

Optimising the selection of demand assessment techniques for water supply and sanitation projects

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List of acronyms

CVM	Contingent Valuation Methodology
DA	Demand Assessment
DFID	Department for International Development
DRA	Demand-Responsive Approaches
HH	Household
PRA	Participatory Rapid Appraisal
WEDC	Water, Engineering and Development Centre
WTP	Willingness to Pay

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Executive Summary

Water and sanitation projects and programmes will fail to be sustainable if they are not planned and designed to meet the needs of the end user. There is plenty of documented evidence of past projects which have failed because they did not take into account the expressed needs and demands of the target population. The recognition of this weakness has prompted the World Bank and other donors to move towards a demand-responsive approach (DRA) to provision of services in recent years. The need to assess demand is central to this approach and there are a number of different tools and techniques which practitioners can use to assess demand.

The recently published DFID guidance manual on water supply and sanitation programmes outlines the principal techniques and provides an overview of the applicability of different tools in different contexts. However, there is a certain amount of controversy and debate about the use of these tools and the different professions involved in the sector tend to favour different approaches. The aim of this study is to explore the issues and challenges surrounding the practice of demand assessment for water and sanitation services. The work has been based on an extensive review of literature and case studies and a one day workshop which was organised to draw together attitudes and knowledge from a small group of experienced economists, engineers and social scientists working in the sector. This study also links in with the recent World Bank-facilitated electronic conference on DRA.

The “demand” for water and sanitation services is relatively complex and it has a different meaning to economists, engineers and social scientists because they are all concerned with different aspects of planning and designing a project. However, all professionals in the sector are ultimately working towards the same goal: development of sustainable services. Demand assessment is an important tool which can help to guide decisions which should lead to sustainable solutions. It is particularly important at the planning stage when there is a need to establish the users’ preferences and willingness to pay for improved services.

The three main tools which are currently available to assess demand are: household and revealed preference surveys, contingent valuation methodology (CVM) and participatory approaches (e.g. PRA). Each technique has proponents and opponents and has strengths and weaknesses in different contexts. Much of the expertise and experience of applying CVM comes from the World Bank which has conducted a global study into its use; in contrast, participatory tools are normally the domain of the social scientist or the NGO. In general, expensive and rigorous CVM studies can only be justified for large capital investments or changes in national policy or tariff restructuring whilst PRA is most effective for use on smaller-scale rural projects with well-defined communities to work with.

These existing tools are relatively well-developed and each has its role to play in certain situations and at different stages of the project cycle. The use of these tools in parallel can provide complementary information to a multi-disciplinary team. There is not a need to develop new tools but there is certainly scope for taking a more holistic and integrated approach to demand assessment. If tools are used in parallel then there should be good co-ordination between the different practitioners involved. The assessment of demand for sanitation is still poorly understood and there is little literature on successful approaches. Similarly there is a lack of documented experience on using participatory approaches to assess demand for urban water and sanitation programmes. The new DFID sector programmes currently being developed in response to the 1997 White Paper provide a good opportunity to develop closer inter-disciplinary co-ordination at the project preparation stage. These programmes will provide pragmatic guidance on successful approaches to demand assessment.

1.0 Introduction

The recent DFID Guidance Manual on water supply and sanitation programmes (DFID 1998a) emphasises the central role of demand assessment in informing policy decisions and in planning and designing services. However, although the manual provides an overview of the range of techniques available to assess demand (Table 1) it is beyond the scope of the manual to provide detailed guidance on the application of these techniques. The aim of this study is to further explore the approaches which are currently being used by professionals in the water and sanitation sector to assess demand for services and to provide a more detailed insight into the issues surrounding demand assessment.

This work has been largely based on a detailed review of current literature and case studies but has also benefited from the concurrent electronic conference on demand-responsive approaches (DRA) which was facilitated by the World Bank. As part of this research work a one day workshop was held at WEDC to draw together experiences and attitudes of economists, engineers and social scientists working in the sector. This workshop helped to focus and develop some of the issues which came to light through the literature review.

This report is structured as follows:

Sections 2.0 to 5.0 discuss the context and background to this work, set out the issues surrounding the selection and use of demand assessment techniques. **Section 6.0** reviews the documented experience of applying the different tools and **Section 7.0** summarises the constraints and potential applications of the three main techniques. The scope for adopting a more integrated approach to demand assessment is discussed in **Section 8.0** and **Section 9.0** summarises the conclusions which can be drawn from this research project.

Appendix I contains an annotated bibliography on the subject of demand assessment and demand-responsive approaches. This bibliography formed the basis of the literature review for this study and is fairly comprehensive. It was posted on the OneWorld website as a resource for the World Bank DRA electronic conference and a few participants contributed further relevant references.

Appendix II is a detailed record of the proceedings of the demand assessment workshop which was held at WEDC on 9 June 1999.

2.0 Rationale and Context

There is growing evidence to support the fact that misjudgments by planners about the nature of consumer demand are an important contributing factor to the poor performance of public water and sanitation systems in developing countries (Altaf, 1994). There are numerous examples of projects which have been unsustainable because they were planned and implemented without taking into consideration the expressed needs or demands of the users (Breslin (1999), Manikutty (1998), White (1997)).

The World Bank and other donors have shifted towards a demand-responsive approach (DRA) to service provision in an attempt to address this problem. The concept is that water and sanitation projects and programmes should be developed only in response to a clearly expressed consumer demand for a service, which is backed up by a willingness to pay for a chosen level of service. Demand assessment is central to this process because it can provide detailed and representative information on user choices and preferences, willingness to pay and response to improved services.

The DFID guidance manual (DFID 1998a) discusses the need for demand assessment and provides an overview of the techniques available as shown in Table 1. This can provide a good starting point for those involved in DA but there is certainly a need for a closer look at the application, benefits and constraints of these tools in different contexts. This work builds on the information in the manual (specifically in Table 1), and also contributes to DFID’s guidance notes to economists on demand assessment techniques (DFID 1998b). We hope that this study will raise awareness of the issues surrounding different DA techniques and stimulate further debate both amongst DFID staff and more broadly within the sector.

This research is particularly timely in view of the recently completed, six week electronic conference on DRA facilitated by the World Bank. The conference attracted over 450 participants from around the world and placed DRA firmly on the international agenda. Some of the issues raised by participants are of direct relevance to this research and are therefore incorporated in this paper.

The culmination of our work was a one day workshop, organised by the author and held at WEDC, to bring together a range of specialists with particular knowledge or interest in DA for water and sanitation. The detailed proceedings of this workshop are in Appendix II but significant comments, attitudes and discussion points are included in the main body of the report.

3.0 What is Demand?

The “demand” for improved water and sanitation services is not a simple concept and the factors or determinants which influence this demand are relatively complex as research from the World Bank Water Research Team (1993) demonstrated. It certainly cannot be directly correlated to household income as has commonly been done in the past. The three main factors which affect demand are (Garn, 1998):

- household income, gender, education, occupation and assets, as well as other local demographic characteristics;
- availability, reliability cost and convenience of existing services relative to proposed options; and
- household attitudes towards government sector policy and the service provider.

To illustrate the potential complexity of the nature of demand for services, Table 2 summarises some of the qualitative characteristics which can be associated with demand.

Table 2: Characteristics of “demand” for water and sanitation:

“Demand” may be:	“Demand” is always:	“Demand” is NOT always:
<ul style="list-style-type: none"> • expressed • effective • latent • uninformed • unrealistic • biased • created 	<ul style="list-style-type: none"> • unique to each project location • dependent on the alternative existing options • dynamic (i.e. will change with time) • different for water and sanitation • dependent on people’s willingness to pay for specific options 	<ul style="list-style-type: none"> • equivalent to choice • satisfied by the “best” solutions proposed by professionals • the same as what people say they “want” • taken into account!

The importance of clarifying the meaning of demand was highlighted at the end of the DRA conference by WaterAid (Trace, 1999) who stated that “...it was a very important discussion

as the varying interpretations of what 'demand' meant served as the basis for most of the arguments around whether DRA does or does not marginalise the poor."

Another participant of the DRA conference commented that the term "demand responsiveness" is closely allied to market economics, but in fact many practitioners in South Africa have interpreted "demand" as meaning an expression of expectation of delivery of a right (Rall, 1999).

It seems then that the problem with "demand" as a concept is that it means different things and has different implications for different professionals and actors working in the sector. Specifically:

To Economists: it is the willingness to pay (WTP) for a particular level of service.

They want to collect financial and economic data on WTP for different levels of service, household income and expenditure, revenue, subsidies.

To Engineers: it is the amount of water needed to supply a population.

They need to collect data on existing consumption patterns, number and type of facilities and levels of service in use, potential demand for future upgrading, operation and maintenance arrangements.

To Social Scientists: it is a basic human need or right which must be addressed in the context of poverty, equity and empowerment of low income groups.

They need to collect data on needs and priorities of different groups, potential user conflicts, cultural practices and beliefs.

These differing attitudes and primary data needs inevitably lead to different approaches to demand assessment as discussed in Section 5.0, 6.0 and 7.0; the scope for adopting a more integrated approach is considered in Section 8.0. This apparent disparity between the different disciplines working in the sector was one of the main reasons for organising the one day workshop at WEDC.

4.0 Why try to assess demand?

The lack of attention given to demand has certainly led to resources being wasted on unwanted or inappropriate systems around the world. These failures have driven sector professionals (and in particular economists) to the conclusion that service provision must be market driven. The need to understand the market - to assess the demand - for water and sanitation services is therefore a logical progression of this approach.

DFID acknowledged the importance of being able to assess demand in a 1997 seminar on the subject, and concluded that: *"Demand assessment studies...can improve prospects of system sustainability. They do this by facilitating decisions, particularly on service quality and cost recovery policy, which reflect what people want and are willing to pay for."*

Everyone present at the workshop agreed that if projects and programmes are planned and designed for sustainability, then there is a need to understand and assess the nature of demand for that project or programme. Information and data is needed at all levels and at all stages of the project cycle to guide decisions on everything from setting national tariffs to choosing levels of service in a village. The economists are clear about their need to assess economic demand for services in order to guide investment decisions since, as Peter Dearden explained in his workshop presentation, under-priced services can lead to:

- under-investment;
- poor maintenance;
- poor technical performance;
- poor judgments about levels of service
- slow progress in extending coverage; and
- wastage of water.

However, it is important to acknowledge that many practitioners also have reservations about applying a demand-led approach too rigorously. In his workshop presentation, Andrew Cotton cautioned that it is initially important for engineers to consider the supply side to be sure that supply can match demand. It is also necessary to “get your story straight” before you talk to primary stakeholders so that when you start discussing options these are realistic and achievable rather than ill-conceived ideas. This opinion is also held by WaterAid (Trace, 1999) which has successfully implemented large-scale, supply-led community managed projects - notably the Hitosa project in Ethiopia which supplies 60,000 people who would never have been able to come together to express a unified demand.

Another concern with demand assessment is that it may become an academic data collection exercise if the reality is that options are constrained technically, financially or institutionally. In many situations there may be only one “best” option available to a community so a demand assessment study would clearly be a waste of effort. However, in these situations there still needs to be a mechanism for communities to demonstrate their demand and commitment, for example by raising cash contribution.

