Policy Brief

Global Water Initiative Sustainability Assessment

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AGUA CONSULT

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In partnership with the Global Water Initiative

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THE HOWARD G. BUFFETT FOUNDATION

Global Water Initiative
A Partnership Funded by the Howard G. Buffett Foundation
Supporting water resources for sustainable agriculture

Summary

Community management of point water supply schemes in East and West Africa can function, albeit with many challenges. Success is driven by an interconnected set of factors including absolute scarcity of water sources and the effectiveness of governance and accountability measures, as reflected in functionality rates which vary from just over 60% to 96% in arid zones. Ultimately this model continues to face structural challenges with few short-term solutions. It remains driven by the political economy of development partner and national government investments which reflect a preoccupation with initial 'implementation' over long-term service delivery.

We argue that there needs to be a rebalance towards sustainability. Policy makers and implementers should test more effective repair and maintenance models based on professionalised providers, at the same time supporting a stronger local government role in monitoring and overseeing the provision of services.

Policy Pointers

I. Communities can achieve positive outcomes in the management of point source supplies under certain circumstances and for limited time periods. In highly stressed water areas user groups often extend well beyond the immediate community, challenging our conventional notions of 'community management'. Financial capacity to maintain service levels in the long-term without external support remains a major challenge; innovation in financing such as pooled savings, revolving loans and insurance schemes should continue to be explored.

II. In spite of policy and institutional frameworks that place local government at the centre of rural water service provision, there is a major policy-to-practice gap largely driven by inadequate levels of fiscal decentralisation. Greater advocacy can increase prioritisation of and public investment in sustainability approaches. The global transition to Sustainable Development Goals provides a useful platform on which to build national dialogues.

III. Alternative models and technologies based on networked schemes may be more appropriate in the future as demand for improved services grows. This includes both professionalised operators and providers of area-based maintenance and repair.

IV. Regardless of management modes, local government must still play an important role in monitoring service provision, managing maintenance contracts and overseeing regulation (even under light-touch scenarios).

Background

The Global Water Initiative (GWI) is funded by the Howard G. Buffett Foundation and supports improved water resources management, water supply and sanitation programmes in 13 countries in Africa and Central America. Between 2007 and 2012 GWI financed rural water supply programmes across eight countries in the East and West Africa regions, including construction of new and/or rehabilitated rural water schemes and establishment of water committees.[1]

[1] This involved 300 water supply schemes in East Africa and 159 in West Africa.

Approximately three years on and driven by an interest in tracking the long-term viability of schemes delivered under these programmes, GWI commissioned two separate reviews to investigate the current status of interventions, as well as the potential for future sustainability. Although the two studies used quite different methodologies, both looked at common areas including technical performance, governance and management systems.

In West Africa the assessment was led by Catholic Relief Services using the Sustainability Index Tool methodology[i]. Developed by USAID and the Rotary International, the tool looks at multiple factors and institutional levels to score the likely sustainability of interventions. The assessment surveyed 46 communities in Burkina Faso and Niger using the full SIT methodology and a further 25 in Senegal looking at functionality only. The final report with detailed annexes can be found **here**[2].

In East Africa the approach differed, with a focus on identifying governance factors relating to scheme sustainability, combining a literature review with findings from surveys using the Governance into Functionality Tool, or GiFT[ii], which is based on structured and semi-structured interviews at community and district level. Surveys were conducted in a total of 219 schemes in three countries (Ethiopia, Tanzania and Uganda); the final consultant report is available **here**[3].

Findings

FUNCTIONALITY

Assessing functionality of schemes can be a useful proxy for sustainability especially when measured regularly over time. However it also can hide variations in the context of water availability and performance and says little about the final levels of service experienced by end users or consumers. Both GWI surveys assessed functionality in two ways. Firstly, a snapshot of functionality 'on the day' was conducted in terms of the most recent data available (2013 and 2014). This was 100% in Tanzania, 96% in Senegal, 87% in Burkina Faso, 80% in Niger, 79% in Uganda and 61% in Ethiopia. Additionally the East Africa data provides an annual comparison across three years from 2011-2013 showing a marked drop off for Ethiopia and Uganda since construction, from 94% to 61% and from 94% to 79% respectively, whilst functionality is maintained at 100% in Tanzania.

