Global Water Initiative - East Africa

Secure water for smallholder Agriculture

REGIONAL APPROACH PAPER

Monitoring and addressing governance factors affecting rural water supply sustainability

Regional approach paper based on Global Water Initiative East Africa Governance into Functionality monitoring of water schemes implemented in Ethiopia, Tanzania and Uganda

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January 2014

ACRONYMS

CBM	Community-based Management
COWSO	Community Owned Water Supply Organisation (Tanzania)
GWI	Global Water Initiative
GiFT	Governance into Functionality Tool
O&M	Operation and Maintenance
RWSN	Rural Water Supply Network
WASHCO	Water, Sanitation and Hygiene Committee (Ethiopia)
WUC	Water User Committee (Uganda)

ACKNOWLEDGMENTS

I am grateful for the support provided by all the different collaborators in this project without whom this report would not have materialised. The different stakeholders in Ethiopia, Tanzania and Uganda who gave their time and insights answering the GiFT questionnaire and semi-structured interviews provide the grounding for this report. The national consultant teams collected and analysed the country level data, providing the necessary and tedious legwork as well as excellent analysis. The GWI Policy and Advocacy Managers Bethel Terefe (Ethiopia), Dosteus Lopa (Tanzania) and Violet Alinda (Uganda) were extremely supportive in facilitating my relationship with the national consultant teams and also provided very useful comments and advice whenever needed. Jennifer Williams provided excellent support by carrying out cross-tabular analysis and quality control of country reports. Helen Pankhurst and Alan Nicol gave direction and overall support throughout the process of data collection, analysis and report writing.

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EXECUTIVE SUMMARY

This regional synthesis paper has brought together findings from a literature review on factors affecting rural water sustainability with findings from a three-country study of schemes supported by the Global Water Initiative (GWI) in East Africa in a total of six districts in Ethiopia, Tanzania and Uganda. The study combined a structured questionnaire (GiFT – Governance into Functionality Tool) conducted at 219 GWI-supported schemes with semi-structured interviews with district water sector stakeholders, investigating their monitoring and support practices and capacities to water user committees in the GWI-supported districts.

The objective of this synthesis is to identify the governance factors that are most significantly associated with water scheme sustainability in the three countries, and to suggest monitoring pathways that are able to predict and address sustainability issues before schemes fall into disrepair.

Summary of findings

The literature review, based on existing research as well operational monitoring frameworks and indicators used in the sector, found that a complex set of governance and non-governance related factors affect rural water supply sustainability. The factors identified in sector literature can be clustered under the following headings:

- Quality of project implementation (related to hardware design and implementation and to the setting up of CBM structures)
- User satisfaction with service provided (related to water quality, quantity, lack of alternative, sources)
- Water user committees' Operation & Maintenance (O&M) capacity (i.e. ability to raise funds, access to repair skills and spare parts)
- Water user committee transparency and accountability to their user base
- External support to water user committees (e.g. via an enabling sector policy framework, and functioning support structures available at local government level)

Results from GWI's GiFT survey show a substantial drop in functionality rates of GWI supported schemes on the day of the survey from 92% in 2011 and 95% in 2012 in 2012 to 75% in 2013. A second measure of sustainability, functionality since the scheme's establishment, confirmed low levels of functionality: in 42% of all cases focus group discussants classified their schemes as functioning poorly (less than 50% of the time) or very poorly (nearly always broken down). The sharp drop in functionality rates and overall poor service levels after only one year of completing GWI Phase 1 is reflects wider trends from country-wide data sets. For example, recent figures for hand pump functionality based on recent country-wide scheme surveys in Liberia, Sierra Leone, and Tanzania show a 20% drop in hand pump functionality after the first year of installation.

When analysing the GiFT-questionnaire related governance factors that significantly affect scheme functionality of GWI schemes, the overall performance of water user committees (including its frequency in holding meetings), and the committees' financial management capacity emerged as most significantly related to scheme functionality across the three countries. Additional governance factors were significantly associated to functionality.

In Ethiopia, non-functionality rates on the day of the survey were highest at schools and health institutions that did not have a dedicated Community-based Management (CBM) structure in place. Also in Ethiopia, 55% of committees were re-elected since the scheme's establishment, and 37.5% of the committees stated that they had not received training. These two factors showed a significant association with scheme functionality, pointing to a gap in the provision of refresher trainings when new CBM representatives are elected. Another significant factor related to functionality in Ethiopia was preventative maintenance (20%) and the existence of a care taker or pump minder (in place in 57% of the

committees). The significance of this factor in Ethiopia compared to Tanzania and Uganda may be related to the higher technical skills related to scheme management for the Ethiopian GWI-supported schemes.

In Uganda, factors relating to committee's transparency and accountability emerged as significantly related to functionality, particularly the committee's knowledge about bye-laws, rules and procedures (yes for 72%), whether the committee kept functionality records up-to-date (yes for 75%), whether it reported back to its user base (yes for 74%) and whether an external audit was carried out in the last year (yes for 59%). For Ethiopia, only a fraction of the committees practiced these management activities, which may explain why they did not show a significant relationship.