The demand for sanitation services is generally acknowledged to be more difficult to assess than the demand for water and there is relatively little documented experience to draw from. Sanitation has components of both a public and a private “good” which makes it difficult to value in the same way as water. In addition, sanitation cannot be measured in quantities as can water since it is basically a “have or a have not” facility. In many situations there may in fact be little existing demand for sanitation so firstly the demand needs to be created. This is essentially a supply-driven activity. It therefore seems clear that a different approach needs to be taken to assess demand for sanitation services. The challenge of dealing with sanitation demand was highlighted both in the WEDC workshop and during the DRA conference but no clear solutions or approaches were put forward. There is still much work to be done in this area.

5.0 Different professions, different tools

As discussed in Section 3.0, demand means different things to the different professions, so it is hardly surprising to find that they use different tools and approaches to try to assess it. Table 1 (from the DFID guidance manual) provides details on a range of demand assessment techniques. Table 3 shows broadly how these demand assessment techniques are favoured by the different professions, but of course this is somewhat simplistic and the reality is that a combination of techniques may be used.

An interesting comparison of the three main groups of techniques - household or broad spectrum surveys, participatory appraisal and CV surveys - is presented in Table 4. This is reproduced from a recent SIDA publication which undertakes a detailed comparison and evaluation of the three techniques based on field work in Jakarta, Indonesia (McGranahan, 1997). This report is aimed at researchers and practitioners and provides detailed guidance on how to conduct the different types of survey. The annotated bibliography in Appendix I provides further references for detailed information on CVM, participatory tools and household surveys.

Table 3: Some of the demand assessment tools currently in use

Engineers	Social Scientists	Economists
<ul style="list-style-type: none"> Household /Revealed Preference Surveys Assumptions based on most feasible option Aggregated estimates based on supply 'norms' 	<ul style="list-style-type: none"> Participatory Rapid Appraisal (PRA) Relative demand - based on community meetings 	<ul style="list-style-type: none"> Contingent valuation Methodology (CVM) Household /Revealed Preference Surveys

Table 4: Comparing stereotypes of three demand assessment techniques

	Broad spectrum sample survey (household survey or RPS)	Participatory appraisal (PRA)	Contingent Valuation survey
Major development	1920 - 1950	1980-	1960 -
Dominant discipline	Statistics	Anti-disciplinary	Economics
Prioritized quality	Empirical rigour	Political correctness	Conceptual rigour
Typical research centre	Statistics office	NGO	University
Main target audience	Planners/ proj managers	Residents/proj managers	Policy makers/utilities
Look for solutions in	Government programmes	Grass roots initiatives	Improved markets
Dominant paradigm	Modernist	Post-modernist	Neo-liberal

Source: Understanding Environmental Problems in Disadvantaged Neighborhoods: Broad Spectrum Surveys, Participatory Appraisal and Contingent Valuation. MacGranahan G, Leitmann, J and Surjadi, C (1997), *Stockholm Environment Institute in collaboration with SIDA, 1997. Page 106 Table 5-1.*

Although Table 4 exaggerates the stereotypes to highlight the differences it is certainly true to say that each technique has advantages and disadvantages, and proponents and opponents. The technique which is currently causing the most debate and division in the sector is the Contingent Valuation Methodology (CVM) which was originally developed by environmental economists to try to assess the value attributed by the public to non-market goods (e.g. protecting a river from pollution). The World Bank has been the prime mover in testing, and subsequently promoting, the use of CVM to assess demand for water and sanitation services in both rural and urban locations. DFID is also moving towards the use of CVM, particularly to guide tariff structuring on large capital investments. The DFID Manual states that *“Choice of the right technique depends on the size and complexity of the proposed programme and the existing capacity in the community for self appraisal. If resources are available, the Contingent Valuation Method is the most reliable.”*

Opponents of the CVM approach, which tends to be more costly than other approaches, would argue that this is an inappropriately complex tool and that much cheaper and simpler participatory techniques could be applied in the majority of cases. These types of techniques are also much easier to transfer to developing country partners. Supporters of CVM would counter that is the only technique which can yield statistically representative data on people's anticipated responses to changes in levels of service or costs. There is some limited evidence that CVM, community meetings and focus group discussions all yield broadly similar and reliable data on demand characteristics and willingness to pay (Davis, 1998) but more research and comparative studies are needed to confirm this.

6.0 Documented experience of applying the different tools

The literature review for this study found several recent studies which have applied and tested the different demand assessment techniques. The categorisation of these studies as shown in Table 4 illustrates the polarisation of the work carried out for water supply and sanitation projects in rural, urban and peri-urban areas. Some of the broad generalisations that can be drawn from this overview of published literature are:

- in rural areas, demand for water and sanitation services are often assessed together and a range of techniques has been used;
- nearly all the documented experiences of applying CVM to assess demand come from the World Bank series of studies;
- in urban areas, demand for water and sanitation services are often segregated for the purposes of demand assessment; and
- there is little literature on the use of participatory approaches to assess demand for water or sanitation services in urban areas.

Table 5 Categorisation of literature on demand assessment techniques

Demand Assessment Technique	Water and Sanitation		Water Supply only		Sanitation only	
	Rural	(peri) Urban	Rural	(peri) Urban	Rural	(peri) Urban
None	Breslin (1999) Manikutty (1998) White (1997)		Hamed (1993)			Altaf (1994)
CVM		Davis (1998) McGranahan (1997)	Briscoe (1990) Griffin (1995) World Bank (1993)	Goldblatt (1999)		Whittington (1992) Whittington (1997)
Participatory	Davis (1998) RWSG-EAP (1998) Sara (1996)	EHP (1996) McGranahan (1997)				Wright (1997)
Other (e.g. HH or vendor survey)	Nordberg (1996)	McGranahan (1997)	MacRae (1988)	Morris (1999) Whittington (1991)		WASH (1993)

The two clear gaps which arise from this review are the assessment of demand for rural sanitation and the application of participatory approaches in urban and peri-urban areas.

7.0 Constraints and limitations of three techniques

It is interesting and revealing to focus on the constraints and limitations of each the three main approaches which have been discussed in this paper. Boxes 1, 2 and 3 below consider the problems associated with each technique and a broad contextual application is suggested for

each tool. This information is drawn from the literature review and from the workshop discussions.

Box 1: Limitations and Constraints of Household or RPS Surveys

- 'Households' can be hard to define where there are extended families or several families sharing facilities.
- Cannot provide data on WTP or response to future improvements in services.
- Relatively costly exercise to train enumerators, pilot testing and data entry, processing and analysis.
- Does not allow a two-way flow of information or dialogue with respondents so local knowledge is not tapped and there is no feedback or follow-up for communities.
- Preferences and demand for improved sanitation are difficult to elicit with this approach.
- Seasonal variations are difficult to capture with this snap-shot survey.
- Survey questionnaires are generally site-specific and are not easily transferred from one project location to another, even within the same area.

General conclusions on applicability/validity of HH/RPS Surveys

The relative inflexibility of this tool and need for rigour means that it is not ideally suited to small-scale rural surveys where it is important to engage with the community. This type of survey is useful for providing information for planners at city/district level for prioritising investments but is not generally used to guide decisions on tariffs, subsidies or cost recovery. RPS is only applicable where water supply problems exist and is not widely used for sanitation surveys.

Box 2: Limitations and Constraints of Participatory Rapid Appraisal (PRA)

- The data obtained from participatory surveys cannot be considered to be statistically representative since rigorous random sampling techniques are not employed.

- Generally considered to have limited potential for obtaining data on WTP or response to future improvements in services (although this point is debatable).
- There is little experience of using participatory approaches to assess demand for large-scale projects or in urban areas;
- PRA tools are often applied by people who do not fully understand the technical implications and this may lead to biased results.
- The flexibility of approach may be equated to a lack of rigour.
- The qualitative nature of the data obtained may make it difficult to link to actual service delivery options.

General conclusions on applicability/validity of participatory approaches

This type of tool is most often used on small-scale projects or rural or slum areas where building a relationship with the local community is of primary importance. Participatory approaches encourage a two-way flow of information and can empower people to take action to improve their situation. PRA is perhaps undervalued as a demand assessment tool by economists and engineers and there is scope for more frequently integrating it into the project cycle early in the planning stage with complementary tools being used later on.

Box 3: Limitations and Constraints of Contingent Valuation Methodology

- The technique requires a high level of expertise and is generally undertaken by external experts. There is little potential at present for transferring this tool to local partners, particularly since there are no straightforward or appropriate guidelines available.

- The hypothetical nature of the questioning means that, unless the survey is well-designed, people may be asked about WTP for services of which they have little knowledge or experience.
- CVM is an extractive process: it does not draw on indigenous knowledge and does not give back anything to the community.
- The WTP results of CV surveys will not reflect the fact that it is normally women who collect water but men who have control over financial resources. This is an important gender implication which must not be overlooked.
- A badly designed or sloppily administered CV survey may produce misleading or meaningless results on WTP data.
- Policy decisions at national level are often guided by political agenda which may take no interest in the results of costly and time-consuming CV surveys (or other demand assessment surveys).

General conclusions on applicability/validity of Contingent Valuation Surveys

The World Bank Water Research Team has given CVM the seal of approval for assessing WTP for water and sanitation services. There is little doubt that it can be a valid and useful tool but only in certain contexts. It can be useful for guiding large investment decisions at a national or city level to provide information for tariff structuring, cross-subsidies and future cost recovery. In this context it can be an important tool to safeguard the interests of the poor. There appears to be little justification for applying CV to rural settings where the choices are more limited and the investments are generally lower. Experience and understanding of applying CV to sanitation is limited and it does not appear to offer great advantages over the other tools in the context of sanitation.

8.0 Scope for a more integrated approach?

The growing emphasis on CVM as the preferred demand assessment technique in many situations means that other, cheaper participatory approaches are being neglected by economists and engineers (or perhaps it could be argued that participatory approaches are neglecting *them*, since these tools are seen as the almost exclusive property of the social scientist). There is surely potential to take a more integrated and holistic approach to demand assessment so that resources, expertise and, perhaps most importantly the involvement of the community, are optimised.

A recent example of an attempt to integrate project planning activities is from the UNDP-World Bank RWSG-EAP project in Lao PDR. A multi-disciplinary local team was trained to carry out a two-way "intensive collective learning process" in rural areas in order to understand why communities make the choices they do (RWSG-EAP, 1998). The project report points out that an accurate estimate of demand was only possible when the choices that communities made were informed ones. Unfortunately it does not explain whether there were any attempts to assess willingness to pay of these communities, or how the results of the initial participatory research was actually used to make design decisions. The Country Programme Manager for this programme contributed to the recent DRA conference with a discussion on this strategy-led, "series" process in Lao PDR (Seager, 1999). This process was successful because the project preparation, including demand assessment, was owned and led by Lao district, provincial and national representatives with the full participation of the communities. This

approach may not be directly replicable in other areas but it demonstrates the effectiveness of an integrated and team approach to project planning and there are surely lessons that can be learned from their experiences in Lao.

One of the primary objectives of this study and the associated workshop was to explore the possibility of developing a more integrated approach to assessing demand and willingness to pay in ways that will satisfy the essential data needs of all stakeholders involved in developing a project. It was therefore interesting, and a little disappointing, to find that none of the participants at the workshop, all of whom are experienced professionals in the sector, could come up with any practical solutions or suggestions. It was agreed that a multi-disciplinary approach is desirable and beneficial but that this is often difficult to achieve within the constraints (time, budget, lack of resources etc.) of a project or programme.