The data for functionality on the day of assessment reflects the quality of system performance, but results can be skewed by the type of intervention and technology; for example, some of the schemes in East Africa are rain water harvesting and ponds which are intended as 'booster' sources and never intended to serve for the whole year but to increase provision for a few critical months[4].

Overall this functionality data shows a mixed picture when compared to regional trends for systems in sub-Saharan Africa operated under community-based management[iii], with those at the upper end of the scale being well beyond the accepted averages for rural point sources. This is even more encouraging given the very high user pressure on

[2] **http://gwiwestafrica.org/en/sustainability-index-rural-water-services-burkina-faso-and-niger**

[3] **http://www.gwieastafrica.org/media/GWI_RegionalGiFT_01_01_2014.pdf**

[4] In East Africa these were: 62 protected hand-dug wells, 87 bore holes, 51 spring-catchments, 10 surface water catchment systems (ground), 25 rain water catchments (roof), 3 river catchments, 6 sand dams, and 41 other including traditional wells. In West Africa they were: 83 boreholes with handpumps, 21 protected hand-dug wells with handpumps, 46 protected hand-dug wells with rope and bucket, 6 gravity-fed schemes and 3 rain water catchment (roof) systems.

some of the water points; for example, in Burkina Faso and Niger the government standards for crowding per water point are 300 and 250 respectively, whilst the SIT surveys found an average number of users of 602 in Burkina Faso and over 1,400 in Niger, as well as watering of livestock. One of the key drivers appears to be the arid environment, also a factor in Tanzania, and the resultant strong demand to quickly fix water points when they break down, especially in the dry season.

The second measure used in West Africa was based on comparing actual service levels against national norms for water quality, quantity, continuity and accessibility. For Burkina Faso, the results are positive and show an actual increase over base functionality from 87% to 91%, but in Niger the number of schemes meeting basic levels of service as defined by government dropped by 5 points to 75% as compared to simple functionality rates of 80%. Again, these are relatively very well-performing measures when looking at experiences with averages for meeting even basic service levels[iv].

In East Africa the team took a different approach to assessing functionality since scheme construction by interviewing users about their experiences, revealing an overall less positive picture than the snapshot taken on the day of survey. Across the three countries, focus group discussants classified 42% of the schemes as functioning poorly (e.g. less than 50% of the time) or very poorly (e.g. nearly always broken). This sharp drop off in functionality, even within a relatively short time period of one year since completion, is again in line with broader national performance rates for countries in the region, but nonetheless remains worrying.

Drivers of Sustainability

Both reviews assessed the drivers that appear to have a significant bearing on the actual or likely sustainability of schemes. Although they used different approaches it is possible to identify commonalities across the two regions that have a bearing on whether physical infrastructure is maintained and repaired adequately and ultimately continues to deliver some level of service to users.

OPERATIONAL AND TECHNICAL FACTORS

Sound technical design and construction quality are fundamental. These sets of factors are flagged as decisive, both taken negatively and positively in determining sustainability. The generally high quality of construction of GWI reported in West Africa was seen to minimise the need and expense of unnecessary repairs, preserve groundwater source yields and contribute to ease of access. Conversely, technical factors such as poor quality of spare parts, high iron content leading to oxidisation of rising mains in some schemes in Uganda and poor design of reticulation systems in Tanzania had negative impacts.

