affected by changes in the nature of water supply at the household level, the extent to which these factors are currently addressed, and how DRA can be enhanced to facilitate sustainable financing at the household and community level.

The aim is to develop sustainable livelihoods-based decision-support tools on WATSAN for use in donor country strategy papers and government and NGO sector development plans in five target countries, India, Sri Lanka, Kenya, Malawi and Sudan, by the end of 2003. This will allow a far greater range of case study material to be developed, than the examples presented here.

5 COST RECOVERY – HOW TO MAKE IT HAPPEN?

5.1 INTRODUCTION

By drawing upon the theory and findings of the previous sections, in this chapter we present an analysis of the factors that seem to encourage financial sustainability in WATSAN projects in rural and peri-urban areas. We identify a series of practical "silver bullet" issues that, if addressed, can increase the chances of successful cost recovery. This evidence is then pulled together to form a policy and programme design framework that could maximise the chances of cost-recovering WATSAN investments for poor people in peri-urban and rural areas.

5.2 WHAT'S IMPORTANT?

A number of important underpinning issues on cost recovery emerge from the theory and our research findings.

5.2.1 *On economics and finance*

The financial challenge of meeting the MDGs for WATSAN is extremely large. It will have to involve a combination of contributions from budget allocations in developing countries, ODA, private sector finance and user payments. Financial sustainability is vital in the long run, therefore, as there are not enough public or grant based resources to cyclically (re)finance all the existing or new WATSAN projects required in rural and peri-urban areas.

Many practitioners, however, misunderstand the concepts and terminologies related to cost recovery, demand, economics and financial sustainability.

As a first step, a clear definition of the gradation of financial costs that can be recovered by a WATSAN project or programme should be devised. It should include three baskets of costs – the costs of operations; the costs of capital maintenance charges; and the costs of servicing capital. Most current initiatives (especially ODA-based ones) recover only a few of these financial costs (mostly related to operation and limited capital maintenance issues). Hence most WATSAN programmes are not financially sustainable.

There is also an important distinction between economic and financial interpretations of costs and how to recover them. While most WATSAN practitioners focus on financial costs, it is also important in terms of an efficient allocation of water resources across society and the environment, that a consideration of economic costs, including opportunity costs, is not lost in the sustainability debate. This will become more pertinent as water resource policies underpinned by river basin management principles are implemented.

Finally, WATSAN programmes should be evaluated on the ratio of economic benefits to costs and not solely on their cost-effectiveness in meeting particular policy goals. This is important, as a focus on the tangible net benefits a programme will deliver to both users and operators can help underpin the design and acceptance of a cost-recovering charge for the service, enabling the benefits to flow into perpetuity. For chronically poor users in particular, focusing discussions and attention on the poverty-reduction potential of a tangible benefit-stream is extremely useful. In these cases, the purpose of the WATSAN programme should be seen more as a strategic livelihoods, or poverty reduction intervention, then as a water or sanitation supply vehicle only.

5.2.2 On income

Though quite prevalent, assessing the affordability to poor people of WATSAN services on the basis of the 5% rule of thumb can be misleading. By using an affordability benchmark, many WATSAN professionals have interpreted the use of a demand responsive approach as one that matches appropriate technology to the perceived affordability (cash-based income) of the users. Commonly, potential users in poor communities are offered a range of technical, low cost, affordable options from which to choose. This can lead to an under supply of services.

It seems clear that household income, though important, is *not* the overriding determinant of demand for improved WATSAN services. Poorer people see water as a relatively income inelastic good and are often willing to pay more for it - or are forced to, when current services are bad. From a range of studies, it seems that depending on local income conditions, the income elasticity of demand for an improvement in WATSAN services will not be more than 0.5, and in most cases will be much less.

5.2.3 On assessing demand

Since the International Decade of Drinking Water and Sanitation, there has been broad consensus of the usefulness of measuring peoples demand for WATSAN projects, and the sorts of options on offer to do so. However, nearly a decade and a half later, there seems to be little agreement among WATSAN practitioners on a precise definition of demand, and more importantly, what demand assessment is, when to do it, or how to use it; although the most prevalent method for assessing the demand of users for WATSAN services is currently via the use of focus groups, not via contingent valuation surveys.

In general, when assessing demand, two approaches can be taken: an analysis of affordability, based on estimating households' current income and assessing what type of WATSAN service they could pay for; or an analysis of willingness to pay, estimating households' desire for improved WATSAN services. They are not the same thing, though both are often called, inter-changeably, "affordability", "willingness to pay", or "demand assessment" studies. The difference can be seen as to whether the study assesses either a

household's effective demand (their affordability of a service on offer), or their notional demand (their willingness to pay for a service they want).

The use of demand assessment, and the willingness to pay estimates it derives from potential users, should focus on identifying notional demand. This is because, within a willingness to pay bid, respondents will value not only the technical option on offer, but also their preferences for many other attributes - the institutional arrangements, the suggested pricing schedule, and the credit options on offer, for example. Hence, demand assessment sits more closely with an economic assessment of costs versus benefits, rather than a purely financial assessment of costs.

This economic approach toward demand assessment fits well with most aspects of the World Bank's useful 1998 identification of a DRA for WATSAN. The key weakness of DRA, however, (and especially for the rights-based proponents of WASTAN) was not to focus on the fact that poor users will also value options which can help them pay for the WATSAN services they want. There was a gap in DRA, which failed to properly highlight the usefulness of credit to facilitate pro-poor design.[85]

Taking on board the issues of credit in WATSAN programme design, a properly demand responsive approach can be seen to be, therefore, a bit like "social marketing" - designing a new product for the WATSAN market that simultaneously educates consumer preferences about the benefits of competing options. Iteratively, through the use of focus groups or consumer surveys, a demand responsive approach can help reveal the technical possibilities, the preferred institutional arrangements, the sort (and level) of financial support preferred and a cost recovering tariff that, when assembled together, can create the right WATSAN "product" for that community. Studies that follow this approach seem to provide (knowingly or unknowingly) more financially sustainable project designs.

5.2.4 On capturing payments – use of tariffs

There are several challenges facing tariff reform, many of which include a need for political reform. For example:

- The poor are assumed to be unwilling or unable to pay;
- There may be a political reluctance to charge; and
- WATSAN service delivers may be unwilling to charge, given the effort (administrative, political, and other) required to unravel existing tariff structures and implement new ones.

[85]Much recent attention has focussed on the role of social marketing to improve WATSAN buy in among communities. Little attention, however, has been given to a related marketing technique – conjoint analysis – that could be useful for uncovering preference weights for service delivery.

Despite these drawbacks, tariffs are *the* primary source of user-finance, which is critical for cost-recovery and sustainable reform. The goal therefore is to develop mechanisms that promote good tariff policies and that provide the accompanying incentives for reform. Potentially, tariff reform and associated increases in user tariffs (to move closer to cost-recovery levels) have the highest potential for unlocking substantial amounts of private sector finance in a sustainable manner.

An efficient WATSAN tariff policy should be one that reflects the marginal economic costs of supply. This should be the "first-best" benchmark against which the tariff is designed.

Tariffs can be flat rate or volumetrically based. In general, volumetrically based tariffs are preferable, as the charges for different amounts can be more pro-poor focused (lifeline, increasing block or two-part tariffs). Free water tariffs, though politically attractive, can be difficult to target particularly on the poorest, and can create financial sustainability challenges for the operator (why try and bill the poor at all?). It is important to not forget that people in general are WTP for WATSAN, and that WTP for service improvements is generally income inelastic.

Communal (standpipe, or borehole) users (probably poorer users) should face a tariff linked to the costs of operation and the costs of capital maintenance charges for a basic level of service; and users who choose individual connections (probably less poor users) should be charged the average incremental cost (AIC) of the costs of operation and the costs of capital maintenance charges, plus any costs of servicing capital, which are relevant to the programme. The same differentiation should apply to networked or non-worked sanitation (or sewerage) services.

