Applying the life-cycle costs approach in Uganda for improved financial planning and budgeting

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Abstract

The water and sanitation sector in Uganda is facing a situation of stagnating coverage, functionality and budgets. In order to increase efficiency of investments in the sector, it is necessary to improve financial planning and budgeting, and a first step was done in April to July 2012 by IRC and Fontes. An information scan looked at the current tools involving cost data used for financial planning and budgeting. It also mapped the expenditure flows of the entire rural water and sanitation sector in Uganda, including all the main actors involved in channeling funds, from the donor level to the private sector actually carrying out the works on the ground, and the government entities involved in monitoring and follow up. In addition, an attempt was made to categorise the main budget items into the LCCA framework categories, in order to create a roadmap for a cost data collection exercise currently going on in one district, where the actual numbers are recorded to analyse the correlation between the way services are financed and the actual service levels provided. This paper summarises the process and the findings of the information scan, and presents a draft framework for doing the analysis of costing sustainable water services at district level in Uganda. It also looks at the necessary processes for the outcomes to have an impact on financial planning and budgeting in the long term.

Keywords

WASHCost, life-cycle costs approach, Uganda, sector monitoring.

Background

Providing lasting water and sanitation services to a fast-growing population with a stagnating budget is a challenge. This is the situation faced by Uganda, which has seen good progress with regards to national and international targets over the last decade, but is now facing stagnation both in increasing coverage and maintaining services functional.

Coverage has been relatively stable around 60% since 2002, and functionality is stagnating around 80%, according to government figures (see Figure 1 below). Another important constraint is posed to the government by a stagnating or even declining budget for the sector (MWE, 2012).

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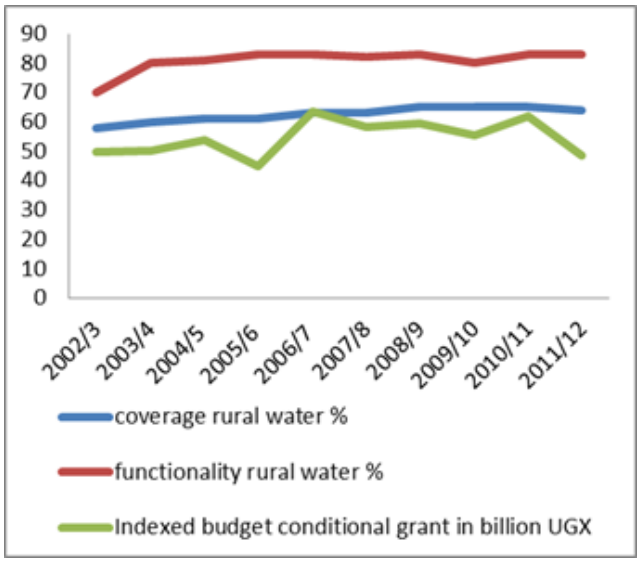
The stagnation of coverage can to a large extent be attributed to population growth, which in Uganda is 3.6% and fourth highest in the world. Another problem more specific to Uganda, is that new districts are created at an alarming pace, and large proportions of budgets for new water sources are spent on setting up new offices, buying vehicles and hiring staff (MWE, 2012). In addition, local government employees report that areas that are easy to provide with services have already been covered, and the remaining populations are expensive and complicated to serve (Biteete and Jangeyanga, 2013).

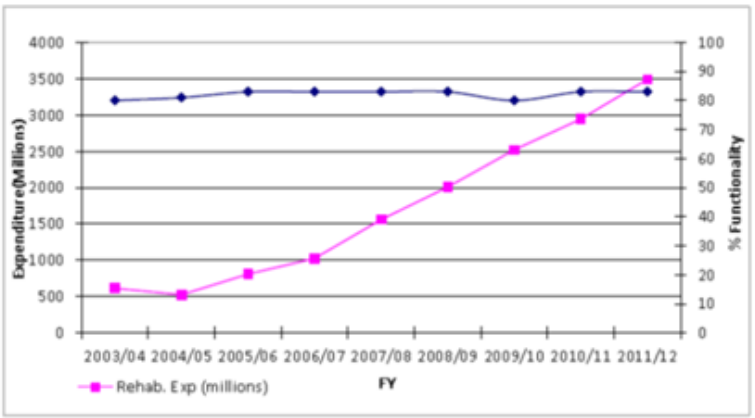
Figure 1: Stagnation in coverage, functionality and budget in rural water in Uganda.