Actual, or perceived, water quality and user satisfaction can strongly drive behaviours. Colour, taste and other water quality defects were seen to have a strong negative correlation, both to the ability of management entities to collect tariffs as well as broader water committee performance. This in turn limits the effectiveness of minor O&M, leading to more substantial mechanical failures. A strong focus on water quality, particularly in the West African programme, shows a positive feedback loop with overall performance. For example in Senegal, except where the level of nitrates was found to be excessive, all committees reported user satisfaction, all the sources were tested for compliance with national standards and functionality rates stood at 96%, which is extremely positive.

GOVERNANCE FACTORS

Performance of community management structures is critical to sustainability, but is often fragile. Unsurprisingly, both studies found that the ability of management committees to raise funds, repair schemes, or access necessary skills and spare parts had a direct impact on scheme functionality (Figure 1). Performance of committees varied across countries and appeared to be determined by the level of demand; specifically in arid areas where the GWI scheme is often the only viable source, user-groups extend well beyond the immediate community. The quality and depth of formation of community governance structures during initial implementation was cited as a key factor. This was both positive, through reinforcing subsequent performance, and negative, by undermining legal representation and capacity to resolve technical and organisational challenges such as re-elections in the long-term. Overall user perception of the 'value' of the scheme to the community emerged as an all-important factor in terms of positive governance across both regions.

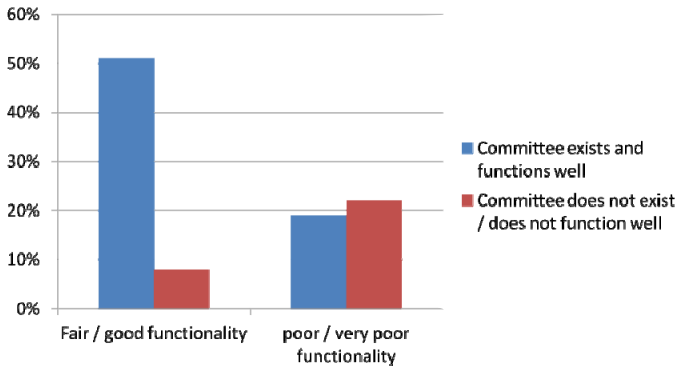

Figure 1: Relation between water user committee performance and scheme functionality (Ethiopia, Tanzania and Uganda data combined).

The more transparent and accountable community management structures are, the better. Both reviews found a strong association between functionality and the transparency and accountability of committees. This included holding regular community meetings, sharing financial records, knowledge of local bye-laws, rules and procedures and re-election processes over time. Both negative and positive examples of this causal relationship were found across various country contexts. Interestingly, no direct association was found between the gender balance of water committees and functionality, where this was assessed in the East Africa evaluation.

FINANCINC LIFE-CYCLE COSTS

Cost recovery through user tariffs is low and likely to remain problematic. Both studies revealed the important link between tariff collection and ability to effect repairs as a key driver of sustainability; they also reported that user payment levels were both irregular and largely insufficient in the majority of cases. The data from Burkina Faso showed that there was a shortfall of approximately one-third in meeting the projected cost for operation, maintenance and repair of an average borehole over a 15 year period; this did not account for the costs of major rehabilitation or so-called 'direct support' costs for the community. Taking these full life-cycle costs into account over the same time period would mean household contributions rising from their current threshold of around $6.25 per year to some $34.5 per year. These findings are in line with the latest research indicating very substantial gaps in financing for most rural water schemes and the need for alternative sources to cover shortfalls[v].

ENABLING ENVIRONMENT

National policies and frameworks exist to support decentralised rural water provision, but there are big gaps in practical application. All countries surveyed had relatively well-advanced policy frameworks and guidance which sets out responsibilities for operation, maintenance and support functions and aspects of cost recovery. Several also had

national monitoring systems in place that specifically track functionality rates (e.g. Ethiopia and Uganda). However, both reviews pointed to a 'policy to practice gap', often linked to lack of public financing which undermines support to, and monitoring of, community managed water schemes. The example from Burkina Faso in Box 1 provides an extreme example of this reality.