The use of output-based tariffs, whereby users pay gradually increasing tariffs in exchange for an improved service and based on a schedule of improvements promised by the water supplier, may be a useful way to gradually introduce the concept of payment into existing or new WATSAN programmes for poor people. With the right programme, poor people will pay for a connection charge to a WATSAN programme. Some may need a loan or subsidy to help them.

Within the programme, differing volumetric charges, cross subsidies and other forms of targeted tariff policy or ladders of service delivery can also be introduced for different consumers, although within-programme cross subsidies (which can work) can be very difficult to monitor.

With these minimum-charging principles in place, the WATSAN investments will be financially sustainable, assuming that grants will be required to kick-start or expand non-networked, and usually rural, improvements. For those programmes where a return can be achieved on the WATSAN asset, the accumulated financial surpluses can over time also be lent to other groups to start similar WATSAN projects.

Without these principles in place, WATSAN programmes will not be financially sustainable.

5.2.5 On help with payments for WATSAN services

The way poor households are asked to pay for WATSAN services affects how much they are willing to pay. Discussing the use of credit or other methods of financial assistance, and the type of payment structure on offer, are important, as they can help shape a poor household's WTP. That is, credit can translate their notional into effective demand for WATSAN improvements.

A sustainable financing strategy for a WATSAN project or programme may often require, the building of a source of financing to help poor people pay for access to an improved levels of services and its long run costs, as well as an appropriate technical solution.

Cross-subsidisation policies and social tariffs, while useful, can fail to provide incentives to the WATSAN service provider to bill or collect from many poor users; they may create disincentives for these providers to expand their services to low-income areas; they may be difficult to implement in rural areas; and they are often not a transparent way of meeting the objective of financial sustainability. Subsidies to help people access services may be more useful and pro-poor.

A theoretical alternative to avoid the continued subsidisation of WATSAN costs for poor people can be the use of marginal/ AIC cost pricing for WATSAN services (especially via the two-part tariff concept), plus a cash subsidy or a form of credit given to the user, to help pay back a loan for a WATSAN connection or investment. Indeed, credit can help tie users into a repayment schedule. Alternatively, more practical approaches often involve various forms of pre-payment or pay as you use charges that can be successfully implemented with clear concessions for poor or disadvantaged users.

5.2.6 On institutions, governance and the private sector

The most prevalent obstacle to achieving cost recovery is political interference, inappropriate public policy or a lack of political willingness to institute cost recovery mechanisms. It is important to change this. Contexts for political unwillingness to charge can differ between countries. In India, a historic public-sector "rights-based" policy is deeply rooted towards heavily subsidised WATSAN provision, with little practical thought given to financial sustainability; in South Africa the political difficulty in moving away from centrally provided, historically free services, while balancing the impression of increased social justice post-Apartheid, is the greater influence on the free basic water policy. In both cases however, the policy does not effectively target the very poorest who still pay a lot (in time, effort and money) relative to their income, to source WATSAN as a result of low quality public-sector services.

The strength of local institutions is important. Local, people-based systems of fund collection, management and re-investment are vital to the success of WATSAN programmes for poor people. Hence, a decentralisation policy that creates the right legal and regulatory frameworks to formalise the status of such local organisations as service providers is important. Governments – especially local governments - and their WATSAN agencies can then make the transition from being a 'provider' of services to becoming a 'facilitator'.

The right legal environment could involve recognising the creation of community water management groups or informal service providers as legal entities and defining a clear division of responsibilities between them and the relevant agencies for WATSAN delivery, such that these stakeholders could:

- Have the right to access credit and financial support;

- Have the right to receive construction support or technical backup from relevant agencies to implement their own WATSAN scheme; and

- Have the right to receive the specialist support they need to help sustain their own WATSAN scheme's management services (for example, via training to develop community capacity for operation, maintenance, and financial management).

The right regulatory environment may well be independent, such that the non-politicised pro-poor WATSAN regulator can:

- Provide an institutional means to effectively implement and monitor the progress of a cost-recovery policy, shielded from political interference.

- Establish a level-playing field for both large–scale public and private sector service operators *and* alternative providers, to encourage the entry of these alternative providers to extend coverage to new areas, or to increase collection rates;

- Develop charging structures that maximise cost-recovery, minimise subsidies and maximise provision of services to the poor, via effective pricing policies and tariff/ subsidy mixes; and

- Allow for service level differentiation between categories of providers and/or consumers.

In terms of the private sector, a number of important issues emerge from the study.

Firstly, there is a need to shift WATSAN thinking in general much more toward having a private sector ethos, if financial sustainability is to be achieved. This does not necessarily mean transferring ownership of assets or extracting profit per se, but it does mean deriving enough return from WATSAN investments (via charges, tariffs or some other cash-creating

mechanism) such that they can be sustained in the long run, or pay back their costs of servicing capital.

Evidence shows that community groups, local NGOs, or smaller locally aware water retail operators can operate WATSAN schemes in this way quite successfully. Larger ODA project-based institutions seem to be less successful at achieving this. Hence, the most viable private sector-style options for delivering WATSAN services to rural and peri-urban communities seem to be a range of local ones (or varieties of partnership between them). They can include:

- *Community contractors,* who can help foster community empowerment and ownership of the project, but who require social development and technical support;

- *Small scale contractors and retail suppliers,* who can deliver services and/or or help develop local private enterprise in WATSAN delivery;

- *Water and sanitation related NGOs,* who can provide social development and technical assistance;

- *Local private sector services,* which can supply the products required in the supply chain (taps, toilets, pipes, tools, etc.) for small-scale water service providers, for example, or who can specialise in local billing and metering technologies via local consulting organisations.

Secondly, the *non-local* private sector component is important, especially in relation to the provision of finance, technical support and water delivery/ wastewater collection for these local schemes to be successful.

In relation to finance, *Annex H* provides an overview of the sorts of financial instruments that are available to help fund WATSAN investments. Based on the types of financing instruments that are available, it seems that, in principle, international institutional investors, combined with ODA support, could be attracted to the sector, given some of the returns such local schemes generate (see *Section 5.6*). However, given the sub sovereign nature and perceived high-risk nature of the sector, the use of ODA or other risk-reducing mechanisms will be critical to catalyse such lending (or to provide a component of the return on finance the institutional investors may ask for). Indeed, this may be a more effective use of ODA money in the WATSAN sector, than the direct investment of it in the often non-financially sustainable donor-driven WATSAN projects, more commonly observed.

In relation to technical support, there could be a role for international private sector WATSAN companies, especially in the provision of management techniques, accounting, cost-control, billing software, customer relations etc., to those institutions who are able to manage a programme of cost-recovering WATSAN schemes in rural and peri-urban areas. Furthermore, as the experience in South Africa indicates, there may even be a partnership role for

such companies in the delivery of such programmes (for example, BoTT), alongside an NGO or other type of institution. In these instances, however, it would be important to study closely the profitability (which may be low) compared to the risks (which may be high) of getting an international company involved; and again thinking about how ODA may be more useful as a catalyst to promote this involvement, rather than using it as a direct source of (non-sustainable) grant financing.

Formalising the relationship between the small-scale private sector style schemes and the main (private or public) bulk supplier (mostly for the peri-urban schemes where networked options are more likely) is also important, as securing reliable water supply provision and wastewater treatment is clearly critical. Again, developing innovative financing agreements, or underwriting the risk of payment of the scheme or retail supplier to the bulk provider (especially in the short term when user payments may be slow to come on stream) is important. ODA or government subsidies may be better used here, than in aiming to provide non-sustainable rights-based projects or free water more generally for the poor.