Source: Koestler and van Lieshout, 2012.

On functionality, the Sector Performance Report 2012 notes that especially the functionality of small piped water systems is in decline, because the financial investments required are often beyond the resources that are allocated to the districts. The report also mentions high overheads if maintenance and rehabilitation funds are managed at district level, and proposes more efficient use at lower administrational levels (MWE, 2012). Local government officials relate stagnating functionality levels to the low share of funds allocated to rehabilitation and repair (currently at 8% of the conditional grant sent to the districts for water and sanitation), compared to an increase in sources to maintain each year. In addition, community management systems are not effective in maintaining the sources and many point sources that were constructed in the early 1990s are now reaching the age when major rehabilitations are necessary (Biteete and Jangeyanga, 2013).

Figure 2: Functionality of rural water sources and rehabilitation fund expenditures since 2003/04.



Source: MWE 2012.

Figure 2 shows that Uganda has increasingly been focusing on rehabilitation over the past years to improve coverage and functionality, but the budget trend of Figure 1, combined with the increasing demand for services and higher service levels due to population growth and socio-economic

development make fear that, however commendable the sector efforts are, it is unlikely that these measures alone will achieve access for all to rural water services. In such a situation, it is necessary to critically look at the way the limited resources are spent, in order to achieve the maximum effect on coverage, functionality and hence, service delivery to the people. It is therefore more important than ever for Uganda to optimise sector investments as a whole, in order to effectively maintain existing service levels and at the same time reach new populations.

This paper will outline the process of introducing the life-cycle costs approach (LCCA)[3] into the Ugandan water and sanitation sector. By better understanding the actual costs of constructing and running water and sanitation systems in the country, as well as comparing these to international benchmarks and guidelines, budgeting and planning could be done with a more clear understanding of how to spend limited resources with the maximum effect. The process is still on-going in Uganda, and this paper will summarise the findings of the first steps, as well as outline the activities currently in process and the next steps planned for the process.

Methodology

The life-cycle costs approach (LCCA) disaggregates costs associated with water and sanitation services delivery into different categories such as the initial investment (CapEx), the operation and maintenance costs (OpEx), major repairs and rehabilitation (CapManEx), support provided to service providers in terms of follow up and capacity building (ExpDS), interest on loans (CoC) and the cost of policy development and sector coordination at a national level (ExpIS).

This paper discusses the LCCA process in Uganda, which was started with a stakeholder meeting in December 2011. Different steps have been taken in the process, which is still on-going:

1. Stakeholder meeting in December 2011, training on LCCA.
2. Information Scan, April to July 2012: understanding what tools are used in the sector today for planning and budgeting purposes, such as unit costs.
3. Expenditure mapping, April to July 2012: mapping the financial flows and the concerned stakeholders in the water and sanitation sector in order to understand which actors are involved in different activities and at different times in the project cycles.
4. Integration of LCCA methodology in the national monitoring framework in order to have an impact on planning and budgeting.
5. Cost data analysis at district level, February to May 2013: data collection of real cost levels and their analysis, comparison with international benchmarks.

The life-cycle costs approach was first introduced to sector stakeholders in December 2011, before the Rural Water Supply Network (RWSN) forum in Kampala, where about

[3]This methodology is promoted by IRC International Water and Sanitation Centre (IRC) in The Netherlands, and has been tested in four countries (Ghana, India, Burkina Faso and Mozambique). More about LCCA on www.washcost.info.