Box 1: Policy to practice gap for maintenance in Burkina Faso

The reform of management of rural water supply gives responsibility to Local Government (LG) for establishing maintenance contracts with pump mechanics, including routine maintenance and technical assistance to local water committees. In return water committees pay an annual fee of 10,000 CFA (about US$21) to the LG. None of the three LGs (Fotouri, Gayéri and Bartiébougou) surveyed have started to implement this system, but they have in parallel instructed committees not to make their own arrangements for maintenance as requested by the reform. This has created a critical ***maintenance gap*** where preventive maintenance is non-existent, except for minor interventions by committees themselves, such as greasing the chain of the handpump.

Source: Debus, JP.; GWI, 2014

Local government faces similar financing challenges to communities and often fails to fulfil key support functions. Under decentralisation policy in all GWI intervention countries local government is expected to play an important role in supporting community management. Low technical and managerial capacity of local government, coupled with inadequate financial resources were identified in both studies as critical barriers to actual or likely sustainability. Follow-up visits, monitoring, refresher training, technical oversight and support functions were often not being carried out because of limited local government capacity. The core reason underlying this was cited as lack of public financing from central government. For example, in the three intervention woredas (equivalent to districts) surveyed in Ethiopia, an average of five water officers relied on annual operational budgets of between US$50 to $90 to support populations ranging from 60,000 to 174,000 people.

Conclusions

The analysis provides a valuable snapshot of the sustainability of rural water schemes and illustrates that under certain circumstances community management of point sources can function, albeit with many challenges. Sound technical groundwork and securing commitments from the community and other stakeholders is critical. But the evaluations also pointed to a number of underlying and interconnected structural challenges which have no easy or short-term solutions.

The imbalance of focus and investment by both external development partners and national government is part of the current political economy and reflects a fundamental disconnect between initial construction and implementation of new and/or rehabilitation of old infrastructure on the one hand, and long-term service delivery approaches on the other. As long as there is insufficient financing to provide long-term support for communities and to address at least some rehabilitation costs, the current paradigm will struggle to deliver sustainable services over time.

Poor services delivered by point source supplies, the resultant low willingness to pay in some schemes and the failure to raise even sufficient tariff income to cover operational costs, poses the fundamental question as to whether community management is fit for purpose and the right model to support going forward. There is an increasing recognition that rural water provision should be professionalised and where possible alternatives to community management be explored and tested at scale[vi]. Some even call for the 'death of the handpump' which is unlikely in highly dispersed and remote populations but is symptomatic of the growing demand for better and more reliable services, for which even the poorest are shown to be able to pay, when convenience and distance factors are taken

into account[vii]. One of the findings of this work is that the notion of community may in itself be a misnomer in terms of point source functionality, with perhaps a greater resort to (wider) 'user communities' likely to reflect more accurately local realities.

It is clear that the future for rural water is moving toward networked systems with higher levels of service – and greater willingness to pay. For example, in India ambitious new government policy targets now aim for 50% of rural households to have access to piped schemes by 2017, rising to 90% by 2022, with fewer than 10% of rural dwellers using a handpump[viii]. In Africa the ambition is in the same direction of travel though not at the same speed, for example Uganda's policy calling for piped supplies in rural areas by 2040[ix].

Recommendations

Many of the challenges highlighted by these two reviews are for the most part well-documented elsewhere. They include structural conditions that are unlikely to change in the immediate future, most notably the rate and scale of fiscal decentralisation to better enable effective local government support to rural communities. The question then is what can be done in the short to medium term to militate against these underlying conditions and give interventions that support rural water services greater sustainability. A number of action points can be identified, both at operational and policy level:

I. Continue with high levels of quality control in initial engineering, social mobilisation and organisation processes; attention to water quality is particularly important and early investments in this will pay dividends in the long-term.

II. Explore new business models for long-term support with a focus on technical maintenance in order to professionalise repairs; encouraging examples exist or are being tested at scale in various contexts, including Ethiopia, Ghana, Kenya, India, Mali and Uganda[x]. Such models also provide various entry levels at which to introduce subsidies, where required.