5.3 EXAMPLES

The process of designing and implementing WATSAN projects and programmes may take account of, to a lesser or greater extent, some of the important underpinning issues mentioned above.

To find out "what works" (or does not work) in the field, we looked at outputs, not processes. We identified a cost-recovering programme and then disaggregated it to find out the process that helped to create it. We hypothesised that the field processes, and the commonalities between them that created successful projects, when combined with some of the important underpinning issues derived from the desk study, hold the key to what makes a successful cost recovering WATSAN programme for poor people. *Sections 2*, *3* and *4*, and *Annexes B* though *H* contain the details of our investigations and findings. We present here the conclusions.

Importantly, for the purpose of this cost recovery investigation, "successful" WATSAN projects and programmes were those that were seen to contain the following attributes:

- They are financially sustainable – they recover their long-run costs;
- They do not rely on large external grants to function;
- Other groups of poor people can find ways to replicate the investment, without a large reliance on external grants, and are interested in doing so.

In contrast, WATSAN projects and programmes that do not work do none of the above. They do not recover their long-run costs, they will require grants to continue operating in the longer term (e.g., within every 20 years), and there

does not seem to be much sporadic replication of their approach by others, without the offer of a large external grant.

It is important to note that many WATSAN programmes have wider aims and objectives than the financial sustainability ones outlined above. Accordingly, our analysis is by no means comprehensive in terms of defining success and failure – it concentrates solely on the aspects of cost recovery that induce financial sustainability.

5.4 WHAT DOESN'T WORK?

5.4.1 Programmes that do not pay for themselves.

Many development agency WATSAN programmes and (to a lesser extent) NGO WATSAN projects often do not have an explicit aim of ensuring that their investments pay for themselves, or recover their financial costs in the long run. Common "cost recovery" goals for these projects are a low amount of the costs of servicing capital; some of the costs of capital maintaining charges; and up to 100% of the costs of operations.

These cost recovery objectives mostly reflect a desire for the project to meet basic needs, to ensure an equitable use of the subsidy they offer, or at best to break even on budget.

Two simple questions then emerge:

- What happens in the long run?
- What happens to those people outside of the area of the project or programme?

The answer to both is equally simple – another grant will be required. It is the same answer for an ODA WATSAN programme with a budget of millions of dollars as it is for small grant project with a budget of hundreds. The grant cannot continue in perpetuity, and the grant cannot meet everyone's needs.

There is simply not enough public sector or NGO money (from either portions of people's tax, or their bequests) to fund these sorts of "public sector" WATSAN projects and programmes for poor people, especially when considering the many other worthwhile demands on fiscal resources. Somebody has to pay for the WATSAN projects, in the long run, to keep them going and in the most part, this will have to be the users themselves.

(This is a point of particular relevance to the discussions about meeting the MDG targets for WATSAN. While much discussion focuses on finding the blend of finance needed for the initial capital expenditure, less energy is spent on thinking about the policies and programmatic design issues that will be necessary to introduce in order to ensure that these investments are financially sustainable).

5.4.2 Projects that are not flexible enough to respond to demand

The evidence suggests that those WATSAN programmes that work best for poor people have asked them, usually via focus groups, what they want from their services and what mechanisms would help them best pay for it. Where people have been unsure that they want, for example, sanitation, social marketing techniques have been employed to show the tangible financial and economic benefits of the option.

Clearly, the technical options on offer can be limited, by physical and logistical constraints. Poor people can be consulted on these technical options (type of pump, tap stand or private connection, etc.), and their preferred choices selected. But an assessment of demands should not stop there. Empowering poor people in the wider institutional design process, by discussing their preferences over how these WATSAN options are initially paid for, maintained, operated, charged for, owned and developed over time can provide a much stronger foundation for a cost recovering project.
Indeed, when engaged in this manner, poor people start to consider the financing issue for the WATSAN intervention in the wider context of their own poverty and their livelihoods. The offer of credit can then help to both increase their sense of livelihood security and bind them to repayment. It can also lead to growth and sustainability of the WATSAN system, as ways of using the surplus or supporting finance derived from the scheme can be devised which help people both to move out from poverty and/or to expand or replicate the scheme for others.

Without this wider context of empowerment in the demand assessment process, however – of working out how to turn notional into effective demand – the WATSAN project is likely not to last or grow.

Many larger programmes, while maintaining a "demand focused approach" at the strategic level, often fail to be flexible enough at the local level. Disbursement mechanisms are fixed and systematised, with commonly low cost recovery goals to be paid by users. Even the managers of some of these projects sometimes think the users could pay more.

At worst, these projects, by using an initial affordability benchmark, interpret the use of a "demand responsive approach" as one that matches appropriate technology to the perceived affordability (income) of the users. Commonly, potential beneficiaries are offered a range of technical, low cost (affordable) options from which to choose, with low targets of associated cost recovery. At best, some lines of credit or income generation activities are linked to the bundle of pre-determined options on offer, with higher levels of cost recovery resulting. Neither are long-term solutions.

However, finding innovative ways for the users to make a return on their assets, or focusing on the output – a financially sustainable WATSAN intervention – whilst leaving the process of implementation up to the community and local support agency (usually a good quality NGO, or an

innovative locally based private sector agent) are much less prevalent models of demand-based design.

5.4.3 Programmes that don't create sustainable institutions

The creation of project management or implementation units (PMUs/ PIUs) is common among large WATSAN programmes or projects. They are linked at federal, state or district level to Water Supply Agencies, and aim to manage or control the disbursement of the project's funds to those WATSAN initiatives that meet the requirements of the programme (of which some cost recovery targets are included).

While the PMUs can be useful to the public agency to account for their funds, they are often not sustainable institutions and may be counter-productive to the objective of creating or supporting financially sustainable WATSAN projects that are managed at the lowest level of decision-making possible. PMUs can be counter productive in two ways:

- They will tend to draw the better employees away from the Water Service Agency to work with international experts on the programme or project in the PMU. Yet it is within the Water Service Agency where innovative thinking and leadership will be required, in order to change from a provider to a facilitator of locally managed financially sustainable WATSAN projects in the long run;

- They will focus on "capacity building" or "training the Agency staff" to re-orientate their approach to WATSAN delivery, but based upon an unsustainable source of funds (the programme budget and the grants it provides) and a lack of cost recovering, or locally flexible projects, on the ground that can be seen to financially sustainable in the long run.

Hence, when the PMU closes at programme end – after four years for example – ex PMU staff will have to reposition themselves back in the Agency with new goals, a changed remit and higher aspirations. However, they will be unlikely to have a sustainable source of funds upon which to make these changes the project recommended, or to sustain the investments the project did make. Further, they may be left with a systematic approach to community co-financing (maybe now enshrined in State policy) that focuses less on being flexible to local conditions, on empowerment and on outputs and more on a set of target cost recovery benchmarks (such as implement WATSAN projects that recover X% of financial costs from users), which, again, maintains a reliance on external funds in the long run.

5.4.4 Examples

Most of the projects that fit the above descriptions are large scale, public (donor) agency driven projects. As such they are more prevalent in India than in South Africa. The case study project and programmes in India that fit this description include:

- The World Bank Swajal Project in India (US$63 million). A PMU based in Uttar Pradesh overseas community contracting and target cost recovery objectives for water supply projects of 10% capital costs and 100% operation and maintenance; 60% cost sharing for sanitation investments;

- The World Bank Kerela Rural Water Supply and Environmental Sanitation Project in India (US$60 million IBRD loan). A PMU in Kerala and district PMUs oversee NGO facilitation of beneficiary group WATSAN schemes; target cost recovery objectives for water supply projects of 15% capital costs and 100% operation and maintenance; 20% cost sharing for sanitation investments;

- The DFID Andhra Pradesh Urban Poverty Project in India (US$134 million grant). Two municipal strengthening units based in Andhra Pradesh; different municipalities prepare Municipal Action Plans for Poverty Reduction, with varying levels of grant input for WATSAN projects in slums. Aims to work within existing WATSAN tariffs of state, and improve cost recovery by mainly reducing supply costs.