50 participants of government and civil society participated. In addition, training in LCCA was provided during the last day of the forum, in which also a good number of Uganda sector professionals participated. The goal was to create awareness on how the methodology can be used and to introduce the ideas of cost analysis and its links to service delivery.

The second step was to understand the current tools used for financial planning in the sector, and their limitations, by carrying out an information scan (Biteete and Jangeyanga, 2013). Part of this information scan was also the mapping of stakeholders and financial flows according to LCC methodology. This study was carried out in consultation with the Ministry of Water and Environment in Uganda and provides a good overview of how WASH services are financed and to start identifying possible gaps to achieve better sustainability.

The information scan included the entire rural water and sanitation sector, including point sources, small piped schemes, household latrines, institutional latrines and public toilets. Based on interviews with 23 officials from different stakeholders and information from sector documents, data was presented in two tools; cost matrices and stakeholder maps (see Figures 3 and 4). The cost matrices arrange the stakeholders according to the WASHCost cost categories and the main sub-categories identified in the specific context of Uganda. This helps to understand which stakeholders are involved in what types of costs. The maps were used to show the financial flows from government and donor funds, through the different government entities, down to service delivery level.

Step four and five are still on-going and will be discussed in the “next steps” section of this paper.

Findings

The information scan found that, apart from the data provided under the yearly sector wide monitoring framework, cost data is rarely used for decision making. Two tools exist, one for borehole costing and the Sector Investment Model, which was developed by consultants in 2005 for the five-year investment plan. However, they are not widely used or updated. The main tool used at the moment to assess the efficiency of the sector, per capita investment cost, only provides a partial picture of reality. It takes into account the investment cost of constructing new systems, mainly focusing on hardware, but the wider financial picture that includes financing of software activities (mobilisation, capacity building, etc.) and all the costs associated with the operation and maintenance of the systems once they are installed is unknown and therefore cannot be properly budgeted for. There is therefore a need to develop better tools for budgeting and planning so that all the costs necessary to keep the systems running can be taken into account.

A first step is to better understand the stakeholders involved and the current expenditures today. The mapping exercise shows a complex picture. For example, certain government agencies, such as water and sanitation development facilities (WSDF) are mainly responsible for investments (CapEx), whereas others, such as umbrella organisations, cover both operation and maintenance (OpEx) and large repairs (CapManEx), including software aspects of support (ExpDS). This mapping also helped identify areas of conflicting information, and discrepancies between theory and practice. For example, whereas the central government at ministry level is not supposed to carry out direct implementation, they still do it in the case of a political pledge. Or, it was not possible to identify who is actually responsible for latrines in primary schools; the district water office or the district education office. The complex set-up and overlapping areas of responsibility lead to challenges in budgeting and efficient allocation of resources. Figure 3 shows an example of the different stakeholders involved in two sub-categories of direct support expenditures (ExpDS) in form of a matrix.

Figure 3: Excerpt from the cost matrix for the water sector, showing two sub-categories of direct support expenditures (ExpDS).

