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Ndezi, Timothy P., and Alison Wedgwood. 2019. "Assessing Demand in Peri-urban Areas of Dar-es-salaam".
figshare. <https://hdl.handle.net/2134/31648>.



Assessing demand in peri-urban areas of dar-es-salaam

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WATERAID TANZANIA have encouraged the use of demand assessment as both a tool for planning their community based water and sanitation projects, and for evaluating the success of existing schemes. Between May and September 2000 a demand assessment exercise was carried out in four street communities in Temeke Municipality, Dar-es-Salaam. This paper describes the process and the key lessons learnt.

The importance of consumer demand for water and sanitation has been recognised for some years. This perspective and its implication have gained increasing attention in the sector during the 1990's, associated as it is with demand-led projects and the demand responsive approach.

By consumer demand we mean an expression of desire for a particular service, measured by the contribution people are willing and able to make to receive it (Deverill et al, 2001). Fundamental to demand assessment is a process, which allows consumers to choose the type of service they require and are willing to pay for. The idea of offering choice is new to many engineers with significant implications for design.

Aspects of four types of demand assessment methodologies were combined and implemented in four street communities in Temeke Municipality of Dar-es-Salaam. These are summarised below.

1. A revealed preference survey, based on observations of current water and sanitation practices.
2. A household survey.
3. Contingent valuation interviews, providing detailed information on how much households are prepared to pay for a particular option.
4. A series of group discussions to capture resident's perceptions for different levels of services.

Background to the project

Since 1998, WaterAid has been working in Dar-es-Salaam City in Temeke Municipality to support communities in seven informal settlements (streets) to develop community-based water, hygiene and sanitation programme.

Temeke Municipality is among the three Municipalities which form Dar-es-Salaam city, the others being Ilala and Kinondoni. The current population of Temeke Municipality is estimated to be 1.1 million, with an area of 656 km². Whilst all three Municipalities suffer from water shortages, the situation is particularly poor in Temeke.

The concept of community based management of urban water and sanitation services is a relatively recent development in Dar es Salaam, associated with drilling of the

boreholes in Temeke, and the realisation by Dar-es-Salaam Water and Sewerage Authority (DAWASA) that it may provide a more practical management option. This process is being supported by WaterAid, working in partnership with Temeke Municipality and a number of community based organisations.

As part of this work, it was necessary to investigate demand for watsan services, both to assess to what extent demand had been captured where improvements had already been implemented, and to guide future initiatives.

Assessing demand in four street settlements

Four street settlements in Temeke were selected for demand assessment. In two streets, WaterAid had already undertaken watsan improvements, in the others, new projects were in the process of being planned.

To some extent, the assessment was needed because it was recognised that there were some shortcomings with the process that had been adopted. Although the improvements had been developed with user participation, it was clear that some households were not collecting water from the water points. It was not known whether this was an issue of affordability, or because the service provided was not wanted in the first place.

The objectives of the demand assessment included:

- To use demand assessment techniques, particularly revealed preference methods, to understand user's coping strategies for both water supply and sanitation in all four streets.
- To learn user's preference for improved water supply and sanitation options to assess how much users are prepared to pay for their various options.
- To help establish a basis for assessing vulnerability within the target streets.

Opportunities for the cross-subsidisation of vulnerable groups would be identified. The ultimate aim was an acceptable, sustainable tariff system that would ensure full cost recovery.

Contingent valuation

Contingent valuation is a relatively new methodology (in terms of it being applied to watsan improvements in informal settlements). In this case, the following methodology was used by WaterAid, facilitated by a UK based consultant with some experience in this field.

Questionnaires and pre-testing

Questionnaires were developed and pre-tested to suit the local circumstances. The questionnaires were developed to reflect various income levels, assess the desired level of services and household spending priorities. Before the interviewing process started, questionnaires were pre-tested to ensure that the tasks were relevant to the local environment.

Menu of options

The questionnaires reflected a choice of service level options: community kiosks and private connections (both supplied by a local borehole) and full pressure connections to the DAWASA pipe system. Different combinations of options were presented to selected households, based on an external assessment of their wealth and asset base. Two management options were also described: a water committee or a private operator. An artist was employed throughout the fieldwork to make maps of the streets and sketch different options for use during household interviews.