There are many other examples of large development agency projects that are not financially sustainable (in fact the majority are not). These case studies are simply illustrations of the projects that staff members were kind enough to introduce to us during field trips to India and South Africa.

However, a counter argument to the criticism that these sorts of projects are not financially sustainable (or really why they should be as public sector projects) is the premise that these projects can influence policy. This is an important point. However, if WATSAN financing policy is to be influenced, it surely should be influenced properly:

- If the policy is influenced such that these projects are to be replicated in other regions, this will mean a need for further (quite significant) grant or loan-based assistance from state, federal government, or external ODA to do so. However, there will never be enough public funds to meet every poor community's needs;

- If the policy is influenced such that existing or new WATSAN projects should aim to recover a portion of the costs of servicing capital and all the costs of operations and capital maintenance charges from users, then further grant or loan based assistance from state, federal government, or external sources will still be required when the assets are run down in, say, 20 years;

- If the policy is to focus the Water Service Agency on process, and not on the objective or output – that is, to support the development of WATSAN projects that make a return on their assets – the it is not financially sustainable.

5.5 *WHAT DOES WORK?*

The WATSAN projects and programmes for rural and peri-urban users that do work have focused firstly on empowerment in the design process

5.5.1 *Projects that follow an iterative process to design a demand driven "product"*

The projects that are financially sustainable have followed a number of iterative design steps, taking account of "notional demands":

- They discuss the social or financial costs that the potential beneficiaries currently pay or incur with respect to their existing WATSAN services;

- They identify the range of WATSAN attributes, which need to be improved, for example a new technical investment that makes supply more convenient, a new payment system, a new ownership structure, or a combination of these things. Often, these options cost the beneficiaries more than they paid before. However, the options are valued highly and they may be preferable to the economic costs they were incurring prior to the project;

- They discuss ownership and management issues in some depth, using local resources to manage and run the project. Also, issues of financing are discussed and commonly agreed solutions found, particularly in relation to how people will pay for the project, if it were to be theirs in perpetuity.

5.5.2 *Projects that use a facilitating organisation who knows the poor well*

Sometimes an organisation, such as a local NGO or a locally based private sector water retailer has facilitated the iterative process to design a demand driven WATSAN "product", drawing upon information, advice and experience from initiatives elsewhere. In other cases, whether through crisis or exasperation, communities, their leaders, or a local entrepreneur asked these questions then sought a solution. But either way, the locally based, successful outcome tends to be the same.

With limited access to finance, a small-scale, or a non-networked, water supply or sanitation system emerges from these approaches. Local rules and local charges can be devised and become prevalent. Differences in rules are allowed between different schemes. Local institutions oversee and regulate the system. Often training is given where needed, and local partnerships are developed.

Often these schemes flourish in spite of, not because of national policies, local government, WATSAN agencies and sometimes the donor community. And because they are often local, small-scale initiatives they tend to get less exposure if they are successful, than the larger ODA sponsored project and programmes.

5.5.3 *Projects that use small grants and supporting finance to encourage replication*

Often a small amount of "seed-corn" capital investment is provided as a trigger to get the scheme going, and a support network for both financial and technical assistance is also developed.

Without this external seed-corn provision, the community may provide 100% of the capital costs, or borrow money to do so, or rely on an entrepreneur, or a wealthy benefactor to help them. In these cases, crisis often dictates.

With limited finance available, the onus is on the local institution to run the scheme they have designed as financially sustainably as possible. The associated costs of doing so, and hence the revenues required, quickly become transparent to all users.

Consequently, these systems have often managed to create an operating surplus or a return on their WATSAN asset, allowing for long term financing, or for the financing of other initiatives.

An informal "seeing is believing" tactic, rather than the carrot of further grants or the persuasion of detailed dissemination strategies (reports, papers, workshops, etc.), is often used whereby neighbouring households and villages (and decision makers) watch, learn and copy the success of the project. The surplus derived from the original WATSAN asset can be used as a loan to the next scheme or village to get the next initiative going. Again, once a new community shows interest and demand, then another, one-off, but limited, "seed-corn" grant can be provided.

5.5.4 *Projects that focus on outputs*

In general, successful WATSAN projects have focused on outputs and not particularly on systematic or specific cost recovery targets. This may be the case because a crisis situation required a community to focus on what was needed to be done, and the lack of finance available meant that it had to be done as cost effectively as possible, and last in the long run. Or, it may be the case that a facilitator encouraged the community to think about what they wanted from their WATSAN services and what they would have to do or pay to make it keep going. Working back from these outputs (financially sustainable WATSAN projects), then innovative methods and processes for local management and cost recovery are often devised by the users, such as pay and use latrines.

In general, a focus on the benefits to be derived from a potential WATSAN project (and then working out how to minimise costs and sustain them financially, institutionally and technically) seems to be more financially successful and create more innovation and local ownership than a project that focuses on the supply of money coming in and how it might best, or most fairly, be spent.

5.5.5 Examples

- Olevanna WATSAN project, Kerela, India – 100% community financed WATSAN schemes generating a return on the assets enough to finance into the long term. Now receives some supporting funds under India' s decentralisation programme;

- The Urban Slums Health and Sanitation Improvement Programme, Tiruchirappalli, Tamil Nadu, India - Water Aid working with the Indian NGOs GRAMALAYA, SCOPE and SEVAI as implementing agencies. A seed-corn grant provided for community sanitation in slums, implemented by local community as a "pay and use" toilet; creates a high operating surplus and community fund to support further WATSAN initiatives;

- Rural Water and Sanitation Programme, Kattukulam village in Tamil Nadu – Water Aid working with the Indian NGO SCOPE as the implementing agency. An initial seed-corn grant and parallel community fund system catalyses sanitation investments to be replicated throughout the village and neighbouring villages. Health cost savings and associated kitchen gardens ensure financial sustainability of the toilets;

- ODI retail and Krugersdorp municipal water services, where following extensive community consultation, the introduction of pre payment metering devices help to manage demand and minimise costs and illegal connections;

- Durban Water Metro whereby locally based flexible service levels were introduced;

- The Eastern Cape BOTT where partnerships between local government, the private sector and NGOs have helped to deliver some financially sustainable WATSAN schemes.

5.5.6 Conclusion

Thus, in order to encourage successful, cost recovering WATSAN programmes that deliver services to the rural and peri-urban poor, the challenge seems to be to:

- Work at the local level, via a decentralised policy and regulatory environment;

- Develop partnerships between the users, local NGOs or CBOs, local (water) retailers and bulk water providers/ para-statal Agencies;

- Undertake an iterative process to design a demand driven WATSAN "product";

- Focus on the output of the project required and work back to create the "product";

- Provide small amounts of "seed-corn" grants to kick the process off;

- Get the users to find a way of managing costs and making the initiative pay for itself in the long term;

- Find ways to replicate those successful projects that don't rely heavily on external grants; and

- Use ODA more intelligently to help trigger private sector-style involvement at the local and private sector finance and support at the international level, than only using it for the direct grant funding of WATSAN schemes themselves.