The different techniques discussed in this paper have different strengths and constraints and should certainly be used to obtain complementary information at different stages of the project cycle. However, the potential for actually combining tools remains unclear. The detailed SIDA study comparing these tools (McGranahan, 1997) briefly addresses the question of combining tools and comes up with the surprisingly strong statement that it may be "...inappropriate and even damaging to merge techniques". The report advocates that tools are instead used in parallel when the need arises. These assertions do depend upon the interpretation of 'merging techniques'. If it implies the creation of another new tool which somehow tries to pick off and re-engineer specific parts of existing tools, then this is indeed to be avoided at present. Using existing tools in parallel does imply that increasing attention needs to be given to a better integrated and co-ordinated *approach* to project design.

9.0 Concluding remarks

This study has explored different perceptions of demand assessment, and reviewed some of the approaches and tools which different professional disciplines have developed. Both this work and the recent World Bank electronic conference on DRA reveal that whilst there is a general consensus on the need to be demand responsive, there are strongly held and disparate views on how demand is interpreted and assessed. These issues run even deeper; if a programme appears to be institutionally, financially and socially sustainable, then interpretative arguments about "supply- or demand-led" approaches become irrelevant. The point here is that we must be careful about confusing objectives with means, and heading for "tool driven" strategies.

We do not yet fully understand how effective and appropriate the existing tools are when applied to water supply and sanitation programmes. There appears to be little objective evidence to compare real outcomes in terms of how people behave and respond when they actually take up the services with the predictions made by different techniques and tools. This problem would benefit from additional *independent* evaluation work. Nor is there a clear consensus on how to promote a closer integration of techniques and tools.

DFID is currently developing new sector programmes in response to the 1997 White Paper on International Development. This presents a good opportunity to develop closer disciplinary co-ordination through careful design of the terms of reference for project preparation studies. A subsequent review of how these issues are actually tackled during the preparation stage would provide useful pragmatic guidance on the way in which sound professional judgments are used to overcome problems.

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Whittington D, Lauria DT and Mu X (1991) A Study of Water Vending and Willingness to Pay for Water in Onitsha, Nigeria. *World Development, Vol. 19, No. 2/3, pp. 179-198*

Whittington D et al (1992) Household Demand for Improved Sanitation Services: A Case Study of Kumasi, Ghana. *Water and Sanitation Report No. 3, UNDP-World Bank Water and Sanitation Program*

The World Bank Water Research Team (1993) The Demand for Water in Rural Areas: Determinants and Policy Implications. *The World Bank Research Observer, Vol. 8, No.1, pp. 47-70*

Wright, AM (1997) Toward a Strategic Sanitation Approach: Improving the Sustainability of Urban Sanitation in Developing Countries. *UNDP- World Bank Water and Sanitation Program, Washington DC 1997*

Appendix I
Annotated bibliography

Annotated Bibliography on Demand Assessment Techniques and Planning Tools for Water and Sanitation Programmes

Altat MA and Hughes JA (1994) Measuring the Demand for Improved Urban Sanitation Services: Results of a Contingent Valuation Study in Ouagadougou, Burkina. *Urban Studies Vol.31 No. 10 1763 - 1776*

This is one of the key texts for CVM applied to urban sanitation. CVM was tested with sample population using photos and description (rather than focusing on technical aspects) for VIP, pour-flush or WC connected to sewer. The aim was to test usefulness of CVM in routine planning - conclusion is that it does provide useful information for planners so that expensive failures can be avoided.

Useful data/findings: Willingness to pay estimated at 4% of monthly household expenditure compared to 1-2% for Kumasi (Whittington et al. 1992). This may be due to the improved use of attributes/elicitation used in Ouagadougou.

Summary: Key World Bank study supporting the use of detailed CVM studies to guide demand-driven investment decisions for sanitation services in urban areas.

Arimah BC (1996) Willingness to Pay for Improved Environmental Sanitation on a Nigerian City. *Journal of Environmental Management 48 127 - 138*

This does not actually cover sanitation but focuses on solid waste and clean beaches so not of direct relevance to demand assessment for water and sanitation services.

Black M (1998) Learning What Works: A 20 Year Retrospective View on International Water and Sanitation Cooperation. *UNDP-World Bank Water and Sanitation Program*

Well-written and presented book reviewing the changing focus and phases of the UNDP - World Bank water and sanitation activities over past 20 years.

Useful notes: Persuasive justification of the shift towards embracing DRA. Case study of Bolivia pilot to full scale project (more details of this in separate booklet from RWSG Andes). Watsan timeline in front cover for reference.

Summary: Readable account with lots of detailed case studies. Good background reading for all practitioners working in the sector.

Breslin N (1999) Lessons from the Field: Rethinking Community Management for Sustainability. *Paper presented at Conference on; Rural and Peri-urban Water Supply and Sanitation in South Africa - Appropriate Practice Conference 14-17 March 1999, East London. Paper can be found on web at: <http://www.crosslink.net/~ehp/breslin.htm>*

This paper is focused on lessons learned in South Africa and presents findings from an evaluation programme of "revisiting schemes" supported by Department of Water Affairs and Forestry (DWAF) and the Mvula Trust. It provides quite detailed feedback and information on some of the key issues affecting sustainability of projects. The evaluations were carried out using Participatory Hygiene and Sanitation Transformation (PHAST) methodology.

Useful notes: The issue of affordability and technical design was one of the areas investigated by the evaluation programme. The conclusion of this assessment is that the demands of communities have not been fully addressed and that there needs to be a paradigm shift within the government (DWAF) and the engineering fraternity generally. Some of the projects were designed by consulting engineers with a complete disregard for community needs, preferences or affordability.

Summary: Interesting and challenging paper exploring the issues surrounding the sustainability debate, particularly with regard to South Africa.

Briscoe J, Furtado de Castro, Griffin C, North J and Olsen O (1990) Toward Equitable and Sustainable Rural Water Supplies: A Contingent Valuation Study in Brazil. *The World Bank Economic Review, Vol. 4, No. 2, pp. 115-134*

Paper on one of the series of World Bank multi-country studies on WTP for water. The contingent valuation methodology was tested in three rural areas of Brazil. The paper presents detailed analysis of the results of the survey and draws conclusions on credibility of the technique. The conclusion (in agreement with the other papers on the study) is that well-designed and carefully administered CV surveys can provide sensible and believable information on willingness to pay for improved water supply services.

Davis J & Whittington D (1998) "Participatory" Research for Development Projects: A Comparison of the Community Meeting and Household Survey Techniques. *Economic Development and Cultural Change Vol.47, No.1 pp.73-94*

This is the only piece of research found to date which compares the rigorous economics-driven CVM approach and the more flexible community meeting approach for gathering data on demand and willingness to pay. The paper clearly states that more comparative studies of this kind should be done to help donors select appropriate techniques (up to now, Participatory Learning Approach (PLA) techniques have been given too little attention by donors.). Conclusion is that both techniques which were tested in Lugazi, Uganda in 1997 can provide useful and comparable data. However, in this study, different socio-economic samples were achieved which made it difficult to directly compare the two sets of results. No studies exist comparing stated needs and willingness to pay elicited during community meeting with subsequent actual choice and behaviour of community.

Useful notes: Household survey comprised 384 interviews, split sample; five community meetings were held (50-225 people). Water facilities and public latrine demands were considered. Community meetings used water ladder and secret ballot (grain in hand) to assess demand for different options. Important conclusion is that the two techniques would have led to the same policy recommendations - i.e. were not significantly different, but unfortunately no mention of the relative costs of the two types of survey.

Summary: Unique piece of research to compare application and reliability CVM and community meetings as planning tools for assessing demand. It supports the argument being put forward by this researcher that PLA/community consultation type approaches should be considered as viable planning tools by economists, engineers and social scientists alike.

DFID (1999) Guidance Manual for Water Supply and Sanitation Programmes, WELL

This manual has been developed to provide a guiding set of principles for DFID water & sanitation programmes. The main thrust is towards demand-responsiveness & replicability, so demand assessment is central. Demand assessment is dealt with from an economic perspective & also in the key interlinkages. Table of Demand Assessment techniques provides useful summary and comparisons. In the economics section, rule of thumb affordability (i.e. household can afford to spend 5% of income on water) and benefit transfer are dismissed: CVM & Revealed Preference Surveys (RPS) are recommended. However, the manual provides little guidance on the use of participatory approaches for initial demand assessment.

Useful notes: The manual points out that CVM may need to be complemented by other techniques. Also emphasizes the need for hypothetical scenarios to be based on sound technical information. Assessment of sanitation demand is briefly discussed and the point is made that WTP will generally be underestimated due to community's lack of understanding of public health externalities.

Summary: This guidance manual provides an excellent overview of the interlinkages and key issues in developing water and sanitation programmes. The material on demand assessment provides a good starting point for anyone interested in the range of techniques, problems and constraints. It is beyond the scope of this wide ranging manual to examine the issues in great detail.

DFID (1998) Guidance notes to economists on demand assessment techniques (unpublished - prepared by Peter Dearden in response to Demand Seminar and forthcoming manual)

This is good set of notes for economists worrying about how to achieve financial sustainability of water and sanitation projects, but is very focused on CVM approaches (provides TOR for CVM, implies that CVM surveys should be undertaken by specialist consultants in isolation from other project planning activities)

Useful notes: Points out that selection of demand assessment technique must be driven by clear understanding of the information (level of detail, reliability) required. States that participatory methods cannot yield representative data for planning and design (but this is contradictory to the findings of Davis & Whittington, 1998). The use of benefit transfer is not recommended -this is in line with most research. Omits to mention ethical issues of extractive nature of CVM. Does not address sanitation approaches separately and so most of the comments are more relevant to water supply. States that rural villages Category 4 (i.e. low WTP because community spends little time or effort on water collection) should not be targeted by DFID projects (these communities will probably not express a demand under a DRA approach anyway.) The paper indicates that CVM is not appropriate for rural projects or programmes due to lack of technical options or demand for a range of different levels of service and also because of the limited cost recovery potential.

Summary: Good overview of the DFID economist's perspective on assessing demand and achieving financially sustainable water systems.

DFID and RWSG - South Asia (1997) Report on Workshop on Willingness to Pay for Drinking Water Supply and Sanitation September 15 to 17 1997.

This workshop was held in New Delhi with the prime objective of providing a forum for review, discussion and dissemination of the experiences related to willingness to pay for water and sanitation services. These proceedings include interesting discussions on different approaches to assessing WTP, factors affecting WTP.

The report also contains seven short case studies from around the world where CV or other demand assessment techniques have been used.

Environmental Health Project (1996) Beyond Participation: Locally based demand for environmental health in peri-urban areas. *Applied Study No.6, USAID*

Interesting paper putting forward strategies for improving environmental health interventions in peri-urban areas, by addressing Locally Based Demand (LBD). Discusses the benefits to communities and other partners of taking a demand-based approach - a learning process which leads to interventions and services based on individual, neighbourhood and community demand.

Useful notes: The report comments that demand assessment and data collection should not be viewed as a one-off but as a process; choice of data collection instrument should be based on specific circumstances; experts should facilitate & empower local communities; data collection can often be carried out from within communities without much external input; supply-side planning is still required, but need to find balance with emphasis on LBD.

