Lessons from using the life-cycle costs approach for rural water supply in DRC through the DRC WASH Consortium

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Abstract/Summary

Since 2013, the DRC WASH Consortium, led by Concern Worldwide, has been adapting the life-cycle costs approach into its rural water supply interventions in DRC in order to improve the sustainability of the rural water services developed. The use of the life-cycle costs approach by the Consortium has two purposes: to improve management of water services by community committees, and to permit informed investment decisions by local actors which are based on an analysis of long-term economic feasibility (in additional to technical and social/institutional feasibility). This paper explains how the Consortium has adapted the life-cycle costs approach so far and the initial results from evaluations with 79 water management committees in the first phase of the Consortium's programme from 2013-15. This analysis highlights the challenges to sustainability that remain, the benefits and weaknesses of the tools developed, and lessons for other actors seeking to use the life-cycle costs approach.

Introduction

The rural WASH sector in the Democratic Republic of the Congo (DRC) faces two key challenges: scaling-up and sustainability (Black, 2013). The 2015 estimates by the WHO/UNICEF Joint Monitoring Programme were that only 31% of the rural population uses an improved water point, and 29% use improved sanitation facilities (WHO/UNICEF JMP 2015).

To scale-up access, a national rural WASH programme is in place called "Healthy Villages and Schools" (*Village et École Assaini,* VEA). The programme is run through the Ministry of Health (and the Ministry of Education in schools), with UNICEF as the key partner for implementation support. The programme completed its first phase from 2008-2012, and approximately 2,500 villages completed an eight-step community process based on PHAST, achieving the seven WASH "national norms" which are required to be certified as a "Healthy Village" (DFID, 2013). The programme is now in its second phase from 2013-2019, expanding in up to 6,000 new villages.

However, the sustainability of rural WASH services remains a huge challenge (Black, 2013). In 2014, the national programme commissioned a 'sustainability study' on phase one villages, 1 to 4 years after they had been certified as "Healthy Villages". This study showed that only 2% of villages had maintained all seven norms (Hydroconseil, 2014). 33% of boreholes with handpumps were not functioning properly, and only 22% of villages had any collection of funds to cover operation and maintenance. To help address sustainability, a key addition to the national programme in its current phase is post-implementation monitoring for all villages up to three years after implementation.

The DRC WASH Consortium was established in 2013 as a complementary initiative. The Consortium is

composed of five international NGOs: Concern Worldwide (the lead agency); Action Against Hunger (ACF); ACTED; Catholic Relief Services (CRS); and Solidarités International (SI). The Consortium aims to support over 650 villages and 600,000 beneficiaries across 15 rural health zones with funding from 2013-2019 from DFID/UKAid (also the principal donor of the national programme.)

The Consortium has the same strategic aim as the national programme of working with communities to become "Healthy Villages" according to the national norms, but develops and tests alternative implementation approaches in order to improve sustainability, including the use of the Life-Cycle Costs Approach to support decision-making and management. The Consortium programme also proceeds in a series of different intervention phases so that lessons from earlier phases can be fed back in. A previous paper (Jones, 2015) detailed how the Consortium had adapted the Life-Cycle Costs Approach into the DRC context. This paper briefly summarises the adaptation and then presents the initial results and lessons so far.

Adapting the Life-Cycle Costs Approach into the programme of the DRC WASH Consortium

The WASH Consortium has adapted the definitions of the different cost components of water services proposed by the WASHCost project, as summarized in Fonseca et al. (2011) and shown in Table 1. The Consortium has so far focused on the recurrent costs which occur at service provider (community) level: operating and minor maintenance expenditure and capital maintenance expenditure. For the moment, costs of direct support are not considered in what communities pay (in principle, these costs are covered through the national rural WASH programme's post-intervention monitoring and support). Indirect support costs at national levels are not included.