The last three of these eight points, which relate to sustainable financing, can be realised by shifting more focus to the economic benefits to be gained from the scheme, especially for the very poor. Through working at the local level, innovative ways of managing or paying for the project can be designed, often with the help of a supporting community finance mechanism. If the output is set such that an operating surplus occurs, then specific cost recovery targets need not be made systematic, unless the cost of capital is to be included. However, in the first instance, a seed-corn grant may kick start this process. Costs of capital may emerge as an issue for second or third generation schemes, which draw on the surplus of the first to finance the capital for theirs. With clear risk-underwriting mechanisms in place, using ODA perhaps, institutional investors or private-public financing mechanisms could be attracted to the returns such schemes can offer, provided a simple route of lending can be set up via an institution (an INGO) which manages such a programme of schemes, for example.

Clearly, an important differentiator here is between peri-urban and rural schemes. Rural schemes may involve much more cash-poor users, and the emphasis on designing a non-networked cash-generating programme, with financial support mechanisms may be higher; and likewise the timeline for cost recovery may be longer. In peri-urban areas, the ability to pay some cash little and often, may be greater from the start, and so there may be more emphasis on designing schemes that can attract payment from these cash flow patterns (such as pre-payment, pay as you use, etc.). Again, cash generation and financial support may be key elements of the WATSAN initiative in the peri-urban area, but the timeline for achieving cost recovering charges should be less.

5.6 WHO CAN PROVIDE SUSTAINABLE FINANCING?

5.6.1 There is a market

There is clearly a potential market for WATSAN programmes among the rural and urban poor, and therefore a potential for finance. The number of

customers is huge, their demand for services cannot be questioned and the financial returns on the right products can be impressive.

- Just one of the 60 schemes in the Olevanna Programme was making an operating surplus of US$630 a month, with no capital cost debts to pay back. Across the 60 schemes, taking a more conservative estimate of US$400 surplus a month, this could equate to an operating surplus of US$24,000 a month or US$ 288,000 a year;

- In the Urban Slums Health and Sanitation Improvement Programme, Tiruchirappalli, one pay and use latrine was operating at a surplus of US$125 a month (this a slum toilet). Over a 16-month period, this one toilet block grossed an income of US$3,290; the community spent just over US$1,280 on operations and maintenance etc; US$1,070 of income was spent on other WATSAN and community investments; and just over US$940 has been banked. Currently there are 6 pay and use toilet blocks. There are a great many more slum dwellers.

However, as discussed, this market is focused on very small-scale, local level innovations, with poor people as the key decision makers. Their demands for WATSAN technology differ in different locations and circumstances, and their demands for institutions, management structures and payment schedules consequently differ as well. If returns are made, the communities tend to use them for themselves, either to reinvest in the scheme or for other development initiatives in the locality. These schemes work, because communities are managing the process and are responsible for it (including the collection and use of funds).

This is not a market, therefore, that is obviously structured to appeal to the current thinking of donor agencies, the international private sector or the international finance institutions (IFIs). Donor agency success in financially sustainable WATSAN projects has been limited and, as discussed, there is simply not enough taxpayers money available to invest in or sustain all of the WATSAN programmes that are required (even to meet the MDGs) via ODA.

For the international private sector, it is generally too risky a venture to invest time and resources in such a large and diverse number of sub sovereign rural and peri-urban schemes with such a heterogeneous set of consumers, management options and cash flows and, importantly, with no obvious return on the investment.

Traditionally, the international private sector has needed an economy of scale – large sunk costs - for their finance structure to work, and a minimal risk, medium-term time horizon within which to accrue its profit from the investment, combined with costs minimisation through standardising and systemising collections, maintenance and other activities. These attributes – large amounts of sunk cost, systemised design, repair and collections mechanisms – are in sharp contrast to the characteristics of successful, financially sustainable WATSAN projects in peri-urban and rural areas.

It seems therefore that, in its present form, the international private sector could operate as a bulk supplier, but could not be seen as a panacea, delivering WATSAN service schemes for all of the rural and urban poor. There could be a support role in the provision of management techniques (accounting, cost-control, billing software, customer relations, etc.) to the managers of cost-recovering WATSAN schemes in rural and peri-urban areas, or even a partnership role in the delivery of such programmes (for example, via a BoTT mechanism), alongside an NGO or other type of institution.. Irrespective of the particular role, a change in thinking about the market opportunities for the international private sector water companies will be required, if they are to get involved with the provision of sustainable WATSAN services to the poor in rural and peri-urban areas.

Elsewhere, IFIs and private investment initiatives or tailored funds may be able to provide some of the capital required to kick-start local WATSAN programmes. Again, however, these institutions are not currently geared to manage diverse portfolios of small-scale "seed corn" investments, involving a whole range of local ownership structures. They would be keener to divest USD millions to larger programmes. Hence, some of the kick-off finance may be available from these actors, but issues to do with risk management and to whom (what institution) the finance would be lent are critical, if they are to get involved with the provision of sustainable WATSAN services to the poor in rural and peri-urban areas.

The NGOs of course, even the INGOs, do not have access to the amounts of "kick-start" funds necessary to cover all the small-scale WATSAN projects that are required. Further, many NGOs can also suffer from a "public-sector" approach to programme design, whereby long run costs are not recovered.

However, one other group of stakeholders remain who, once a kick off is provide, could have the money in the long run, the incentive and the ability (with support) to sustain the types of WATSAN projects in peri-urban and rural areas, which are identified as successful in the long run. This is the poor themselves.

5.6.2 A sustainable WATSAN scheme for the poor

If one were to look to see how much the poor, in total, are spending, or willing to spend if their notional demands can be made effective, on WATSAN supplies, then this may be the key (and cumulatively the largest?) source of finance truly available for most of the long run expenditure required for WATSAN services in rural and peri-urban areas. And who better to scrutinise how the limited finance available from other sources is spent and what kind of WATSAN "product" can best be got for the money, than those who need it the most?

It seems that ODA/IFI/state/private sector money can only help, at best, to provide a targeted kick-start to the WATSAN project process (which seems sensible from an economic point of view). The design, management structure, institutions, payment schedule and other arrangements of the WATSAN

product should be left to the poor to decide upon, with expert facilitation and specialist technical help to make sensible, informed choices.

It is perhaps (in theory) quite simple. In relation to developing a financially sustainable WATSAN programme in a rural or peri-urban area, use the poor, or someone who can work with the poor well (a local NGO or local private sector entrepreneur), to work to an output. The output could be, for example:

Design, build and operate (or transfer if appropriate) a WATSAN programme (comprising of a suite of schemes) that the poor in the peri-urban, or rural area in question want, using most of their money to finance it in the long run, with a supporting community financing system that can help the very poorest people to pay in the short run. Ensure that the long run costs of these schemes are covered, so that the scheme can be rehabilitated, replaced or expanded over time. Give the users a small amount of finance as a loan or grant to kick the project off, and ask for it back over a longer time period. Allow any operating surplus that is created to be invested in further WATSAN or other community development initiatives. Perhaps find ways to minimise costs through upfront charges, or to maximise intra-community choice through offering a range of flexible service options at different prices. Perhaps use output based charges or tariffs to gradually introduce the ethos of payment. Perhaps seek to devise strategic partnerships with the local private sector or NGOs to help construct and run the scheme and supply inputs.

If the poor designed it, own it, and like it, they will sustain it. If others like it, they will copy it. The others may even ask to borrow some money from the project's surplus to help finance their own version. Of course, the use of expert facilitation and support (the local organisation who knows the poor well) will help in managing different interests within the community (or future demands on the service via population growth or returnees) to ensure system sustainability over time. Also, it is clear that partnerships with local private sector suppliers, bulk water suppliers and/or the State water and sanitation agency may be appropriate for the provision, installation (or network connection) and detailed upkeep of capital equipment

5.7 COST RECOVERY FOR THE CHRONICALLY POOR

Cost recovery strategies can also be developed for the chronically poor, a target group that humanitarian or emergency assistance organisations cite as those who really can't afford to pay anything at all for WATSAN services. These people will usually be located in rural and/or the more remote areas of the country in question. They may be suffering from economic collapse, military conflict, post-conflict stagnation, extreme environmental stress, and political/cultural/ethnic biases in policy or society. They probably own no or few assets; they probably have no social networks to speak of; and they may have absolutely no cash or other savings, or access to formal or informal credit networks.