Goldblatt M (1999) Assessing the effective demand for improved water supplies in informal settlements: a willingness to pay survey in Vlaktefontein and Finetown, Johannesburg. *Geoforum 30 (1999) 27-41*

Recent paper detailing experience of one of the few Contingent Valuation Surveys which was not sponsored by the World Bank. Provides a useful overview of the issues, benefits and constraints of CVM and willingness to pay surveys (including comprehensive literature review). The paper provides detailed analysis of the results for the two South African settlements and also draws conclusions on the appropriateness of using CV studies as a planning tool for urban water supplies.

Useful notes: Detailed analysis of the socio-economic issues surrounding water supply provision in South Africa. Methodology and results from two WTP contingent valuation surveys. Examination of the "five percent rule" found that in Vlaktefontein and Finetown 64% of respondents would only connect to the piped supply if the monthly expenditure on water was less than 5% of their total income. The paper concludes that a local demand assessment (CV or other) can provide a solid basis for economic and financial planning for urban water supplies (no mention of guidance for technical planning). The author comments that increased use of CV studies in the sector would improve and refine methodology and hence lower the cost of this relatively expensive survey technique.

Summary: Comprehensive paper of direct relevance to the South Africa case, but also providing more general viewpoint on the application of contingent valuation studies for urban water supply.

Griffin CG et al (1995) Contingent Valuation and Actual Behaviour: Predicting Connections to New Water Systems in the State of Kerala, India. *The World Bank Economic Review Vol. 9 No.3 373 - 395*

This is the classic study endorsing CVM because it is the only study which has had the opportunity to carry out CVM and then go back and check actual behaviour of the sampled communities three years later. It also tests the theory of benefit transfer and finds it wanting, hence the fact that benefit transfer is widely acknowledged to be unreliable even in areas with apparently similar characteristics.

Useful notes: The study found that connection cost for individual connections is one of the most significant factors in take-up; amortizing the loan would increase take-up by 450%. Correlation before and after (the same households were resurveyed wherever possible) was found to be very good - 14.9% of households got connected compared to 14.2% predicted, but then the sample is very small; total of 148 HH, with only 22 connecting so I find it surprising that these results are so heavily depended on for evidence of CVM's reliability.

The study found that using benefit transfer overestimated connection take-up by a factor of four. Also found that hypothetical bias is significant, particularly where people have no direct understanding or experience of the benefits of a piped water supply connection (this is probably an even more significant factor for demand assessment of sanitation options - see Wright 1997 and Saywell 1999 on Strategic Sanitation Approach - demand must be "informed").

Summary: Strong case for benefits of CVM, but the caveats do point out that it is only validated for a specific set of conditions and any CVM survey needs to be very carefully designed and administered. Also states that bidding costs for the hypothetical scenarios should be as close to actual costs as possible. Generally, the paper is quite theoretical but does provide a convincing case for the use of CVM as a planning tool for assessing demand for water services.

Hamed ARA & Sannen AMH (1993) The Development of Rural Water Supply in the Province of Fayoum, Egypt. *Water, Science & Technology Vol. 27, No.9*

pp.37-46

Interesting because it clearly demonstrates the engineer's traditional approach to demand "assessment" i.e. existing consumption is modeled and then future demands are projected up to the year 2000 (based on "present trend" it is assumed that by 2000, 75% of population would have a private connection - this could be flawed because water is free from public taps, so behaviour is perhaps difficult to predict).

IRC (1999) Demand Responsive Programming and Equity: a discussion paper for the water and sanitation sector. <http://www.irc.nl/home/comm/demand.htm>

This short paper was prepared by the Water Supply and Sanitation Collaborative Council's Working Group on Advocacy and Communication Strategies. It aims to stimulate conversation and exchange on the question:

For water and sanitation programmes, what are the implications for equity of demand-driven approaches?

The paper outlines the general rules which can be associated with DRA, namely:

- eligibility criteria
- technology choice and level of service
- cost-sharing for capital cost
- community payment for operation

Each of these issues is then explored in some more detail to encourage practitioners to share views and experiences on the subject.

Livingstone A and McPherson M (1993) Community Management of Rural Water Supplies: Lessons for Developing Countries from a Western Canadian Experience. *Water International* 18 pp.225 - 232

The detail is not necessarily relevant (experience is drawn from rural Canadian cooperatives to develop water for remote farms) but the main lessons drawn from this study are certainly relevant to developing countries, namely:

- sustainable water supply must be demand-driven
- the implementing agency must provide an enabling environment
- people must be legally empowered to assume ownership.

Useful notes: Even though the projects were driven and managed by the community to a large extent, the design & construction supervision were provided by an engineering consultancy. The company was either selected by the community or assigned on rotational basis by the programme. Construction was monitored closely by the water cooperative with assistance from the consulting engineer. Flexible and adaptive approach to planning and project development is central to successful implementation.

Lovell C, Moran D & Waughray D (1997) Potential Uses of Contingent Valuation in the Evaluation of Dryland Resource Development Projects: A Small-scale Irrigation Case Study from South-east Zimbabwe, *in Sustainable Development in a Developing World*, Kirkpatrick N and Lee N (Editors), 1997, Edward Elgar

An interesting case study of the use of contingent valuation in Zimbabwe to assess the non-market benefits of constructing collector wells with two handpumps to assist with the establishment of community gardens and water supply schemes. The CV technique was used to elicit wtp for joining the schemes and the field experience suggested that the value obtained was a combination of the

MacRae D & Whittington D (1988) Assessing Preferences in Cost-Benefit Analysis: Reflections on Rural Water Supply Evaluation in Haiti. *Journal of Policy Analysis and Management*, Vol. 7, No. 2 pp. 246-263

Old paper looking at the use of cost-benefit analysis as opposed to CVM. Questions how individual's preferences and social values can be quantified or assessed with this type of technique. Asks philosophical questions with regard to WTP for status, as opposed to the convenience, of a private tap and also discusses husbands' views of wives' time savings (suggests that in cost-benefit analysis we should subtract the cost to the husband of his wife's becoming more independent!!) Also considers social welfare aspect where old man is prepared to contribute for good of community even though he won't use the facilities himself.

Useful notes: Paper provides an interesting (if critical) set of case studies on the CARE projects in

rural Haiti (demonstrating that projects will fail if they do not take into account WTP and consumer preferences for levels of service).

MacGranahan G, Leitmann, J and Surjadi, C (1997) Understanding Environmental Problems in Disadvantaged Neighborhoods: Broad Spectrum Surveys, Participatory Appraisal and Contingent Valuation. *Stockholm Environment Institute in collaboration with SIDA, 1997.*

This is an excellent and detailed report which describes and evaluates three methods applicable to environmental problems facing households and communities: (a) broad spectrum household surveys; (b) participatory rapid assessment and (c) contingent valuation. Each application was tested in a different setting in Jakarta, Indonesia to illustrate the strengths and limitations of each technique. The report is aimed at practitioners, planners and analysts and aims to provide guidance on the practical, technical and theoretical issues surrounding these demand assessment techniques. It draws conclusions on the application of the different techniques in different contexts but does not seek to produce blueprint answers or models; rather it suggests that there is no substitute for sound judgment, good practice and active support of good governance.

One section of particular relevance to this study is a discussion on the scope for combining the three techniques into single studies. Interestingly, the authors state that "...in many situations it is inappropriate and even damaging to merge these technique." The report concludes that there may be more opportunities for combining the different techniques by applying them in parallel.

Summary: This is key reference for this study since it seeks to answer questions on the validity and relative strengths of different demand assessment techniques in different settings. It is a useful for text for anyone who is involved in demand assessment or planning of projects at a community or neighborhood level.

Manikutty S (1998) Community Participation: Lessons from Experiences in Five Water and Sanitation Projects in India. *Development Policy Review Vol. 16 (1998), 373-404, published by ODI*

Drawing lessons from five large donor programmes in rural India (starting in late 80s or early 90s). It is interesting to note that NONE of these projects involved the beneficiary communities in selection of levels of service or technology choice!

Morris N & Parry-Jones SA (1999) Affordability of Water in an African Town. *Water and Environmental Management, Journal of the Chartered Institution of Water and Environmental Management Vol.13, No.1 February 1999 pp.1-6*

This paper reports the findings of a significant World Bank funded demand and affordability survey carried out in Jinja, Uganda. The study was carried out through a household survey (a total of 1265 individual surveys) and analysis of the utility's billings data. The results of the study were used to guide decisions on subsequent investment to rehabilitate and extend the decaying urban water supply system.

Useful notes: Main findings include the fact that people in Jinja are spending an average of 10% of their income on purchasing water. The most cost-effective supply was found to be through private yard tap connections (people spend around 5% of income but consume a healthy 50 l/c/d) and there is great potential for expanding this service in the city.

The study shows that the main constraint to people getting yard taps is the cost of connections, so amortization would benefit many of the poorer people. Standpipes are used by 60% of the population (consumption 16 l/c/d, 9% of income); the survey showed that standpost demand is relatively inelastic to price. Standpipe consumption accounts for 25% of water use but only 5% of revenue, so it is concluded that water could be given free. However, it is preferable to encourage community-run standposts. This will require education, capacity building and promotion amongst peri-urban communities. Main constraint to this approach is lack of information reaching outlying communities.

Summary: Paper shows the type of useful planning data that can be obtained a detailed demand survey. Highlights the problems of supplying poorer peri-urban communities from a city-based utility.

Muyibi SA (1992) Planning Water Supply and Sanitation Projects in Developing Countries. *Journal of Water Resources Planning and Management Vol.118, No. 4, pp. 351-355*

Little information of relevance to demand assessment, but it discusses the need for a sequential procedure for total involvement of community in construction, operation and maintenance.

Useful notes: Highlights two interesting points about **engineers** - firstly that they design what they know & understand, and secondly that their training is often inappropriate to community-based approaches. This is a particular problem for engineers trained in an industrialized country who feel under pressure to demonstrate their "superior" knowledge and apply the latest (often completely inappropriate) technology.

Narayan D (1996) Toward Participatory Research. *World Bank Technical Paper Number 307, The World Bank, Washington DC*

Key document on participatory approaches providing a practical guide to formulation and implementation of participatory research and inquiry (i.e. data collection and information gathering with communities to gain an insight into goals, perspectives and felt needs).

Useful notes: The document initially highlights the need to assess WTP at the beginning of a project or programme, but there is no guidance on how to do this in a participatory way. Astutely points out that rough, indicative but timely data is often much more useful to planners than highly detailed data which is provided six months late!

Participatory research is two way (as opposed to CVM which is totally extractive). Good summary of conventional versus participatory techniques (p.30).

Points out that participatory techniques are often resisted by governments, planners & engineers (largely because they have not been trained and have no understanding of this approach). However, If participatory techniques are introduced, these sceptics can become strong proponents (case studies p.23, 25, 52).

Importance of focusing on how results will be used (this is a common weakness with PRA) p.77 Box on Kumasi - comparison of use of conventional & participatory techniques (but interestingly, the survey was only repeated in a participatory way because the original survey missed the stakeholders).

Nordberg, N and Oranga, H (1996) Health Information for District Level Planning: A Cross-sectional Household Survey in Rural Kenya, *East African Medical Journal Vol. 73 No. 6 June 1996*

Interesting paper which provides information on costs and methodology for a large household health survey in rural Kenya. The survey included data on water and sanitation services and the authors propose that the data generated could be used for routine planning at district level. The article also states that group discussions are useful and inexpensive but cannot produce the level of detail that HH surveys can (but does not rule them out for planning purposes).