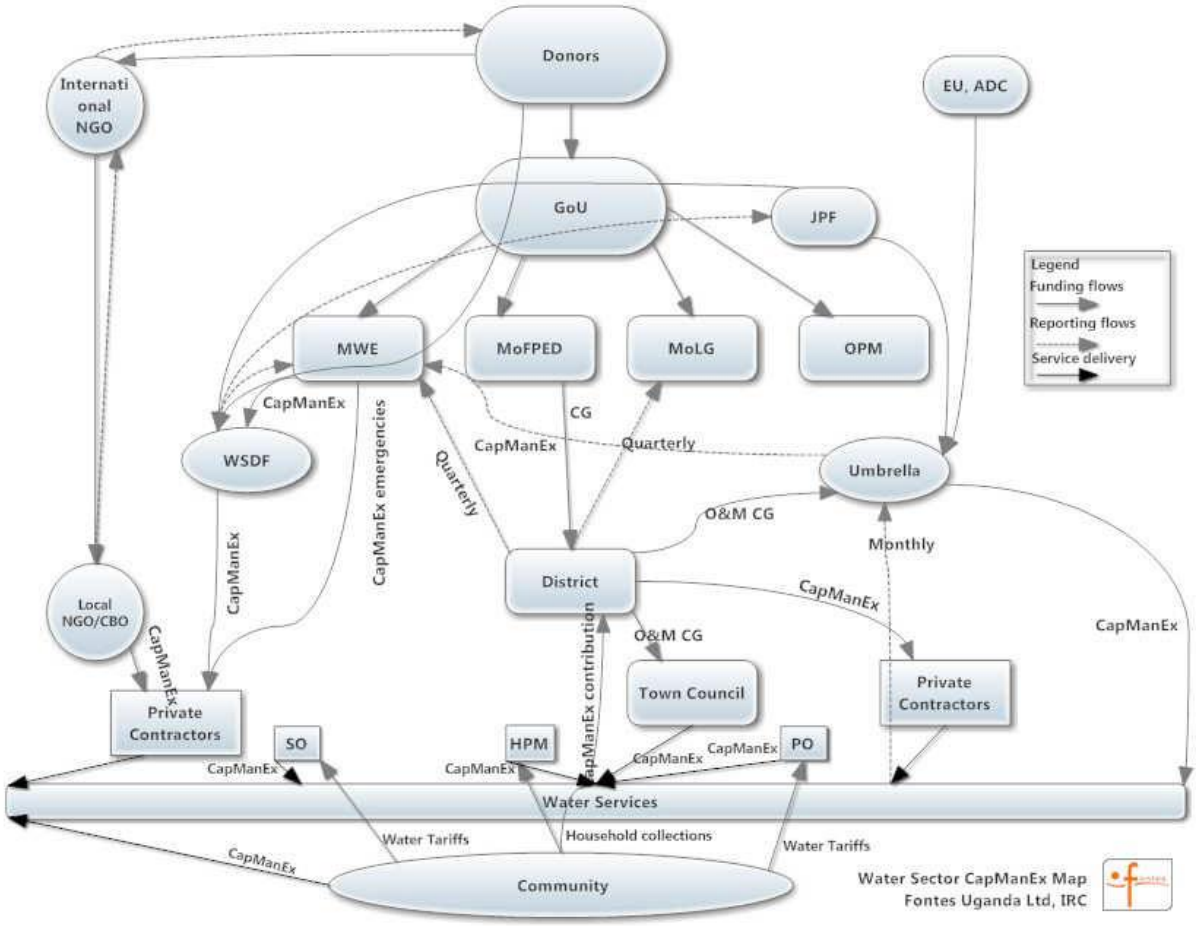
Support to Water Committees (refresher training, follow up)	NGOs	International NGOs, Donor Funds, Multilateral agencies/UNICEF	Some NGOs can follow up over time, and sometimes pay for follow up after end of project period through cross-financing from new projects in the same area. Can be integrated in sanitation/hygiene/education programme
	Umbrella	JPF, MoFPED, Donor Funds	Only to WSSBs of piped schemes. Quarterly visits to all members, support financial management
	Sub County	DLG	Through community development officer (CDO)
	DWO	MoFPED	Up to 11% of CG is for software (both for pre and post construction). This is the main role of DWO but often limited in practice due to lack of resources for transport
Technical backstopping and support (directly to individual schemes/communities	TSU	JPF	Mainly supports DWO but also goes directly to the communities
	NGOs	International NGOs, Donor Funds, Multilateral agencies/UNICEF	
	Town Council	MoFPED	Through town engineers
	DWO	MoFPED	Part of 11% CG software

			budget for existing water points
	HPM Associations	Community, Sub-County, NGOs	Training of pump caretakers, technical advice
	Umbrella	JPF, DLG	Only to WSSBs of piped schemes mostly on request. Has qualified staff to support SO or WSSB on technical problems

Source: Biteete and Jangeyanga 2013.