In these circumstances, a WATSAN programme needs to have an explicit poverty reduction focus and it should be viewed much more as a strategic

investment, or a catalyst, which aims to start improving people's livelihoods and making them more secure.

The key to getting the chronically poor to (start to) pay for a (livelihoods focused) WATSAN programme is to ensure that there is *a clear and tangible stream of benefits,* which the investment will bring them. Once the benefits have been established, discussed and quantified, a discussion of costs can then be introduced to the design process. The aim is not necessarily to find the cheapest possible design, but instead to maximise the cost to benefit ratio of the programme. Cost discussions must take place with (even chronically poor) users as part of the WATSAN programme design process, in order to gain their buy-in, and to aligning it closely with their preferences. The user community should be encouraged to think about what they want from their WATSAN services and what they would have to realistically do (or pay) to maintain it.

With a long-term view, discussions should be facilitated that allow the community to find innovative ways for the users to make a return on the programme to cover costs in the long run. Many communities will come up with innovative cost recovery ideas, especially if the benefits stream from the project is clear and tangible.

In this manner, WATSAN investments in regions containing chronically poor people can be targeted to fit within Poverty Reduction Strategies; they may well form key parts of more comprehensive Rural Livelihoods Programmes.

5.8 STEPS FORWARD

Although a seemingly simple concept at first, the design of a financially sustainable WATSAN programme for the rural and peri-urban poor actually requires a detailed analysis of a wide range of complex and critical issues, at both macro and micro levels. Many of these issues will require shifts in policy and in the approaches of the donor and State Water and Sanitation Agencies, INGOs and the international private sector. Based on the evidence of what seems to work, however, the following practical steps are seen as critical.

5.8.1 A Water Supply and Sanitation Finance Policy for the Poor

Financially sustainable WATSAN programmes will work best where an appropriate enabling policy is present.

A clear and uniform national policy for the investment and longer term financing of WATSAN services in rural and peri-urban areas is therefore required within the country that assistance is to take place (a "WATSAN Sustainable Finance Policy for the Poor").

The objectives of the policy should be as follows.

- To decentralise WATSAN responsibilities for financing, implementation and development to the lowest possible level of decision-making, while ensuring a system of sub-sovereign guarantee provision can be built into the decentralisation process in order to attract wider financing;

- To provide assistance in the development of the social capital and civil society networks required to allow decentralised decision making to take place among the poor, if civil society is weak;

- To provide a legislative environment that allows and helps the poor to organise to undertake WATSAN schemes, with technical and managerial support, credit and information available as required;

- To provide an independent regulatory environment (thereby minimising the problem of political interference) that sets out clear signals on price, market-entry, service differentiation/ innovation and price-credit-subsidy mixes for pro-poor WATSAN service delivery;

- To define clearly the gradation of financial costs that should be recovered by a WATSAN project or programme; and to state that the "first-best" water pricing policy against which WATSAN tariffs should be benchmarked is to price WATSAN programmes such that they capture long run financial costs and allow regions to explore water rights trading, such that scarcity costs may be addressed;

- To promote tariffs (and tariff reform) and well-targeted subsidy-credit mixes, based on the first-best principles outlined above, as *the* primary source of user-finance critical for cost-recovery; and to promote ways of helping the tariff implementation or reform process (such as output based tariffs, subsidies or contracts) during the transition period;

- To promote local partnerships between local community groups, NGOs, the local private sector and Government WATSAN Agencies to help deliver the WATSAN schemes in these programmes;

- To develop self-sustaining community investment finance initiatives to help poor people finance the WATSAN schemes they want;

- To focus pro-poor ODA WATSAN finance only on helping to create outputs that sustain themselves financially in the long run. Only those that are designed to be financially sustainable should be able to access supporting funds;

- To promote the need for iterative, demand focused design processes that can strengthen key parts of the WATSAN "product" to suit local conditions, for example particular institutional or payment arrangements, or certain technical components, such as sanitation;

Agreement by donors and government agencies on the core objectives of this WATSAN Finance Policy for the Poor is also essential so that Government interference does not occur and markets are not distorted by different donor agencies offering differing levels of financial assistance or conflicting approaches.

(It may be that key components of the financial sustainability policy suggested here, can be developed upon and incorporated into current policy reform orientated water and sanitation financing initiatives, such as the WSC/ GWP "Camdessus Panel" on Financing or the EU Water Initiative Finance component).

5.8.2 No Easy Money

Lowering the marginal utility to the poor of each WATSAN investment on offer, through widespread and blanket implementation based upon grant financing and/or free usage for all, does not create a financially sustainable situation and distorts the net economic value of the WATSAN product. Many examples show that if poor people want a WATSAN investment, in most cases they will pay for it or seek ways to help them pay for it. Non-payment is the political or historic exception (such as in South Africa), not the rule. This is true for part-capital (and full costs of servicing capital payments in many cases) as well as costs of operations and capital maintenance charge payments.

Often examples of people's own payments for 100% of the WATSAN schemes have arisen through a crisis in supply. The aim is to avoid crisis, while capturing the desire and ability of poor people to pay and take a stake.

New programmes should not grant 100% of capital costs. However, supporting financial mechanisms are important to help users pay the costs of servicing the capital for the remainder, and should be kick started through a one-off grant. Replication, however, should not require any further capital investment grants to the same level. New users should seek to draw mostly upon the financing mechanism of the original programme to help them pay for replication and they should seek to pay capital costs (and any associated costs of servicing the capital) back to the programme.

A slightly different approach, with a more explicit poverty reduction focus for WATSAN improvements and the grant money it involves, can be taken for the chronically poor (see *Section 5.8.13*).

5.8.3 Think small

Many peri-urban and most rural WATSAN schemes are often non-networked, or fall outside of the regular networked tariff system. Prior to the programme, successfully networked coverage is usually very low. Hence, many new separate initiatives will have to be designed and created. Furthermore, rural and peri-urban communities are not homogenous either within or between themselves. So many smaller schemes should be encouraged that suit their particular users best. This could be on a village-by-village or on a slum-by-

slum community basis. Smaller schemes mean lower exposure to the risk of financial failure. Micro-networks, or non-networked systems, with 50 or less households per group seem to be a feasible size for success, though there are no hard and fast rules.

Clearly, however, there will be interaction between schemes, especially in more densely populated peri-urban areas, and cooperation between schemes will need to be facilitated to ensure different payment horizons are understood and to encourage water trading, if scarcity issues become important factors within the programme. Indeed, although thinking small is important to encourage local ownership and heterogeneity in each scheme and cooperation between schemes, the programme also should combine this with thinking globally– such that representatives of these small schemes can "network" with each other, to facilitate replication and cross-fertilisation of ideas and also to strengthen the overall voice of the poor in their demands for service improvements.

5.8.4 Think many

Take the "Starbucks" approach. A programme should pepper a neighbourhood, or rural area with several small schemes, each having been iteratively designed to suit very local needs. Localise the WATSAN product, and then people will treat it as their own innovation.

5.8.5 Think unsystematically

There will be many different ideas and approaches as to what may work. By taking an output based approach, it does not matter so much what the design of each scheme in the programme is (as technical options are limited, people may choose differences in the institutional, payment, management options), so long as minimum (technical, social, environmental) criteria are met and the schemes delivers the overall output required – a WATSAN programme that people want, which sustains itself financially in the long run. Some ideas and designs will work and some will fail. The ones that work will quickly be replicated and the failures will be forgotten, or learned from. With a stake in their own scheme, people will also choose their options carefully to match their local conditions.