Useful notes: The cost of this comprehensive health information survey was US\$24,000 but surprisingly two thirds of this was attributed to computer data processing (local health officers/school children were used to collect the data so the actual survey costs were kept low).

Summary: This may provide an interesting alternative model for collecting demand or planning data for water and sanitation projects using a cross-sector approach to district planning.

Pearce D (1997) Demand Assessment in the Water and Sanitation Sector in Developing Countries - an overview of demand assessment. Unpublished. Presented at DFID Seminar 15-16 December 1997

Very economics-focused "overview" of demand assessment for water and sanitation projects - also emphasizes need to consider non-potable uses. Does not discuss the potential of using participatory approaches for estimating demand. Good summary of different elicitation methods for CVM and table of WTP for range of surveys.

Rogerson, CM (1996) Willingness to Pay for Water: The International Debates. *Water SA Vol 22 No 4 373 - 380*

Detailed literature review of all the WTP studies carried out to date (i.e. mostly focused on the series of World Bank demand studies). The paper is a good starting point for people wanting to gain an insight into the issues surrounding WTP and the application of contingent valuation surveys but there is no original work here for those familiar with the debate

RWSG-EAP (1998) Rural poor choose their water and sanitation services. Lessons Learned. *Regional Water and Sanitation Group for East Asia & the Pacific*

Paper on the new approach to World Bank project preparation where staff from the Lao PDR government Rural Water and Sanitation Department were trained to carry out participatory consultation in rural areas ("intensive collective learning process - understanding **why** communities make the choices they do; accurate estimate of demand is only possible when the choices are **informed** ones"). Two-way dialogue with multi-disciplinary team (technical & software). "...joint quest to recognize and facilitate the expression of demand...there was no single expert guide, nor a step-by-step manual available for the task" .

The survey team used water ladder and sanitation ladder to facilitate technical choices. This raised discussion about costs so engineers had to be prepared with relevant information to advise communities. The challenge was to find locally acceptable solutions without compromising technical feasibility/quality.

Summary: Useful case study for the use of a participatory approach to project preparation and demand assessment. It would be fascinating to find out how the project has progressed from these initial detailed and extensive consultations - i.e. how expressed demand was met in practice.

Sara J, Gross, A & van den Berg C (1996) Rural Water Supply & Sanitation in Bolivia - from Pilot Project to National Program. *UNDP-World Bank Water and Sanitation, Washington DC*

Excellent case study on the use of a demand-responsive approach in Bolivia which has been successfully scaled up from the pilot programme. Lessons are drawn for project planners and World Bank staff. These lessons will certainly be key to moving forward with DRA.

Useful notes: Financial policy for the project was guided by WTP survey but there are no details on how this was conducted. Subsequent project rules/community contributions were based on these findings. 50% of the funding for capital costs was provided by the local community. Each community was offered a choice of at least two LOS. Latrine demand has increased despite the reduction in subsidy in the third year of the project. The project team was multi-disciplinary - engineers were specifically trained to work (negotiate) with communities

Summary: Useful and detailed case study which seems to provide a model approach to DRA! Unfortunately it is lacking in information on the initial WTP/demand surveys, but some of the lessons learned are of direct relevance (p.24 & p.39).

Sara J and Katz T (1998) Making Rural Water Supply Sustainable: Report on the Impact of Project Rules. *UNDP-World Bank Water and Sanitation Program*

Detailed report presenting and analysing the results of this World Bank study which was undertaken on ten projects between 1996 and 1997 in : Benin, Bolivia, Honduras, Indonesia, Pakistan and Uganda. Useful for providing definitions and explanation of demand, DRA and the importance of project rules. It also compares water and sanitation sector projects versus multi-sector projects.

Useful notes: Figure 1 (p.12) provides a good graphical summary of the factors affecting DRA and sustainability and p.14 discusses indicators for DRA projects. The report presents statistical evidence on the link between demand-responsiveness and sustainability and finds a convincing correlation (significance level of more than 99%). The most useful section for practitioners is probably Chapter VI which draws important lessons on designing demand-responsive, sustainable projects.

Summary: This study is certainly one of the first to provide hard statistical evidence on the benefits of adopting a demand-responsive approach to water and sanitation programmes. The lessons distilled from this study should guide future design of demand-responsive water and sanitation programmes and also policy formulation.

Saywell D & Cotton A (1999) Strategic Sanitation Approach: A Review of Literature. WEDC

This booklet reviews 63 documents on strategic sanitation and examines how the key concepts

underlying the Strategic Sanitation Approach (SSA) have been applied in the field. The key piece of work which formed the basis for this review is Albert Wright's Towards a Strategic Sanitation Approach.

Useful notes: SSA is a demand-based approach to sanitation services. It requires agencies to conduct effective demand assessment exercises. This should be done through stakeholder participation and consultation. Incentives need to be identified at the start of the project in order to ensure effective participation of the full range of stakeholders. Useful section on assessing demand for sanitation (p.29).

Summary: This is an important literature review which provides a succinct but detailed introduction to those interested in understanding and applying SSA.

UNDP- World Bank Water and Sanitation Program (1997) Regional Workshop on Demand Responsive Approach to Community Water Supply Proceedings. June 23 - 26 1997. *Regional Water and Sanitation Group - East and Southern Africa.*

The background to the workshop was that most countries in the region already have policies that reflect the shift towards decentralization of control and implementation, an increased recognition of the role of users in planning, financing and implementation of WSS, but lacked strategies for implementation. Based on case studies from the 10 countries in the region and other parts of Africa (Ghana and the Mvula Trust), the workshop focused on improving participants' understanding of the concept of DRA, identifying the major implementation challenges, and how to design and implement the transition.

Summary: Essential reading for those interested in moving from the concept to implementation of DRA.

UNDP- World Bank Water and Sanitation Program (1997) Urban Sewer Planning in Developing Countries and "The Neighborhood Deal": A Case Study of Semarang, Indonesia, by Dale Whittington, Jennifer Davis, Harry Miarsono and Richard Pollard. *Working paper produced in December 1997.*

This working report describes a feasibility study which was conducted to test a contingent valuation methodology for assessing consumer demand for sewer services. Households and neighborhood groups were offered different theoretical pricing arrangements for house connections and feeder sewer networks, and the results were analysed to determine the deal preferred by each of the three sub-districts where the survey was conducted. It is not a comprehensive wtp study for Semarang but it provides some interesting insights into consumer priorities for public and private investments in sanitation infrastructure. It is interesting to note that the survey sample was based on three purposively selected areas so the study does not conform to the economist's demand for statistically random rigour : this begs the question whether it should be termed a CVM study and how valid or widely applicable the results are. However, the conclusion is drawn that "contingent valuation can be an effective approach for assessing demand for sanitation services".

Summary: An interesting and recent study on the application of CVM to urban sanitation services which takes a somewhat less rigorous approach than earlier studies and also makes use of community meetings.

UNDP- World Bank Water and Sanitation Program (1998) Community Water Supply and Sanitation Conference Proceedings. May 5-8 1998, *UNDP-World Bank Water and Sanitation Program, Washington DC*

This conference held last year was effectively the launch-pad for the World Bank's shift towards DRA. The introduction to the proceedings (Sara, Garn and Katz) provide core messages, characteristics, context and history of DRA . The proceedings contain many useful case study papers from around the world including Mvula Trust (South Africa), PROSABAR (Bolivia), China, Ghana, India and Indonesia.

Summary: Key document for DRA issues and practical experiences to date. Essential reading for all DRA enthusiasts, novices and hardened cynics.

UNDP - World Bank Water and Sanitation Program (1999) Voice & Choice for Women: Water is Their Business. <http://www.wsp.org/English/png-pla.html>

This paper is published on the UNDP Water and Sanitation website and provides some background information and more detailed methodology on the Water and Sanitation Program (WSP) global initiative **Participatory Learning for Action (PLA)**. This study was launched in October 1997 and aims to establish the link between sustainable water and sanitation services and the use of demand-responsive, participatory, gender and poverty-sensitive approaches.

Useful notes: The PLA initiative aims to test a methodology for social assessment and draws on the participatory methodology developed by the World Bank and also the WHO Minimum

Evaluation Procedures (MEP). Phase I assessments are being carried out on 14 projects in five regions. Phase II will synthesize the results of this global study and capacity building will be undertaken at all levels to facilitate design of sustainable projects.

The Phase I assessments use 26 indicators including six to test demand-responsiveness of projects so the study should provide important information of the success and appropriateness of past attempts to employ DRA.

Perhaps one of the disappointing aspects (in the context of this paper) is that the study is seen as a social assessment exercise and does not appear to provide interlinkages with technical and engineering issues associated with DRA and demand assessment. However, since the study teams include a sanitary or water supply engineer a certain amount of synergy and overlap is guaranteed.

Summary: The PLA initiative will provide key information and statistical evidence of the benefits of adopting demand-responsive, participatory, gender and poverty-sensitive approaches to water and sanitation projects. This paper provides a good overview of the objectives and methodology for this important global study.

WASH (1993) The Unique Challenge of Improving Peri-urban Sanitation, *WASH Technical Report No. 86, July 1993*

Advocating a more multi-disciplinary approach to tackling the challenge of peri-urban sanitation (move away from technology-based solutions). Not much detail on how to actually assess demand, except that it states that a WTP survey *must* be devised to guide investments!

Webster M (1998) Effective Demand for Rural Water Supply in South Africa (technical and financial implications of designing to meet demand). *MSc thesis (unpublished) Water, Engineering and Development Centre (WEDC), Loughborough University.*

Useful and recent piece of research which includes a thorough literature review on approaches to demand assessment, and in particular contingent valuation studies. It also investigates the current thinking and applications of the demand-responsive approach with particular emphasis on the South African water sector. The study uses a South African case study to investigate different scenarios of designing for mixed levels of service.

Useful notes: The level of demand-responsiveness of a project or programme can be measured by the extent to which customers are allowed to choose their level of service. In the South African context, projects need to be designed to meet changing demands over the whole project life; this means that technical solutions need to be upgradeable. The service provider (either government or private) needs to become consumer-orientated to achieve financial sustainability.

Summary: A good research project providing a detailed and interesting insight into the South African perspective together with a detailed literature review on financing of rural water supplies and demand assessment.

White J (1997) Evaluation Synthesis of Rural Water and Sanitation Projects. *DFID Report EV 596, May 1997*

This is a useful evaluation study for DFID staff (and others) to lesson-learn from past ODA and other donor projects in the sector. Seven projects were evaluated in: Sierra Leone (CARE/ODA), Uganda (WaterAid), Indonesia (Madura), Swaziland, Lesotho and Nepal.

Useful notes:

- In the past, projects have not reflected communities' felt needs, and donors have often presented standardised technical packages with little or no choice on LOS or technology
- Where projects do not reflect felt needs, facilities are under-utilised
- Community demand is the key determinant of whether a community and agency can come together to create improved services
- Sanitation projects - should they meet or create demand? (latent demand is often low)
- In the case of the seven ODA projects evaluated, none of them used a truly participatory approach to planning and design

Summary: This evaluation contains a number of important lessons which reinforce the need to move towards more demand-responsive project and programme planning and design.