III. Prior to implementation, invest more in advocacy and building consensus to obtain commitments from local, provisional and national government. Regardless of the business model, (local) government will still have a vital role in oversight and regulation, including monitoring and major repairs of schemes. This requires lobbying for greater fiscal decentralisation to support district water offices.

IV. Continue to work with and train local governments as key partners in rural water service provision to build their own capacity and awareness on issues including current policy and legislation, asset management, monitoring and life-cycle costing.

[i] The WASH Sustainability Index Tool was originally developed by Aguaconsult, a UK company, under USAID-Rotary International funded research 2012 and revised and improved based on subsequent field experience in three countries. It is an open source tool with a framework that assesses the likely sustainability of WASH interventions using a range of qualitative and quantitative indicators, across a number of factor areas (institutional, management, technical, financial and environmental) and at different levels, from national to decentralised and service provider; the tool now has been applied in seven countries and is available online: **http://www.washplus.org/rotary-usaid**.

[ii] The Governance into Functionality Tool (GiFT) focuses on various governance aspects including the technical and financial management capacity of community-based management organisations. It consists of questionnaires to assess the relationship between scheme functionality and governance. Results from these surveys were then analysed using the Fisher's exact test to examine the significance of the association (contingency) between these two kinds of classifications.

[iii] Recently compiled and aggregated meta data (123 sources) by RWSN indicates average failure rates of 38%, with a further 35% needing repairs and only 54% functioning RWSN, (2009) *Hand pump data, selected countries in Sub-Saharan Africa* [online]. **http://www.rwsn.ch/documentation/skatdocumentation.2009-03-09.7304634330/file** (accessed 27.09.2014)

[iv] Functionality results do not reflect the actual quality of service being provided to users in terms of defined levels of quantity, quality, accessibility, continuity and crowding, which are normally set out in national policy. Therefore, even though a scheme may be recorded as 'functional' it may be failing to meet service standards when assessed against benchmark parameters. Recent research from IRC's Triple-S project in Ghana from three districts shows a high level of non-compliance with the government's Community Water and Sanitation Agency norms and standards: only 2%, 3% and 34% of schemes providing services meeting even the most basic standard respectively, but also in the performance of the water service provider (Water and Sanitation Committees or Water and Sanitation Development Board) and also at service authority (district assembly) level; see: "*The status of rural water services in Ghana : a synthesis of findings from 3 districts (Akatsi, Sunyani West and East Gonja Districts)*"; Adank, M., Kumasi, T.C., Abbey, E., Dickinson, N., Dzansi, P., Atengdem, J.A., Laari Chimbar, T., and Appiah-Effah, E..; Triple-S – Working Paper; IRC, 2013

[v] Research by IRC's WASHCost project shows that capital expenditure benchmarks for preparing and installing a borehole and handpump (at 2011 prices) range from US$ 20 per person to just over US$ 60 per person. For small piped schemes, including mechanised boreholes, costs range from US$ 30 to just over US$ 130 per person. By comparison recurrent costs (that is everything else except for capital investments) benchmarks range from US$3 to US$ 6per person per year for boreholes and handpumps, and from US$ 3 to US$ 15 per person per year for piped schemes. Over a lifetime of a system, say 25 years, recurrent costs actually represent 2 to 3 times more in order of magnitude than capital expenditure; **http://www.waterservicesthatlast.org/resources/building_blocks/financing_to_cover_all_life_cycle_costs/life_cycle_costing** (accessed 27.09.2014)

[vi] The professionalisation of community based-management (CBM) means moving away from an approach based purely on volunteerism, towards a more professional, competent and effective management of rural water services working to agreed standards, and with greater transparency and accountability. Conventional approaches to CBM have had an overwhelming reliance on volunteer management arrangements which have often limited the capacity and skills of operators. Lack of more formalized relationships has also resulted in inadequate or low levels of accountability. Poor management, lack of checks and balances and incentives can all lead to inadequate technical, financial and scheme performance, and ultimately system breakdowns and service failures; see: **http://www.waterservicesthatlast.org/resources/building_blocks/professionalisation**. (accessed 26.09.2014)