5.8.6 Others will know who the poorest are. Use them to design and deliver local projects

Moreso than Government Agencies or Donors, there are usually local organisations, grassroots or local NGOs, CBOs, community groups or local vendors, private sector actors or informal service providers who know who the poor are, what they want and what they will pay for in terms of WATSAN services; or who can find out quickly and efficiently if not. Often a bigger (international) NGO, or another sort of organisation (a national WATSAN retailer or a pro-poor consultancy firm, for example) will have a good contact network with these local grassroots actors and can act as a coordinator of

these local knowledge networks for the Government – a "Partner Organisation" to the Donor or Government.

Rather than conducting its own research, the Donor or Government Agency should encourage the Partner Organisation, therefore, to liaise with these grassroots organisations to identify the initial desires of the communities. In using grassroots organisations for this initial information exercise, their potential to be local WATSAN scheme coordinators can be ascertained by the Partner Organisation.

Where these community networks do not exist, or are patchy, it is critical for the Donor or Government Agency to invest in their development. Firms or INGOs can help this process. This could be done as part of a wider (and not necessarily WATSAN focused) PPA or PRS process, or as part of a wider civil society or local governance development initiative.

Once a network of local service coordinators has been identified from among the grassroots organisations, the Agency should use the Partner Organisation to maintain this network (which may include a mix of local water user groups, local private sector operators, CBOs, NGOs or informal service providers), with an aim to help them form local partnerships to develop and manage a portfolio of small-scale WATSAN schemes with local users. Training in long- term financial planning, social development and technical issues can be provided via the Partner Organisation.

The Agency should encourage the Partner Organisation to manage the grassroots organisations and their implementation of each of these local WATSAN schemes via simple, performance based, or output-focused contracts.

The Partner Organisation can thus help to coordinate the design, implementation and management for the Agency of a wide range of many small WATSAN schemes, which are run on a day-to-day basis by these grassroots organisations and local user groups. Risk of overall contract failure for the Partner Organisation is minimised through this breadth of portfolio and service deliverers, but the incentive for the grassroots organisations to perform on service delivery and other targets, on a case-by-case basis, is maximised through reputational risk or loss of contract to supply the local users, or by the fact that they may well be the local users themselves. The Partner Organisation can help in the provision of training, leadership development, and community conflict resolution and in the development of systems for internal decision-making, as appropriate.

To start with, some seed-corn money, disbursed by the Partner Organisation to the local service provider, may be required either for capital investment or to kick start savings schemes to help pay for the local WATSAN schemes. Following this initial injection of funds, all long-term costs for the project should be sought from its users.

Quite simply, if a local scheme works it works, and its customers will becomes its best advocates for replication. If it does not work it will fold, but the local contractor or user group will face the loss of their stake. If local contractors know their market, the scheme should not fold, but should organically grow.

To maximise financial sustainability, incentives might be given to encourage local service providers to draw as least as possible upon the Partner Organisation's funds for capital investment grants and more from the community themselves and the funds available to kick start community savings schemes or WATSAN funds.[86]

5.8.7 Schemes within a successful WATSAN programme will replicate themselves

Performance satisfaction about each local scheme would come via feedback from the users themselves. Success at this level will be measured by local replication and uptake; capital and longer run costs will de facto be recovered, especially with good tutelage from the Partner Organisation and local service provider. If people replicate the WATSAN project, with no external grant funding, they obviously like it, want it and are willing to pay for it.

The demonstration effect is a critical factor in success, not only on a community-to-community basis, but also in terms of changing the mindset of local WATSAN agency staff, local, regional and national decision makers, and donor agency WATSAN personnel. Indeed, local community operator-user groups can be federated so that the demonstration affect can work as a motivating force among the local population as well.

5.8.8 Evaluate success on outputs

The Partner Organisation should have its own performance evaluated based on how many smaller WATSAN schemes are created *and then* sustained, how many are replicated and by asking local customers what they think of the programme; success is not equated to how much money was disbursed (in fact, the reverse) or what technologies were used. Innovations in terms of local management, payment and financial structures should be looked for and the successful ideas encouraged and knowledge transferred.

Key indicators such as for social development, water quality, environment and health can to a greater or lesser extent be focused upon depending on whom the Partner Organisation chooses to contract to deliver services at the local level, or who they choose to help provide additional technical assistance. However, these indicators should be monitored and evaluated at key points in contract renewal, and the contract refocused or re-tendered if needs be.

[86] In relation to South Africa (and possibly other parts of sub Saharan Africa), this approach could help to position WATSAN saving schemes as a new focus for the very traditional user credit associations many of which were centred around funeral loans (or stokvels in South Africa). Due to the HIV AIDS crisis, these traditional and important community savings schemes have collapsed, increasing the vulnerability and fragmentation of the poorest communities.

An output-based subsidy structure could help here, whereby the Partner Organisation is provided with subsidies from the Government or Donor to address gaps in cost recovery based on the service delivery levels and other factors that are specified as benchmarks to development. For example, some applications of output-based subsidies could include subsidies for expanding coverage (where increasing connections in poor areas are emphasised).

5.8.9 Don't use rules of thumb in steering design

Local users, and hence the WATSAN schemes they like, will differ. The Partner Organisation, in collaboration with the agency should concentrate on the outputs and indicators that they want to see achieved and the grassroots contractors and service providers should be left to find the right process that people will buy into.

5.8.10 State Water Agencies must actively participate, but a mindset change will be required

Thus far little mention has been made of existing State Water Agencies or parastatals with responsibility for WATSAN service delivery in peri-urban or rural areas. These are an important stakeholder group. However ineffective or awkward the state WATSAN service agencies and decision makers may be at first in the delivery of financially sustainable water and sanitation services for the poor, they must become actively engaged in the process or re-gearing WATSAN improvements to be financially sustainable.

In certain cases the State Agency may be able to take on the role of the Partner Organisation immediately. However, in most cases it is more likely that the challenge will be for the Partner Organisation to strike a partnership with the relevant state WATSAN agency, and to gradually help build capability within these agencies in financial understanding and local contracting/ regulation/ evaluation procedures, so that the local state structures can gradually take the reins. To move from a supply and target driven mindset in the state WATSAN agency to one of managing portfolios of very local contracts focused on outputs is difficult. However, the "seeing-is-believing" aspect arguably provides a more powerful steer than simply building capacity alone.

There may well be an immediate role the State Agency can play, either in terms of bulk water supply and/or wastewater treatment services (and the negotiation thereof of more amenable supply contracts with the Partner Organisation); or in technical backstopping through the provision of repairs, rehabilitation services etc. In some cases there may even be potential for the State Agency to enter into a learning Partnership with the Partner Organisation, if it can bring to the table a good knowledge of the priority areas to target under the programme, recommendations for local service providers or private sector actors; and extension staff who know and can liaise with the various communities in the region.

5.8.11 The right financial architecture is vital

To maximise the chances of success, the programme of local WATSAN service delivery schemes has to be accompanied by limited sources of grant or credit to oil the wheels of the first initiatives. With the right financial architecture in place, schemes can often create surplus revenue, which can be re-lent, through user-group-to-user-group networks to help develop replicate projects.

The cornerstone of success will be to firstly unpick the key financial and economic drivers (cost savings, time savings, revenue generation, less medical bills, other positive attributes) that will enable the WATSAN investment to be easily marketed to potential users; and then to create a payment mechanism and related financial support structures (community funds, savings clubs, revenue streams from the intervention etc) that can help to turn nominal into effective (paying) demand.