Whittington D, Lauria DT and Mu X (1991) A Study of Water Vending and Willingness to Pay for Water in Onitsha, Nigeria. *World Development, Vol. 19, No. 2/3, pp. 179-198*

This paper is one of the classic references on studying vending activities as a means to assessing WTP for water services. It contains a detailed description of the field work which would be of use to anyone conducting a similar study.

Useful notes: Interviews conducted at all levels of the system & cross-checking from different sources. 3 days training/testing and 10 days surveying. Emphasizes the problem/risk associated with the non-rigorous sample frame. Planners face choice between expensive detailed surveys and rapid rough and ready techniques.

Detailed description of bidding game procedure and analysis of results to predict future behaviour. 58% of the sample were estimated to be paying 18% of income on water in dry season. Vending system responsible for 95% of sales in monetary terms.

Summary: Provides a strong case for carrying out this kind of survey to assist in project planning and decision-making. Also supports the argument that poor pay more for water.

Whittington D et al (1992) Household Demand for Improved Sanitation Services: A Case Study of Kumasi, Ghana. *Water and Sanitation Report No. 3, UNDP-World Bank Water and Sanitation Program*

Report on the findings of the World Bank CVM survey for demand for sanitation services (1200 households in Kumasi, Ghana). The main conclusion is that CVM can be a useful tool for obtaining data for planning urban services. The two technologies offered were Kumasi ventilated improved pit latrines (KVIPs) and water closets connected to the sewer system - it was found that most people were WTP about the same for both technologies; it was therefore concluded that generally water closets are not affordable to the majority of the population in Kumasi.

Useful notes: The introduction gives useful historic perspective of sanitation planning - supply side, little consideration for individual household demand, simplistic assumptions etc. The results of the CVM survey could be used for messages in a social marketing campaign.

Key determinants of WTP are found to be income, tenancy, current expenditure on sanitation and level of satisfaction with existing services. The study found that WTP for sanitation and water services are comparable and largely separable. The report indicates that more research is needed on: how households choose between two or more options presented simultaneously at different prices and on collective WTP for groups of tenants in apartments.

Summary: Useful text on application of contingent valuation survey to assess demand for urban sanitation services. The report draws general conclusions on the application of CVM techniques (finding it to be a useful planning tool) and also specific conclusions on the demand for sanitation services in Kumasi (confirms that conventional sewerage is generally unaffordable).

Whittington D (1998) Administering Contingent Valuation Surveys in Developing Countries. *World Development, Vol. 26, No. 1, pp.21-30*

The how-to-do-a CVM paper. Raises interesting issues on setting referendum prices, interpreting answers, ethical problems (i.e. extractive nature of this type of survey) and the need for some form of compensation to the respondents. Suggests that exchange of information may be best compensation to respondents - but of course this is rarely done with CVM approach (external "experts" normally conduct the study and do not return to the area once the study is complete).

Summary: Good background reading for those specifically interested in knowing more about the practical application and issues surrounding the use of contingent valuation surveys for developing countries.

Whittington D, Davis J, McClelland E (1998) Implementing a Demand-driven Approach to Community Water Supply Planning: A Case Study of Lugazi, Uganda. *Submitted to Water International ?? Unpublished to date.*

Rapid appraisal study - two weeks in Lugazi, Uganda - employing a range of data collection techniques to assess household demand for improved water and sanitation services (observations of vendors, observations of public latrines, 87 in-person interviews with vendors, 384 HH interviews including CVM section, participatory group meetings).

Useful notes: Results from group meetings are close to those from CVM survey on WTP for household connections. The "demand assessment" i.e. the suite of surveys will guide investment decisions because it was found that the community managed standposts envisaged by engineering consultants are not a popular option: rather that there is a high demand for private metered connections.

Summary: The most important lesson from this paper is that engineers, planners, governments and economists need to be flexible to cater for communities' demands which emerge as the planning process advances. One challenge is to create incentives to encourage engineers and planning consultants to take DRA planning process seriously .

Whittington, D (draft only) Guidance Notes for DFID Economists: Use of the Contingent Valuation Methodology for Demand Assessment in the Water and Sanitation Sector, unpublished.

Although the paper focuses on economic demand assessment, and specifically CVM, it also discusses the selection of different techniques, and points out that different techniques are not mutually exclusive and in fact it is advisable to structure a primary data collection exercise to employ complementary techniques.

Interesting table on comparison of attitudes of different professionals to the different techniques (Table 1) and discussion of the different attitudes.

World Bank Water Research Team (1993) The Demand for Water in Rural Areas: Determinants and Policy Implications. *The World Bank Research Observer, Vol. 8, No.1, pp. 47-70*

This is the synthesis paper for the series of multi-country World Bank demand studies. Evaluates the key determinants in relation to WTP and derives a categorization for different proposes the 4 village categorization. States that either vending studies or CVM are needed to make informed decisions on LOS planning. The paper is quite academic and economics-orientated but is important because it draws from such extensive and rigorous studies.

Wright, AM (1997) Toward a Strategic Sanitation Approach: Improving the Sustainability of Urban Sanitation in Developing Countries. *UNDP- World Bank Water and Sanitation Program, Washington DC 1997.*

The key document on the Strategic Sanitation Approach (SSA) which involves taking a demand-based approach to provision of sanitation services. The book is divided into two parts: Part 1 looks at Past Approaches and Future Directions and Part 2 looks at the practical implications and issues of adopting a SSA.

Useful notes: Success in the field of sanitation can be attributed to:

- paying attention to user preference and WTP
- unbundling sanitation services
- appropriate division of responsibilities between formal and informal institutions

SSA aims to provide:

- a wider choice of technology
- recognition of consumers' WTP
- matching levels of service to affordability
- innovative financing mechanisms

The book provides some useful guidance on demand assessment for sanitation services (p. 19-21).

Summary: Key document setting out the new thinking on approaches to sanitation, which complements and corresponds to the DRA for water services.

Appendix II
Workshop proceedings

Workshop Proceedings

1. Introduction and Background to Workshop

The workshop was opened with a brief introduction and welcome from Sarah Parry-Jones. She explained the DFID-funded research project which was the basis for this workshop and outlined the key issues to focus on during the day. These can be summarised as:

- The shift to Demand Responsive Approaches (DRA) means that demand assessment is becoming increasingly central to planning and design of water and sanitation programmes;
- This workshop coincides with the on-going World Bank electronic conference on DRA which has brought up some interesting questions with respect to the concept of “demand”. Gourisankar Ghosh (head of UNICEF Water and Environmental Sanitation) noted that at present DRA “...is a combination of some economic tools with a sprinkle of practical experience.”
- It is true to say that demand seems to be dominated by the economists view that it is equivalent to willingness to pay for a chosen level of service. One of the main objectives of this workshop is to explore the differing context of demand as viewed by economists, social scientists and engineers;
- The workshop will look at the different tools and approaches used by the different professionals, with a view to moving from theory to operation;
- The use of participatory tools is often overlooked or neglected by engineers and economists; the application and potential benefits of these tools will be discussed by the participants;
- In order to contribute to the research output, the ultimate aim of the workshop should be to focus on the potential for developing a more integrated approach to demand assessment.

2. The Economist’s Perspective

2.1 Presentation by Peter Dearden, Natural Resources Economists, DFID: Demand Assessment: The Economist’s Approach

The economist’s view of demand for water is that it is defined by the relationship between quantity demanded and price but other characteristics will also affect the relationship including:

- convenience
- reliability
- cleanness
- taste
- preferred level of service

Demand assessment needs to be used to guide public decisions on capital investment, pricing of services and the use of subsidies. The latter is of particular importance to ensure that investment benefits are distributed to the poorest sectors of the population. Economists are interested in the pricing of water and sanitation services because underpriced services lead to:

- under-investment
- poor maintenance
- poor technical performance
- judgments about levels of service
- slow progress in extending coverage
- wastage of water

Demand assessment needs to examine the **difference** between the proposed new service and the existing services and current behaviour. In other words, the question needs to be asked “are the proposed “improvements” an improvement from the consumers’ perspective?”

There is no “best” demand assessment method but since there is typically a lack of useful secondary data it is often necessary to collect primary data. This can be done through the use of focus group meetings, key informant interviews and surveys of users and potential users. The best approach is often to use a mix of methods at different stages of the project cycle: for example focus groups and key informant interviews can provide useful qualitative data at the scoping or feasibility stage whilst systematic and quantitative data can be collected through well-designed surveys. If the data is to be used for large financial investments, policy decisions or tariff restructuring then there is a need to obtain statistically sound demand estimates. Statistically representative data requires:

- a large, randomly selected sample
- statistical expertise
- time
- money (cost of enumerators etc.)

The two main types of survey are revealed preference and contingent valuation. Revealed preference involves making observations on existing water vending and water fetching activities; it is a relatively low cost and straightforward technique for obtaining demand data, but it cannot be used to predict consumers’ response to big changes in prices or levels of service. It is also difficult to decide how to value time savings with confidence.

The contingent valuation methodology (CVM) is also known as stated preference because it involves asking people to state what they would be willing to pay for hypothetical improvements in levels of service. In order to get valid and reliable estimates of willingness to pay (WTP) it is necessary to employ experts with specialist experience in CVM. The questionnaire design and analysis must be done with care and the hypothetical scenarios need an engineering input to ensure that they are realistic. This type of survey is therefore relatively costly and time-consuming. An interesting dilemma with the use of CVM surveys is the gender implication of the results: it is generally women who collect water but men who have control over financial resources but the results of a CVM survey will not necessarily reflect the differing priorities of men and women.

The case for large scale CVM is stronger in **urban water schemes** where:

- a range of LOS options is feasible and likely to be affordable for some users, even at full cost charges;
- significant tariff changes are being considered so that future charges will be much higher than existing levels;
- there is scope for wealthier users cross-subsidising through tariff structuring so that low income users can benefit from below-cost prices;
- there is scope for those with private connections to pay full cost and then sell water on to neighbours.

The case for using CVM in **rural water supply schemes** is less clear and it is generally considered inappropriate to invest money in CVM where the population density is low. To achieve sustainability of rural schemes it is important to ensure the community participates in:

- selection of LOS
- selection of location

- design of O&M arrangements
- meeting full O&M costs
- (possibly) meeting some capital cost (related to LOS)

Where there is little quantitative information available or the scope for conducting detailed surveys is limited, proxy measures of rural demand may include:

- village size and population
- round trip time to existing water sources
- price paid to water vendors
- prevalence of water-related diseases

Assessing demand for **sanitation services** is more difficult and less well studied. It is acknowledged that sanitation has important public good properties, especially in densely populated urban areas. It also has private good characteristics including privacy, convenience and family “private” health. CVM and other survey methods can be used to assess sanitation demand but there seems to be little evidence of surveys being used to set costs for sanitation.

In conclusion demand assessment is certainly an important project planning activity and there are various methods which can be used. The key questions to ask when selecting an appropriate demand assessment technique are:

- what decisions will demand assessment influence?
- who takes these decisions?
- how will demand assessment influence the decision-making process?

Peter Dearden concluded his presentation by stating that experience of demand assessment within DFID is still fairly limited but CVM has recently been undertaken in eight towns in Ghana as part of a national privatisation programme. The data from these surveys will help to guide decisions on setting national water tariffs to achieve cost recovery and sustainability whilst safeguarding the interests of the poor.