Although Uganda has a Sector-Wide Approach (SWAP) which means that donors pool funds in a basket fund, it was found that a number of donors and NGOs fund specific agencies or projects outside this mechanism. In addition to showing the different actors involved, the study also outlined the main funding mechanisms, such as the District Water and Sanitation Conditional Grant, the Joint Partnership Fund and the Uganda Sanitation Fund. The information was presented using stakeholder maps, and specific maps were created for each cost category, and each technology for both water and sanitation. The map below shows the map for CapManEx in the water sector, a cost category which is often under-funded. Although the map shows a number of actors involved, most mechanisms to access this funding are slow and dependent on general and not earmarked budgets. According to the Ugandan Water Policy and the Operation and Maintenance Framework for Rural Water Supplies (MWE, 2011), communities are in principle responsible for the maintenance of their schemes. Only if a repair is beyond the capacity of the community, they can apply to the district water office (for point sources) or to the water and sanitation development facility (for piped schemes) or the town council (for small towns). Districts only have a limited percentage of the Conditional Grant available for CapManEx (8%), which translated to approximately 1.6 million USD in 2011-12, which means only USD 14,300 for a district that has between 200 and 400,000 consumers. The WSDF and town councils do not have clear budget lines for large repairs, and have to apply to the central government. An attempt to improve this situation has been to create regional umbrella organisations for operation and maintenance of small piped schemes, but they are struggling to become financially viable and are not fully operational in all regions of the country.

Figure 4: Stakeholder map of capital maintenance expenditures in the water sector in Uganda.



Source: Biteete and Jangeyanga 2013.

Together with the matrices, these maps provide a framework for future data collection for a more detailed cost analysis. For example, if cost data is to be collected for small pipes schemes, the map can be used as a guide for which stakeholders should be considered in the exercise. The matrix also provides more information, especially in the comments column which spells out some of the conditions or inclusions/exclusions.

The importance of looking at the costs and financing of the services in a more holistic way is shown by WASHCost, which has developed benchmarks for recurrent expenditures for water and sanitation services (see Figure 5). A first estimate by the Information Scan (Biteete and Jangeyanga, 2013) estimates the current spending on direct support costs in Uganda at approximately 0.1 USD/capita/year, where the benchmark is set within the range of USD$ 1 to 3 per capita per year, suggesting that increasing expenditures on support services may be needed to achieve higher coverage and functionality.

Figure 5: Breakdown of recurrent expenditure benchmarks for water services.

Breakdown of recurrent expenditure[4]	Cost ranges (min-max) in US$ 2011 per person, per year	
	Borehole and handpump	All piped schemes
Operational and min or maintenance expenditure	0.5-1	0.5-5
Capital maintenance expenditure	1.5-2	1.5-7
Expenditure on direct support	1-3	1-3
Total recurrent expenditure	3-6	3-15

Source: WASHCost, 2012.

The information scan found that adopting the life-cycle costs approach (or parts of it) can have a number of benefits for the Ugandan rural water and sanitation sector. It will help to factor in the costs spent after a water system is put in place, such as OpEx, CapManEx and ExpDS. These categories play an important part in ensuring sustainability of the structures. Other benefits are related to the increased understanding by government entities, NGOs and donors of the need for post-construction support and follow up, and the budget implications this has. In addition, it entails assessing the life-cycles of different technologies and allows for proper planning, so that funds are available for replacement once the life-time of a certain asset is over. Specific data on recurrent costs could also lead to wiser technology choice, as well as guide managers in setting appropriate water tariffs in piped schemes. Increased focus on cost data would also improve the accountability in the sector, and could be used as benchmarking tools for local government structures and other stakeholders. It could also shed light on value for money and the lost investment every time a water source breaks down and is not repaired. Eventually, these different aspects could contribute to improved sustainability and more continuous service delivery to the users (Biteete and Jangeyanga, 2013).