At the programme level, it is important that, again to be both financially sustainable and to be able to cover all those users who need water and sanitation developments, such programmes are not 100 per cent grant funded by a donor agency or national Government. Thus, in terms of triggering the creation of financially sustainable WATSAN programmes for the poor in peri-urban and rural areas (and taking the assumption that there is not enough donor aid available to kick start this process alone), it seems that the following could be a route forward.

User finance (via cost recovering tariffs) will be required to help meet the costs of servicing the capital of perhaps a (partial) combination of soft loans issued by a donor-related agency or IFI and other loan financing, mobilised by a development or water orientated fund (such as the Emerging Africa Infrastructure Fund, for example). Risk to the fund could be underwritten by well-structured sub sovereign risk guarantees, developed by specially focused institutions (such as the proposed multi-donor Development Guarantee Company), or underwritten by a Donor Agency. With this kind of financing package in place, a private sector "ethos", as discussed, would necessarily be required in order to service the costs of capital assembled to finance the capital investment in the Programme.

Furthermore, the targeted uses of grants via output-based aid to help kick-start a portfolio of well designed, demand driven schemes within the Programme; a range of associated micro finance and subsidy schemes if required; and other initial start up activities, is also critically important to success. This targeted portion of grant finance would create the necessary pro-poor "software" for Programme implementation – demand responsive designs, supporting finance, other training and capacity building etc. It may be the case that this component would be undertaken first, such that, based on outputs being achieved, sequential delivery of the financing component could follow, with minimum risk to the investor(s)of up front exposure.

The Poverty focused WATSAN programme and its financing package could be developed to fit within a wider Poverty Reduction Process, or it may even

be able to gain support from a Poverty Reduction Strategy Credit, thus helping to lower the cost of servicing the financial capital required still further.

5.8.12 Have a private sector company oversee the contract

Development agencies find it difficult to manage WATSAN programmes with a private sector mindset. They look for break-even, or rights based related markers, and are not good at creating sustainable financing arrangements. Often many NGOs do the same.

There is a clear role for the private sector, therefore, and participation can occur at two levels, local and international.

At the local level this can occur on the supply side, through the use of community contractors, local entrepreneurs, retail water suppliers and water and sanitation related NGOs who can run local schemes with a private sector "ethos"; or the use of local private sector services, which can supply the products or advice required in the supply chain for delivery.

At the international level, the role of the private sector in this kind of programme seems more likely to take place within the context of Partnerships. It seem unlikely that a large-scale private sector water operator would be enthusiastic to invest directly in such a programme, though they may offer financing through some of the mechanisms outlined above. Conversely, however, it would also seem unlikely for a sub-sovereign Water Authority, an (International) NGO or a local Water retailer, to be viewed by potential international investors as being risk-free enough to trigger the non ODA finance components discussed. Instead, these investors may prefer to see overall financial responsibility of the Programme in the hands of an international private sector company with experience in the water sector and with satisfactory levels of (sub sovereign) risk mitigation in place. Consequently, some sort of a Partnership between these actors would seem a useful combination:

- The INGO or local Water Retailer as the Partner Organisation with in-country pro-poor mobilisation and service delivery skills;
- An International Private Sector Company with experience and skills in managing programmes with a private sector "ethos" in order to reduce risk, ensure the costs of servicing capital are met; and provide technical services if required;
- The State or Municipal Water Authority as a Partner that can grow its role and responsibility within the Partnership, as capacity is built within it and demonstration effects kick in;
- The State Government acting as a guarantor for the Programme, within the context of the National Water Financing Policy for the Poor.

The private sector company will be able to interact with the donor or government, the partner organisation and the State Water Agency in terms of training, technical advice, strengthening of financial sustainability issues, monitoring and evaluation. With overall output achievement resting with the company, not the donor, the donor or government can replace either the company or the partner organisation and the integrity of the programme with the recipient state government and its population will remain. Again, disbursements to the company could be sequential, and based upon outputs being achieved. Financial incentives to deliver could be based upon key performance indicators at the programme level being met - financially sustainable and replicable local schemes, which are equitable and institutionally robust, with feedback coming from the users, the partner organisation and the state partner. With a focus on clearly defined outputs, the potential for collusion and corruption is also limited.

Over time, the aim would be for the private sector firm to gradually withdraw, transferring this role to the State Water Agency with responsibility for water and sanitation. Other specialist international private sector inputs could continue to be provided, however, and these may involve issues related to the provision of management techniques (accounting, cost-control, billing software, customer relations, contracting, etc.).

5.8.13 Programmes for the chronically poor

As part of the programme, or separately if necessary, the partner organisation can help develop for the funding agency a suite of much more strategic, livelihoods-focused and poverty reduction orientated WATSAN initiatives with the very poorest groups of people, maybe those in more remote rural areas, or from a certain social or ethnic background.

The financing for these schemes may initially be more intensive, with a longer time lag to be expected in terms of costs of operations and capital maintenance charges being met. Hence, finance for some future costs of capital maintenance charges may also be required up front. The blend of ODA to private finance may be much higher for these types of scheme.

However, if the national policy framework is in place and decentralisation is encouraged, then by following the steps outlined in *Section 4* and being developed by the SecureWater initiative, WATSAN interventions for the very poorest, which gradually become financially sustainable should be able to emerge in the medium to long term. Their development could be more explicitly linked to wider poverty reduction strategies for the country.

6 CONCLUDING COMMENTS

This study was mostly a desk review-based exercise, with a limited country remit (for example the case studies of Water Aid's work in Tamil Nadu are used both in *Section 3* as rural and peri urban field visit reports and as case studies for working with the chronically poor in *Section 4*). The recommendations in the report are therefore ideas, based upon (and constrained by) the research and its geographical remit. Nevertheless, through the framework described in *Section 5*, we would suggest that there is a way in which finance could be mobilised to help trigger and then sustain cost recovering WATSAN programmes for the poor in peri-urban and rural areas. However, it will require some innovative thinking and a "leap of faith" among donors, investors, INGOs and the private sector to make this happen. As at the scheme level, one successful demonstration programme may be enough to forge the way ahead.

While we feel that some key steps have been made through this research in the development of practical recommendations for designing financially sustainable WATSAN programmes and supporting policies for the poor in rural and peri-urban areas, there are still are number of clear opportunities for further work, whose outputs could feed usefully into furthering the policy agenda on this issue.

These opportunities can be split into more blue skies research and more action-research orientated exercises.

6.1 BLUE SKIES RESEARCH

- The undertaking of further analysis of the valuation of key attributes of water and sanitation services for the poor, through perhaps the development of conjoint analysis as a demand assessment tool;

- The undertaking of a much wider meta-analysis study to provide pointers on the key drivers for demand, perhaps in particular geographical regions or for particular types of technology, or income groups.

6.2 ACTION ORIENTED RESEARCH

- The broadening out of the strategic policy and programme design framework on financial sustainability in the WATSAN sector, which we have presented in *Section 5*, to draw upon a wider set of country experiences and WATSAN professionals;

- With some development support from a donor agency, the design and implementation of an innovative pilot programme of water and sanitation schemes for the poor, based upon the recommendation we have developed.

This would take place in conjunction with a suitable partner organisation for in-country mobilisation (an INGO or a Water retailer with development skills), an international private sector partner from the water industry, a combination of interested IFIs, private finance investors and/or other development focused funds, and a suitably interested State or Municipal Water Authority. A key output would be to show that, with minimum grant based inputs a Programme of financially sustainable and self-replicating WATSAN projects can be developed and implemented with poor users in rural or peri-urban areas.

The findings contained here should be no means viewed as "the last word" on this topic, however. Indeed, since this research project began, a range of other institutions and organizations have also started to look at issues of financing and cost recovery, often in more detail or using more resources. Some key research institutions now looking at cost recovery and financial sustainability in water and sanitation projects include IRC, WEDC, ODI and WSP Africa.