2.2 Key Discussion Points Arising from Presentation

After the presentation the discussion was opened up to the workshop participants to explore the economic perspective of demand assessment. The key issues emerging are summarised below:

• *Cost recovery and subsidies*

The question was asked whether designing for full cost recovery should always be the objective of demand assessment. Participants agreed that in rural settings it was certainly not always possible to recover capital costs. An affordable basic LOS is a right which should always be met and affordability will be location-specific. To meet this basic need some subsidy will nearly always be needed in developing countries and the challenge is how to allocate the subsidies to maximise the benefit to the poor.

It was pointed out that in many towns and municipalities services are delivered on a “spend as you go” basis and there is little interest or incentive to recover costs. In these situations it would therefore be inappropriate to conduct detailed CVM surveys. Demand assessment needs to be seen in the context of a sector strategy and CVM may only be relevant where it will be used to guide national policy and tariff setting.

• *Reliability and relevance of CVM results*

There is evidence that respondents to CV surveys will give the same response one year later if you go back and ask the same questions about the same hypothetical scenarios. This confirms that there is theoretical consistency in the results, but it does not

necessarily follow that actual behaviour will match these responses. The World Bank Kerala study is the only one which went back and checked actual behaviour against CV results and this was for a relatively small sample. Many of the workshop participants were concerned with the theoretical nature of CVM and pointed out that people's behaviour would depend on the institutional and political environment and their level of understanding or knowledge of the services being offered. Demand may also be stimulated and enhanced by the onset of a project (once people see that the services are real and possible) and CVM cannot model this behaviour.

• *Sanitation*

Experience of assessing demand for sanitation is limited. The point was raised that sanitation, unlike water, cannot be measured in quantities because a person either has a latrine or they do not. Therefore the quantity versus price relationship is not valid and sanitation demand needs to be considered in a different way.

• *Gender*

The issue of gender allocation of resources is not one which can readily be addressed by CVM surveys; it was pointed out that a woman may "offer" to pay a sum under a CVM or WTP survey but this may not necessarily be sustainable if a male head of household has different priorities. The use of CV as a demand assessment tool was therefore considered by some to be inappropriate because of this constraint.

3. The Engineer's Perspective

3.1 Presentation by Andrew Cotton, WEDC: An Engineering Approach which promotes choice

The focus of this presentation was based on Andrew Cotton's experience of designing to deliver services to urban slums in India and Pakistan. In the introduction he emphasised the importance of:

- looking at the supply side first or at least at the same time as you are thinking about demand; supply and demand need to match;
- options should be based on what is feasible and can realistically be delivered. It all depends on what is there now and the local institutional context. There is a need for more common sense and less theory: *need for realism in what can be delivered locally*;
- engineers should become increasingly flexible and move away from standards and norms in design;
- how do these demand assessment tools work in terms of sanitation which is a household decision and relies on promotion and access to finance (sewerage is not likely to be widely adopted).

An engineering approach which promotes user choice - the process

1. Start the planning at the city level and have a good concept of the likely institutional incentives for a change in approach. The key point is to have flexibility in terms of levels of service, moving away from city-wide blueprints based on norms so that you can have different infrastructure/services in different communities (a classic example is sanitation choice in Indian slums; the only perceived solution by local engineers is communal latrines). However the local norms and standards are important, as they provide the basis for doing 'first cut' cost estimates (see 4)
2. Map out a strategic approach for infrastructure for the areas of the city where the slums and urban poor are.
3. Produce local area infrastructure context plans so you know what you have got. (e.g. it is clearly pointless to talk about sewerage if there is no sewerage in the city).

4. Look at likely options at the tertiary (community) level; develop some very general indications of likely unit costs for different options in relation to a particular town. This can be done quite quickly.
5. So far the activities are based on *supply* rather than *demand*, but my own experience is that unless you have got your story clear with your secondary stakeholder partners at the municipal level, you end up totally confusing the primary stakeholders if you go to the slums with half baked ideas.
6. Having established feasible options we can then start to look at the consumer side;
 - participatory assessment of what is already there; how does it work? Look around you and you will find the technical solutions/options (99%)
 - Perhaps the first way into demand is to assess in a participatory way what are the aspirations of consumers and what do they currently pay, for example, for sanitation, what investment have they already made? Let's use some common sense; i.e. if x% of people have invested more than Rs2000 in the last 5 years they are unlikely to want to, say, triple that investment now.
 - In investigating options and preferences, these must be based on what is deliverable by a project or programme.
 - We can put this in context using the ball park unit cost figures which can be developed at the town level for the different options as described above. Certain options will then drop out for a combination of technical and financial reasons.
7. My next question would be does this approach give us sufficient demand side knowledge to move ahead without extensive and expensive WTP and CV surveys? The pragmatic answer is probably yes, and so we can start to look with the city council at what this implies in terms of financing mechanisms.
8. We can then get down to the more detailed work leading towards action at the micro-level, with proposals for financing, implementation and developing local institutional and NGO support.

Implementing new Strategies

It is fanciful to expect complex new tools and techniques to be readily adopted locally. There need to be strong incentives to encourage change.

Incentives

New approaches requires the *status quo* to change at municipal level.

- The concept of incentives is central; what are the incentives for each stakeholder to change the way they currently operate? An understanding of this is needed in order to unlock many of the problems.
- It is essential that local politicians buy into any incentive-based approach, whether at the state-to-municipal level, or the municipal-to-neighbourhood/household level.
- A wider civil society issue beyond sanitation is the apparent lack of public pressure for better services.

Developing New Strategies

How is the required change at the municipal level likely to come about ?

- It is unrealistic to assume that municipal level staff will think through complex strategic issues and develop innovative practices. Whilst there are a few notable exceptions to this (e.g. Ahmedabad and Surat), municipalities need clear procedures which tell them what to do and how to do it.
- Tinkering with small towns in the hope of developing a good strategy is unlikely to be successful; engaging at the state level is crucial.

3.2 Key Discussion Points Arising from Presentation

- *Institutional approach*

It was pointed out that the process described in the presentation is very much based on institutions rather than engineering. In the urban context a demand-based approach must pick up on local initiatives rather than trying to introduce totally new ones and must also work within the existing legal power structure. The case of Orangi Pilot Project was quoted where the initiative to construct sewers came entirely from the community.

- *Resources*

Community plans are costly and difficult to do and require extensive resources which are often beyond the reach of local governments and municipalities.

- *Assessing future demand*

The presentation did not discuss the need to assess future demand which is often the task of the engineer. City or community level plans rarely take into consideration future demands and this is a shortcoming. Engineers generally resort to best “guesstimates” based on current consumption, projected population growth, changes in land use and so on. Future demand is just one of the factors which will affect the engineer’s detailed design but it is important for engineers to be aware of the sensitivity of the design to changes in demand (e.g. how much bigger does a water supply transmission main have to be if, over five years, there is 30% increase in house connections as opposed to 15% increase?) A simple model of demand to test this sensitivity would be useful for engineers. The level of detail of demand data should be kept in perspective with this sensitivity: often the demand data needed is fairly basic for the purposes of detailed design.

4. Participatory Approaches to Demand Assessment

4.1 Presentation by Tamara Rusinow (Care UK) and Sanjay Wijesekera (Scott Wilson Kirkpatrick): The PROSPECT project in Zambia

The PROSPECT project is a multi-sector project in the peri-urban compounds of Lusaka, Zambia which is now in its second phase being implemented by Care UK with funding from DFID. Scott Wilson Kirkpatrick is the consulting engineering firm responsible for doing the detailed design of the project. The first phase of the project which was called PUSH started in 1992 as a food-for-work project funded by the ILO. This approach was clearly unsustainable and in the second phase the emphasis shifted to a process-oriented, livelihoods approach. The key to the success of this project can be attributed to the long-standing relationship based on trust which has been built up between the Care project team and the peri-urban communities.

The project approach is to carry out needs assessment with communities to establish their priorities; this may be anything from literacy training to police posts but in many areas water is found to be a priority. The assessments are carried out using internally/externally facilitated PRA. This is now being led by the Resident Development Committees which were originally set up by Care but have been integrated into the local administrative structure. It is important to note that this is a unique aspect of the project because when Care started work with the communities in 1992 there was no existing local administrative structure in place.

The inter-relationship between the three project components of infrastructure improvement, institution building and micro-finance is shown in Figure 1. The concept is that time savings and benefits achieved through construction of local infrastructure should feed into the micro-finance component so that women are empowered to take loans and start their own small-scale enterprises.

In terms of linking the social and technical aspects of this project, it was considered to be important to have a technical input at the earliest stage of the project to try and match supply with demand. The data collected at this stage was qualitative and was based on the PRA activities and revealed preference surveys. Although the engineers acknowledge that indicators such as project budgets and consumption will constrain the project to a certain extent, one of the key lessons emerging is the need to be as flexible and adaptable as possible in order to meet demand. The project's attitude towards future demand is that it is inefficient to allocate resources to try and estimate something which is dynamic and will be affected by the project itself. Figure 2 presents a schematic diagram of Care's perception of demand assessment dynamics; the type of demand assessment to used is linked to the type of management role which the community will ultimately have. In broad terms this equates to:

Community management	PRA
Local government run	RPS
National policy decisions	CVM

However, in reality there will be a need to use a combination of tools at different stages of the project cycle. The PROSPECT project relies heavily on community-facilitated participatory tools but this is achievable mainly because of the well-established relationship between implementer and community.

It is interesting to note that to date sanitation has not been addressed in this project simply because it has not been identified as a priority by the communities. However, due to the nature of these relatively densely populated peri-urban compounds there is a risk of groundwater contamination and so the PROSPECT project team have felt it is necessary to raise the issue of sanitation. They are currently trying to channel this awareness through the empowerment work being done with women in the communities. In a similar multi-sector Care project being implemented in Madagascar communities have identified the need for public toilets in urban market places and these are now being managed by attendants who are paid by the community.

4.2 Key Discussion Points Arising from Presentation

- *Ownership of project*

One participant who is also familiar with PROSPECT raised the issue that community response to a project will largely depend on who is planning and implementing it - NGOs tend to inspire more confidence than governments. Care admits that initially the project was owned by the NGO but over the past few years they have been attempting to devolve responsibility and ownership to the communities and local administration. It has apparently been noticed that this has resulted in increased confidence and respect for the local councils. However, it is true to say that the project remains heavily dependent on donor funding and is unsustainable in that respect.

- *Land tenure and "service areas"*

Land tenure and ownership in these Lusaka compounds is often a problem which reduces the potential for the formal sector to get involved in service delivery. This concept can be extended to the general problem of defined "service areas" which often exclude marginalised groups who are the poorest of the poor. If a demand assessment study is well-designed then it should ensure that these groups or marginalised areas are represented in the survey sample but care must be taken to make sure they do not get neglected or overlooked.

· *Scaling up*

CV surveys are geared to providing data for large and extensive donor projects. The Care approach which was to gradually build up the project over a number of years has provided valuable lessons and has given the communities time to buy into the project and build confidence. The new World Bank approach to urban and peri-urban infrastructure takes a similar approach which to work in three “tranches” - micro, macro and trunk - check so that you start by understanding the nature of demand on a small, local level and gradually build up to the bigger picture.

· *The demand assessment continuum*

Peter Dearden was unhappy with the demand assessment continuum shown in Figure 2 which implies that CV is one extreme. This will certainly need to be used in conjunction with participatory approaches in any type of project development. It was agreed that participatory tools can be used in conjunction with any other demand assessment tool, including CVM.