At the same time, the data collection exercise is showing some important challenges. A number of cost categories are currently lumped under general budget lines, and it takes some effort and estimation to disaggregate these costs. Not all entities are be willing to give away cost information, and cost information might not be reliable due to corruption and poor reporting and verification routines. Another challenge is the quality control of the information by cross checking and triangulation to achieve highest reliability of the data.

Conclusions

It may be evident that costs change over time. First of all labour costs and the prices of materials will vary according to market fluctuations and government regulations. Capital costs will change due to change of interests on loans. These are mainly external influences on costs. Secondly more sector related developments will change the costs and finance needs in the sector. For example when coverage rates increase, the relative

share of for example rehabilitation costs against capital investments for new infrastructure will grow. Or the introduction of more sophisticated monitoring methods may increase or decrease the support costs. It is therefore logical to see the LCCA not as a one-off exercise, but as an on-going integrated part of managing the sector. To realise this integration, it will be in particular important to integrate the required data collection with the overall sector monitoring tools.

In Uganda, IRC is working alongside the government in developing a monitoring framework for the performance of the service delivery models for rural water supplies. A service delivery model defines the legal and institutional frameworks for delivering service and commonly understood and accepted roles. It includes the following:

- The service to be provided (level of quality, reliability, access, etc.).
- The infrastructure used to deliver the service.
- The management system needed to operate and maintain the infrastructure.
- The revenue mechanism that will make the service financially sustainable.

The management system refers to the institutional arrangements for the service provider, supported by the service authority.

The monitoring framework is intended as an additional tool next to the broader sector performance framework to monitor the performance of (parts of) the sector. The present sector performance measurement framework in Uganda provides a "structure and focus for reflecting on issues or challenges, which enhance or inhibit achievement of the targets and objectives" (Ssozi and Danert, 2012), and sector performance measurement is today fully linked to the planning and budget process. While this framework is providing information on how the sector is doing in terms of the broader performance indicators, like access to water and functionality of the water sources, it does not provide in-depth insight in the performance of the service delivery models, for example in terms of the level of services received, performance of the service providers and adequacy of support to the service providers.

Cost data is essential to complete this monitoring framework and make it relevant for sector players. It makes it possible to calculate yearly costs of keeping different systems in different settings running over time, as well as per capita costs for the entire life cycle of a system. It will also provide the tool with information that can help make important policy decisions, for example showing what service delivery models are cost effective and what models are not, which models are high in Capital Expenditure costs and which models are high in Operation Expenditure and Capital Maintenance Expenditure. In addition, it can guide the government on which models to promote in which areas, and to the different types of communities. An integration of LCCA into the planning and budgeting processes will make it even easier to access this type of information in future, and link it directly to the service delivery models and service delivery levels provided. It can also highlight the areas where funding is lacking and provide focus on post-construction expenditures, something that can have significant benefits on functionality.

The use of effective and financially sustainable management models is expected to have a direct impact on the expansion of coverage and increase of functionality in the sector as a whole, something that is essential facing challenges of budget constraints and increasing demand.

Next steps

In order to create the benefits explained above, it is necessary to start working with real numbers. Only if the actual costs are collected and understood, gaps can be identified which can have a direct impact on financial planning and budgeting. Experiences in the countries that have started to apply the LCCA approach show that there is a strong correlation between the way of financing and the effectiveness and efficiency of WASH service delivery. The understanding of this triggers a desire among the sector stakeholders for a better understanding of this relation and will provide them with a stronger drive for looking for a way of financing of the services that will increase sustainability. In Uganda some of the steps in the process are taken or planned.

A still unpublished case study (SNV/IRC, in press) on the present CLTS triggering approach led by local government and civil society suggests that full coverage and sustained ODF in all rural Ugandan villages may take up to 15-40 years from now. The main reason is that the current approach requires human and financial resources for the facilitation that by far exceeds availability. The life cycle costing approach may also help the sanitation sector in designing a more feasible CLTS approach at scale.