Table 1. Type of recurrent costs of water services at local levels according to the life-cycle costs approach (adapted from Fonseca et al. 2011 and Jones 2015)

Life-cycle costs terminology	Life-cycle costs description	Adaptation and terminology used in the approach of the DRC WASH Consortium
Operating and minor maintenance expenditure (OpEx)	Expenditure on labour and materials needed for routine maintenance which is needed to keep systems running, but does not include major repairs.	"Level 1 costs": Regular costs which are needed at least annually, with a particular emphasis on the management costs required at community level (e.g. costs of fee collection and social marketing), not just hardware costs such as spare parts.
Capital maintenance expenditure (CapManEx)	Renewal, replacement, and rehabilitation costs which go beyond routine maintenance.	"Level 2 costs": Costs of major repairs which are required typically every 2-5 years.
		"Level 3 costs": Costs of rehabilitation which is required typically after 10-15 years.
Expenditure on direct support (ExpDS)	Costs of ongoing support to users and local stakeholders, for example local government staff.	For areas where this direct support is in theory provided by local health services, the costs are not included in the estimates for what communities need to pay.

To put this into practice, the Consortium developed a set of tools and training modules for village committees with a focus on financial analysis and planning (which was lacking from previous tools available). This approach is referred to by the Consortium as developing a 'business plan' for a proposed water service in a village. The term 'business plan' was chosen to highlight the difference with the humanitarian approach that NGO staff in DRC are more used to.

Main results – comparing estimates of Life-Cycle Costs to estimates of communities' ability to

pay

In early 2016, the first phase of villages in the Consortium programme had completed their intervention process and endline evaluations were being carried out, as villages became certified "Healthy" (up to 6 months after the installation of the water point). As of April 2016, 79 communities so far had taken part in the evaluation comparing the estimated long-term costs of their water point with the estimated capacity of the community to cover these costs (according to their 'business plan' analysis, which includes the tariff system adopted by the community). These initial results are shown in Table 2.

Table 2. Initial results of the life-cycle costs analysis for the first phase of villages

Estimated capacity of the community to cover the long-term costs of the water point	**Percentage of communities, by type of water point**		
	Drilled boreholes or hand-dug wells fitted with handpumps (n=44)	*Protected springs (n=35)*	**All water points (n=79)**
The community will not even be able to cover operation and minor maintenance costs ("level 1 costs")	*30%*	*23%*	**27%**
The community will be able to cover operation and minor maintenance costs ("level 1 costs"), but not major repairs ("level 2 costs").	*48%*	*49%*	**48%**
The community will be able to cover operation and minor maintenance and major repairs ("level 2 costs") but not full rehabilitation ("level 3 costs").	*23%*	*29%*	**25%**
Average amount of cash available in the committee's funds	*Mean = 47 USD* *Median = 36 USD*	*Mean = 45 USD* *Median = 39 USD*	**Mean = 46 USD** **Median = 39 USD**
Estimated yearly cost of running a water point ("level 1 costs") *	*Min = 125 USD* *Max = 654 USD*	*Min = 84 USD* *Max = 531 USD*	
Estimated yearly cost of running a water point ("level 2 costs") *	*Min = 275 USD* *Max = 832 USD*	*Min = 134 USD* *Max = 561 USD*	
***** Variations in cost estimates depend on the technology adopted (e.g. handpump model) and on context-specific variables such as geographic location, cost of access to spare parts etc. Ranges are given to indicate this significant variety in estimates, given the lack of hard data in DRC. Consistent "level 3" costs estimates are not available yet, due to the specific nature of full rehabilitation works in each water point.			

So far there seem to be no significant differences between communities where drilled boreholes or hand-dug wells fitted with handpumps were installed compared to communities where protected springs were installed. The overall data shows the high challenge of sustainability: according to the analyses, 27% of communities will not even be able to cover operation and minor maintenance costs. However, this should be taken into account alongside the fact that at the time of the survey almost all communities have some cash available (mean 46 USD; median 39 USD) for minor costs if required. No village seems to has achieved "level 3 costs" so far, i.e. the capacity to carry out full rehabilitation at its own expenses. This is not too surprising considering the generally low income levels in rural DRC and thus the limited capacity to mobilise financial resources locally. Further data will probably cast light on this aspect in the following phases of the project.