[vii] Evidence shows that even extremely poor households can and do pay for improved water and sanitation services. However, households prefer to pay for more expensive services to reduce the distance required to collect water instead of paying for the cheaper maintenance of communal (further away) sources. Small increases in the wealth of the poorest have a large impact on the services demanded in terms of quantity, distance and time spend as well as an increase in the level of capital and maintenance expenditure. "*The death of the communal handpump?: rural water and sanitation household costs in lower-income countries*", Foncesca, C., 2014 **http://www.ircwash.org/resources/death-communal-handpump-rural-water-and-sanitation-household-costs-lower-income-countries**

[viii] Strategic Plan – 2011- 2022, Department of Drinking Water and Sanitation – Rural Drinking Water "*Ensuring Drinking Water Security In Rural India*" Department of Drinking Water and Sanitation, Ministry of Rural Development, Government of India; (accessed 27.09.2014)

[ix] "*Uganda Vision 2040*" National Planning Authority, Government of Uganda, 2014; **http://npa.ug/wp-content/themes/npatheme/documents/vision2040.pdf** (accessed 27.09.2014)

[x] Alternative business models for long-term support that can provide more professionalised solutions for technical maintenance and repairs are being piloted and tested in a number of contexts; these are increasingly using smart technologies and telemetry to improve response times and efficiencies; see as follows:

a. **Kenya:** A DFID supported pilot in 2013 has yielded positive results from a new business model based on 'smart' technology to the repair of handpumps with 96% functionality rates, 4 out of 5 consumers paying tariffs and downtime reduced ten-fold from 27 to 3 days; see: **http://www.smithschool.ox.ac.uk/research/library/SSEE_Rights%20to%20Results_FINAL_March2014.pdf**

b. **Ethiopia:** Charity: water is supporting the national NGO, REST, to establish a large-scale programme of circuit riders in Tigray state across 24 Wordeas, with the aim to use similar smart technology to monitor the performance of handpumps and to improve access to more immediate repairs. See **https://www.charitywater.org/pipeline/**

c. **Ghana and India:** The NGO Safe Water Network has developed a business model to provide improved water services to rural and small town communities, with a strong focus on water quality, including chlorination where necessary. The price point is set at no higher than 5% of basic income (as measured at $1.40/day), so is not reaching the extreme poor, but has a proven track record in full operational cost recovery; a few systems are also able to recover some capital investment costs. To date there are 30 schemes in Ghana and 60 in India, with the aim to expand to 100 and 300 respectively. The final step is to create 'Field Service Entities' to act as the next tier of aggregated technical support to the stand-alone schemes, based on a fee for service model; see: **http://www.safewaternetwork.org/our-model**

d. **Uganda:** The Ministry of Water and Environment, IRC and SNV have been working in partnership to accelerate and improve the government's strategy of establishing district based Hand Pump Mechanics Associations (HPMAs) to strengthen O&M of rural water systems and increase functionality of rural water sources in six districts (Kabarole, Lira, Arua, Kasese, Bundibugyo and Kyenjojo). Financing of the HPMAs still remains a major challenge. Presently, HPMA services are being financed through a mix of public financing and membership fees, and share capital contribution. The average membership fee is 50,000 shillings. Share capital contribution is also being considered. HPMs are willing to contribute up to UGX 100,000/= per share for a minimum of (2) shares and maximum of five (5) shares. HPMAs will require external support to help them build systems and structures. Business Development services are also required to enable them develop a range of low cost WASH products. See: **http://www.waterservicesthatlast.org/experiments/uganda_experiments/developing_business_model_for_hand_pump_mechanics_associations** (accessed 28.09.2014)

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