Data collection for cost analysis at district level

The next phase is the actual collection and analysis of data and information that will establish the correlation between the levels of services provided and the way they are financed according the different cost categories of the LCCA. In Uganda IRC and Fontes have started with the collection of this information for the rural water sector in two districts. For this purpose a cost analysis framework has been developed, based on the cost matrices of the information scan and similar exercises in other countries carried out under the WASHCost project (see Figure 6). Much information will be collected from the field, but already a lot is available at the ministries and local government. The data is categorized according to technology (shallow well, borehole, protected spring, gravity flow scheme and pumped scheme) and compared to service level data already collected by Triple-S[4] in the same districts. Capital expenditure data, capital maintenance expenditure data and expenditures on indirect and direct support is collected from government sources as well as other stakeholder such as NGOs. For the purpose of this first collection exercise, operation expenses are only collected from three areas of the district, and the areas are selected based on where the highest and lowest cost levels can be found, based on a number of factors. Examples of factors that can affect cost levels at scheme level are population density, proximity to important roads or urban centres, topography (hilly landscape or water bodies that cut off access) and distance

[4] Triple-S (Sustainable Services at Scale) is a six-year, multi-country learning initiative to improve water supply to the rural poor, led by IRC International Water and Sanitation Centre.

from repair services such as handpump mechanics. In addition, some operations data is collected from centrally available sources such as the handpump mechanics association or the umbrella organisation.

Figure 6: Excerpt of data collection framework developed for data collection at district level in Uganda.

Major civil construction not service related (new building)	Admin CapManEx	CapManEx Maintenance
Significant investment in new administrative technology (e.g., a computer)		
Misc. Administrative CapManEx		
Major repair of settlement tank/treatment works	Storage reservoir CapManEx	
Major repair or replacement of intake		
Major repair on water tower or platform	Storage CapManEx	
Major repair on storage tanks		
Flushing of boreholes	Borehole CapManEx	
Fishing of dropped pipes or equipment		
Replacement of raising mains or casings		
Other major borehole repair		
Replacement of pump/handpump	Pump CapManEx	
Replacement of pump motor		
Major electrical repairs at pump house		
Replacement of generator	Power supply CapManEx	
Replacement of transformer of large electrical supply item		
Replacement of solar panel		
Major repair of transmission on pipeline	Network CapManEx	
Major repair of standpipe headworks		
Major excavation/relaying/movement of piped network		
Network surveys for planning	Misc. CapManEx	

Source: Biteete, Janaevanaa and Bariave, in press.

The cost analysis exercise currently running in the districts will provide valuable data on how much is spent on these categories, and where the gaps are. It will be possible to see how much it costs on average per capita to construct a borehole, or how much on average is spent on district level on operations of point water sources. It will also be possible to see the amount of government funding compared to the funding from donors and partners. The cost data will also be linked to service levels in order to understand what level of service is provided with the current cost levels. If the service level is below national standards, this will show that it is necessary to re-allocate or increase spending in certain areas to achieve the desired service levels. In addition, service level parameters such as for example down-time (reliability) will show whether the efforts in capacity building and post-construction support is having the desired results or not.

Collecting actual cost data also makes it possible to compare with internationally developed benchmarks like the ones showed in Figure 5. From there it could then be possible for the government and other stakeholders to calculate the gaps in monetary terms, which would provide valuable input to financial planning and budgeting.

The data collection exercise on district level is still on-going and may take between six and nine months including the consultative process. A key milestone of the overall process will be the presentation and discussion of the results during the Joint Sector Review in October 2013.

The next phase will be to analyse the data on the future costs and levels of services provided and embedding of LCCA in the sector. It will also include adaptation or upgrading of some of the existing instruments and discussing the development of new tools. The duration of this phase may be between three months and a couple of years and is largely dependent on the ambition of the sector partners. It is hoped that the integration of LCCA in the budgeting and financial planning processes in Uganda will eventually lead to higher efficiency and effectiveness of the sector, which again would translate to improved access and higher levels of services for the population.

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