Based on available data, population in target villages contribute 0.65 USD/household/month (mean) or 0.5 USD/household/month (median). However, such data need to be taken cautiously: in many villages income-generating activities are also in place to foster financial viability of water points; regularity of

contributions changes; mixed systems are often in place (monthly contributions in conjunction with fees by jerrycan); 'vulnerable' households are generally exempted; and quality of financial management at the village level varies.

So far the Consortium has encouraged communities to identify the full range of potential costs in their 'business plans' (e.g. costs of fee collection and social marketing, not just hardware costs such as spare parts) as a way towards semi-professionalisation of community management rather than relying on volunteerism. However it may be that this approach over-estimates the minimum required for basic operation and maintenance. This was done in the absence of a specific legal framework in DRC: at present, rural water supply tends to be de-facto unregulated in terms of roles, service levels and tariff systems. This may improve gradually in the coming years, since a new Water Law was promulgated in January 2016. The new law prescribes that even though access to water services is a right for all, it is not for free and tariff systems need to be established according to principles of cost-recovery, equity and non-transferability. The law does not indicate any price range or tariff method yet, however it specifies that tariffs should be based on metered consumption and not on flat rates (Journal Officiel de la République Démocratique du Congo, 2016). Such approach, though understandable in principle, is likely to encounter significant implementation barriers in rural settings and wherever water supply is done via self-supply or via point-of-use sources.

For villages in its second phase of the Consortium project onwards, the Consortium has taken into account the challenge of villages which may not even be able to cover operation and minor maintenance costs by selecting at the start of each intervention phase about 20% more villages than originally planned. During the intervention process, the estimates of life-cycle costs of possible water points and the estimated community capacity to pay will be analysed to permit a decision before the final choice of which villages are feasible for installing water points. The impact of such strategy on the capacity to achieve fianancial sustainability of water points is still to be appraised in full. In the approximately 20% of villages where a water point is not made, alternative solutions such as household water treatment and rainwater harvesting will be explored in more detail.

Lessons learnt – promoting learning and advocacy at local and national levels

The DRC WASH Consortium is still at an early stage of implementing the life-cycle costs approach. Getting the key concepts understood and adopted has been a process of over two years since the start of the programme and so far has been more important than the exact details of the calculations (which have to be estimates anyway in DRC given the lack of historical data on e.g. frequency of different types of repairs).

At local levels, it has been important to allow new initatives to emerge which support the overall use of the life-cycle costs approach. For example, some of the Consortium members undertook socio-economic household surveys to provide data which could inform the discussions with communities about what they were willing and able to pay. Others have used more informal focus group discussions to address this issue.

At national level, the Consortium has used its field experiences to share learning and promote debate about life-cycle costs to try to "socialise the concept" in the sector. At its first external sector workshop with over seventy representatives of all key stakeholders in 2014, the Consortium invited an external expert in life-cycle costs to facilitate one day of the workshop and provide credibility for the approach. In 2015, the Consortium followed this up with a workshop on "How to make sustainable investments in the rural WASH sector in DRC?". This initiative helped focus the debate on a key moment in all water projects (the decision about what water points to invest in and where) and share experiences about how life-cycle costs tools could inform this decision.

Conclusions and Recommendations

For the DRC WASH Consortium: The Consortium should undertake more detailed analysis once full results of the first phase of villages are available, and then revise the tools as required for the next phase of the

programme and to permit recommendations to the sector on experiences of adopting the tools.

For the DRC rural WASH sector: The sector should aim to adopt life-cycle costs tools more widely. This includes tools for key elements of life-cycle costs such as direct support costs. This could be linked to the roll-out of the national post-implementation monitoring process for "Healthy Villages", as well as the implementation of the new Water Law which emphasises the responsibilities of decentralised local governments in planning, coordination and support.

For other actors using and adapting the Life-Cycle Costs Approach: There is a trade-off between harmonising tools and definitions (for example, to allow comparisons across different geographic areas) and permitting adaptation in different contexts so that local actors can adopt and adjust methodologies as needed. It is important that at each level (from community to national), life-cycle costs tools are adapted to the management and decision-making needs of each stakeholder, and that the benefits of using a life-cycle costs approach are evaluated.

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