A key objective of the survey was to establish how much people would be prepared to contribute to receive their preferred service. The price of the water provided was already fixed at 20 Tanzanian shillings (Tsh) per 20 litres, based on current practice. It was assumed that at this price, the services being offered could be sustained.

Household interviews

The household survey was conducted in all 4 streets and took about 30 days. Approximately 100 households (or 1 in 10) in each street were interviewed. Undertaking a large household survey like this involves a sequence of activities: questionnaire and sample design, pre-testing, enumerator training, survey implementation, data entry and data processing. An important factor to be considered is how to sample households in order to obtain reliable results.

In this case, respondents were divided into three groups. Each group was associated with a specific *starting price* for the cost of installing communal taps (option A) or private connections (option B).

The interview process started with an enumerator describing a number of possible service options together with their costs and benefits to a household member. Respondents were first asked if they were prepared to pay this to receive the service. Depending on the answer, the question would be repeated using the next highest or next lowest price. The aim was to find the maximum price people would pay.

Group number	Starting prices: Option A (Tsh)	Starting price: Option B (Tsh)
1	200	25,000
2	500	100,000
3	1,000	200,000

Data Analysis

Once the survey had been completed, two enumerators carried out the data entry, with random crosschecks carried out by the WaterAid programme manager to ensure accuracy. A consultant based in the UK analysed the data using a software package. The whole process of data entry and analysis took nearly a month.

Findings

In general, households were willing to contribute for an improved water supply service.

The enumeration process provided a good opportunity of interacting with a number of communities who normally did not attend community meetings. After the personal interview, most hoped that the new facilities would be in place soon.

The study has also revealed more information of why other people are not collecting water from community kiosks. This includes the long distance from households to the kiosks, long queues due to the low yield of the borehole, and the limited affordability of some households.

Demand for private connections was higher than expected. Over 30% of all respondents surveyed were prepared to pay between US\$ 100 - 200 in a lump sum, plus US\$50 per year in water charges, for a private connection. Although the community has demonstrated its demand for private connections, technical and managerial issues have still to be addressed. These involve the safe yield of boreholes and the capacity of a water user committee to manage such a system.

A tariff model for borehole projects has also been developed. An analysis of one street indicates that the Tshs 20 price of water could be lowered and the project could still be financially viable. During discussions the local water user committee expressed the need to collect funds for future expansion, and that it was too early to lower the price.

Almost 80% of all respondents opted for a community based water management committee rather than a privately run water supply. Many households have no experience of the private sector especially in the water sector, but have seen the success of the water user committees.

The assessment revealed that demand for sanitation was very low. Although some initiatives were carried out previously to promote hygiene and sanitation, it appears a different approach and more time is required to “unlock” demand in this instance.

Men were willing to pay more than women for a similar service level. This is probably related to the control of financial resources. The findings has also shown significant differences in the amount that men and women are prepared to pay towards the capital cost of installing a private connection, with women being more conservative. This reflects the reality of family finances and associated decision making.

Lessons learnt

The selection of local community members as enumerators, working alongside professional staff, was an excellent way of using local knowledge of the area and those who lived there. There was no sign of bias in the results obtained, although more emphasis has to be given to training.

In developing technical options, it was particularly important to involve and obtain advice from DAWASA, especially on the private connections costs. In reality, this was not done as well as it might have been, resulting in some erroneous assumptions being made.

Contingent valuation is a useful tool, but is complex, relatively expensive, and requires trained enumerators and, in this case, an international consultant. Data analysis using econometric techniques seems particularly expensive, and there is scope for developing a simpler alternative.

Demand assessment techniques are not normally used to evaluate project interventions. The conventional approach is to use it to help design a project. The use of demand assessment to evaluate how facilities which have been provided are used, and whether the water tariff is appropriate was therefore an innovative aspect of the research.

Conclusions

Demand assessment has helped the WaterAid programme to understand community priorities and improve project

planning. The programme has since undertaken demand assessment in two new areas using a modified survey technique: WaterAid has simplified the process by refining and focusing questions asked during the contingent valuation survey, combining this process with participatory appraisals and also encouraging the use of the community enumerators. This should make the process more affordable.

A study is being undertaken to establish the technical and managerial viability of private connections to boreholes. In retrospect, this should have been undertaken before offering it as an option.

In order to create demand for domestic sanitation, the programme has started to identify various technical options. A participatory process has been developed to unlock demand.

Reference

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