4.3 Workshop Discussion on Participatory Tools

The discussion followed on from the Care presentation to explore people’s attitudes to participatory tools and approaches for the purpose of demand assessment. Whilst everyone was in general agreement that participatory tools can be applied to most contexts, some interesting constraints and qualifications were raised which need to be borne in mind when planning and designing projects and programmes with participatory tools:

- The traditional concept of PRA is to “hand over the stick” to the community. However, it is also important not to forget that the outsiders or facilitators also have useful knowledge and ideas so it should be a two-way communication;
- In a demand-responsive project process it is important that technical personnel do their homework at an early stage to present realistic options and costs to the community. One of the challenges is for engineers to present these options in an accessible and understandable way to the lay-man;
- Engineers should be fully involved in all stages of a participatory process and in this way they will learn the importance and benefits of taking time to work with communities; a good case study which illustrates this approach is the World Bank-RWSG-EA Lao PDR project (see annotated bibliography for more details) where a multi-disciplinary team was built up and trained to carry out demand assessment investigations and discussions in remote rural areas. However, this approach is no doubt very costly;
- Participatory approaches with focus discussion groups are often criticised because they are not seen as generating representative data. It was suggested that one possibility could be to carry out participatory work with randomly selected statistically representative sample groups. However this could be considered as inappropriate because it is an extractive approach which will not help to build trust within a community;
- PRA and similar techniques do tend to raise expectations within a community which is often considered an undesirable effect: it may however serve to raise community awareness and empower them to subsequently move things forward on their own initiative;
- The question of choice is central to demand assessment; the water and sanitation ladder are often cited as the best participatory way of discussing and selecting options. In many situations the reality may be that the options are extremely limited by technical, financial or institutional constraints. These constraints should also be identified and brought to the attention of communities so that they understand the limitations on choice. In the case of sanitation there is often only one “best” option so it is debatable whether people should be offered a range of inappropriate choices;

- Participatory studies are often carried out by consultants external to the project who do not understand the processes which must follow so, for example, they will produce a beautiful community map with no idea of what should then be done with it. The demand assessment studies need to be clearly linked with the service delivery process so that the data generated can focus on how to get from A to B;

To conclude:

Demand Assessment must be linked to the decisions that need to be made at each stage.

4.4 Linkage with Marketing Strategies for Supply Services

There is a Knowledge and Research project currently being carried out at WEDC on marketing strategies for water utilities. There clearly a linkage between participatory demand assessment and a social marketing approach. The key issue for both is to ensure a flow of information between the service provider and the consumer. It is important to understand your market and this is done by consumer segmentation. Thus the demand assessment technique (formative research process) can be matched with who wants the information and who is being asked.

5. Afternoon Discussions on Key Demand Assessment Issues

At the end of the morning session the participants were asked to write down two key issues or discussion points which emerged from the morning session and which they would like to discuss further. An interesting range of questions was raised and these were grouped into the following five categories which were discussed in turn by the whole group:

1. Policy
2. Sanitation
3. Information/communication
4. Integrating multi-disciplinary perspectives
5. Next steps - links to service delivery

These discussions are summarised as a series of bullet points below.

5.1 Policy

- Policy is often way ahead of what is happening on the ground so that in reality communities are not being offered real choices about technologies, management options, financing and ownership;
- There is a danger of DRA becoming a “tool-driven-strategy” but it is important that there is a flexible and enabling policy environment before we start using the tools;
- Governments, politicians, institutions and service providers need to be trained and sensitised to participatory tools and approaches before they can be expected to engage in dialogue with communities (RSWG-EA Lao project is a good example of this);
- Policy on subsidy and cost recovery is essential, but it is often difficult to enter dialogue on such issues without offering tangible projects or incentives simultaneously. NGOs are often well placed to advocate new approaches or policies. In Zambia, Care initially worked independently of local institutions and service providers. However, now that the Lusaka Sewerage and Water Company has seen that the Care approach works they are keen to link in with the project. This

approach is iterative - do some implementation and then go back and talk policy once you can show that it works;

- Demand assessment is harsh in the economic sense that it relies on ability to pay for a service; it is therefore essential that policies are put in place to protect the poor through cross-subsidies and regulation;
- The concept of “demand” does not always mean something to partner governments (Rajasthan was given as an example where this is a problem). In these situations, “demand” is too esoteric to be an incentive for change and more pragmatic approaches are needed to engage in useful dialogue. Ultimately, institutional reform is needed in these situations before demand can be considered but change needs to come from within to be sustainable;
- Cost recovery needs to be a policy-level decision: CV surveys can help guide the policy (and the survey should be framed with this in mind). Ideally governments should be aiming to maximise “aggregate welfare” from water and sanitation investments but in reality politicians and others will have different agendas.

5.2 Sanitation

- Sanitation is a different, and more complex, good from water and is always context-specific. Where sanitation is water-borne it can be priced on the basis of water costs but the link with water and on-plot sanitation is less direct. However, generally a holistic approach should be taken (as advocated in the DFID guidance manual) so that water and sanitation should always be considered together to maximise the health benefits;
- The Strategic Sanitation Approach considers sanitation outside of the context of water. This is mainly because of the institutional issues which are often very different for water and sanitation (e.g. responsibilities will lie with different ministries or institutions, and utilities rarely have any incentive or interest in dealing with on-plot sanitation);
- Sanitation in developing countries is going to continue to be primarily on-plot for the foreseeable future. The key is initially promotion and then access to finance since it is nearly always a household level investment - in Barratpur 90% of investment in sanitation is from the private sector;
- Sanitation demand generally needs to be **created** rather than **assessed** so it will almost certainly require a different approach from assessing water demand;
- Sanitation promotion needs to be packaged to include both behaviour change and mechanisms for providing facilities. In the first instance careful message positioning should provide people with some incentive (e.g. privacy, status, convenience) - these messages may well be different for different stakeholders.

5.3 Information and Communication

- People’s response to demand assessment questioning will depend on their existing experiences and levels of knowledge - it is therefore important to know what people understand what people know and are familiar with. Thus a demand assessment exercise must involve a two-way exchange of information and ideas;
- The suggestion for CVM surveys is that when you present people with hypothetical scenarios you must get respondents to “suspend their current level of knowledge or beliefs”. This is clearly impossible and there will always be a certain degree of hypothetical bias in CV surveys; the bias will be worse where consumers have little confidence in the existing or proposed service providers;
- The level of accuracy and detail of demand information is dependent on the types of decisions or questions that need to be answered. For example, for engineers the possible *future upgrading* of facilities will have a much more significant impact on

infrastructure design than the estimate of *current demand*. It is essential to retain a perspective on the type and quality of data which is needed to make valid decisions;

- In many cases “cheap and dirty” methods can be valuable and cost-effective in providing appropriate data. However, we need to get away from labels and CV should not be excluded as a high cost solution since it can be applied in different contexts, for example as part of a Revealed Preference Survey;
- The reality is that decisions are often guided by a political agenda which is in no way affected by any demand assessment studies so detailed information may be a waste of money.

5.4 Integrating Multi-disciplinary Perspectives

- Different professions involved in demand assessment have differing data requirements; the challenge is to try and integrate the approaches used to obtain this data. The Logical Framework Analysis provides an integrated project PURPOSE which should unite all partners in working towards the same objective, and professional interests should be secondary to this objective. Of course the reality is not usually so straightforward;
- A livelihoods approach is an inter-disciplinary and holistic approach which looks at the household as an economic unit and covers issues of food security, income generation, health and water resources. This information can be used at a strategic level to help donors or governments to prioritise work. However, it does not solve the “problem” of demand assessment for water and sanitation services.
- A participatory wealth ranking exercise can help to generate useful information on household priorities for different income groups and may also be used to estimate willingness to pay for these groups;
- Whatever demand assessment tools or approaches are used, they must be simple and replicable at a local level so that local partners can apply them in their work. It also essential that the results generated can be used to guide project design and decision-making processes;
- There is not a need for *new* demand assessment tools but the existing approaches need to be integrated and operationalised for use by partners and stakeholders.

5.5 Links to Service Delivery - Next Steps

- Local institutions are often the weak link in carrying forward the results of demand assessment; there is no point in conducting a detailed demand assessment exercise if the local partners are not capable or willing to assist;
- One of the common constraints is that demand assessment is done by external consultants who produce a report which sits on a shelf. The data collection process should be simplified and internalised by the primary and secondary stakeholders so that continuity and direction are assured. This will also help to ensure that demand assessment is an empowering process rather than just a means to an end;
- Demand assessment will play a different role at different stages in the project cycle (it may be particularly important near implementation) and will need to involve a range of professionals. It is essential that the different players are all clear what they are trying to achieve in the context of the demand assessment exercise, and how this will contribute to building up the bigger picture;
- CV surveys present a risk to project planning and design if the questionnaire design is sloppy. The economists in the workshop felt that PRA could not support CV type questions because the samples are too small so statistical analysis would not be possible. This view was challenged by other participants who consider that there is potential for achieving statistically representative data from participatory group approaches.

5. Concluding Comments

Andrew Cotton closed the workshop by very briefly summarising some of the key concepts or challenges to emerge from the day. These were:

- Everyone working in water and sanitation is basically struggling with the same concepts and challenges of how to ensure communities have sustainable services;
- The Care case study demonstrated the benefit of having **time** to build up a good working relationship with a community;
- At present demand assessment comprises fragmented activities done by various “experts”. There is a need to develop tools and/or approaches which can be owned and used locally;
- The link between sanitation and demand is still poorly understood and needs more attention.

Programme

Time	Topic	Person
1000	<i>Arrival and Coffee</i>	
1030	Welcome and introductions	SPJ
	Programme/agenda for workshop	IKS
	Background to the reason for workshop - key issues from discussion paper - anticipated output.	SPJ
1045	Presentation: D A - the economist's approach	Peter Dearden (DFID)
	Brief questions/discussion - key points arising	All
1115	Presentation: D A - the engineer's approach	Andy Cotton (WEDC)
	Brief questions/discussion - key points arising	All
1145	Presentation: CARE approach in to DA Zambia	Rusinow/Wijesekera
	Brief questions/discussion - key points arising	All
1215	Discussion on participatory tools and techniques	All
1245	Identification of key issues for discussion in afternoon	IKS to facilitate
1300-1400	<i>Lunch</i>	
1400-1630	Focused discussions based on the key issues identified in the morning as follows:	All
	<ul style="list-style-type: none"> • Policy • Sanitation • Information/communication • Integrating multi-disciplinary perspectives • Links to service delivery - next steps • Specific questions 	
1630	Concluding remarks	APC
1645	End of workshop	

List of Participants

Name	Discipline/area of interest	Organisation
Jeremy Colin	Environmental Health	Independent
Peter Dearden	Economics	DFID
Dominic Moran	Environmental economics	Ove Arup
Alan Nicol	Sustainable livelihoods	ODI
Tamara Rusinow	Regional manager	CARE UK
Kevin Tayler	Strategic Sanitation Approach	GHK
Sanjay Wijesekera	Senior engineer	SWK
Sue Coates	HRD and hygiene promotion	WEDC
Andy Cotton	Engineering (esp urban sanitation)	WEDC
Sarah Parry-Jones	Engineering	WEDC
Kevin Sansom	Institutions	WEDC
Ian Smout	<i>Facilitator</i>	WEDC
Marielle Snel	Solid Waste Management	WEDC
Mike Webster	Engineering	WEDC