In Tanzania, where the sample size on 11 schemes was too low to yield significant results, a scheme-by-scheme assessment yielded that a combination of different factors affecting the sustainability of water supply services. The report identified a combination of environmental, technical, and governance factors as negatively affecting scheme functionality. In several cases competing water demands by irrigated agriculture (khat production) left water schemes with insufficient water availability, an issue exacerbated by the lack of legal registration and related water entitlements of water user committees. In the case of deep wells run by power generated from windmills, the lack of strong winds limited water provision. At several schemes, water quality issues and the presence of alternative sources affected water use. The Tanzanian study noted the following internal committee governance challenges: a general dependency of water user committees on external support for scheme maintenance, weak financial management and limited income due to high poverty levels.

The inter-related nature of governance and other factors is a key finding for the study as a whole. Results from the GiFT survey in Uganda, in particular, showed that poor water quality (like worms, brownish water due to rust, turbidity) was related to a lower number of scheme users from among the wider community, which was also associated with poor water user committee performance. The following points emanate from an examination of the policy environment that supports CBM in the three countries: Ethiopia and Uganda had set specific national policy targets to reduce non-functionality rates. In Ethiopia, Tanzania and Uganda, sector policy documents provided O&M frameworks and, in Ethiopia and Uganda, government monitoring formats captured scheme functionality and various governance aspects also subject to the GiFT survey. However, there was a clear gap in the operationalisation of broad sector policy guidelines into concrete monitoring, oversight and support activities at the local government level. When analysing district water sector offices' capacity to support and oversee CBM committees in GWI supported districts, clear gaps emerged that mirrored some of the governance problems experienced by water user committees.

All districts experienced a combination of serious human resources, financial resources and logistical capacity constraints that strongly hampered government water sector staff abilities to carry out the duties stipulated in the national O&M and related sector monitoring frameworks. For example, financial management problems at CBM level were mirrored by a lack of skills and operational funds to adequately train, support and oversee financial management of water user committees. In Otuke District, Uganda, human resources were most limited: the district water officer, the only full time sector staff member, simultaneously acted at the district engineer while overseeing the district's 394 water schemes. In Ethiopia, budget constraints were a key inhibiting factor to supporting CBM structures. The three district water offices only had the equivalent of 50 to 80 US dollars available to them per year for all operational activities, including monitoring. This also meant that government employed pump mechanics were often not able to carry out their preventive maintenance duties or to respond to repair requests. The absence of manuals and reporting formats at all three woreda offices further indicated the

lack of overall operationalisation of O&M arrangements in Ethiopia. In Tanzania, where staff levels were higher (a total of 22 staff members), the lack of skills hampered the office's capacity to support water user communities. For example, only three staff members had computer skills thereby limiting the water sector office's capacity to properly manage scheme data received from water user committees.

Indications from these anecdotal findings are that, despite policy frameworks being in place, sector offices' activities at district level were still geared towards the implementation of new schemes. District water offices were not yet well equipped and incentivised to support and monitor the sustainability of rural water services after project completion. This situation was exacerbated by a focus of NGO and donor support to the time of the project implementation cycle. The continued focus on building new schemes is supported by current international policy goals, the Millennium Development Goals, that push towards increasing supply compared to monitoring the sustainability of services, their quality and outreach among marginalised segments of the population.

The findings from GWI's 2013 sustainability monitoring indicate that the CBM model, in its current form, does not provide adequate support to sustain rural water supply schemes in the GWI supported districts of Ethiopia, Tanzania and Uganda. The final section of this synthesis paper draws out recommendations related to national and regional sector governance. Further detailed recommendations related to GWI-supported schemes are available in the national consultant reports.

Recommendations

The GiFT analysis shows that across all countries, two governance factors stand out as most significantly related to water services sustainability: financial management and the performance of the CBM structure linked to the water scheme. These two factors are the subject of the first two recommendations:

Strengthen financial management at scheme level to improve sustainability. A number of activities at district level can be implemented to support CBM financial management including:

- encourage CBM structures to link to existing Village Savings and Loan Associations or establish such schemes ;
- revise and deliver financial management trainings, including refresher trainings that provide a realistic assessment of individual scheme income and expenditure dynamics with recommendations for tariff setting;
- more regular, external audits of CBM income and expenditures.

Support internal CBM governance. The results from the country studies indicate that different entry points are needed in each country / local government. For example, in Ethiopia, functionality was significantly related with high levels of committee re-elections (55%) and low levels of trained committees (37.5% not trained). Health institutions and schools did not have any committees, clearly making this a priority support area at GWI-supported schemes in Ethiopia.

In Same, Tanzania, supporting CBM structures in obtaining a legal status to strengthen their standing in claiming their water rights is a recommendation in at least one case where the community's demand for domestic water clashed with upstream water demands for cash crops.

Further to governance, the country reports also indicate that GWI may want to revisit design-related functionality problems. For instance, in Same, Tanzania, water point was elevation above the water tank affected functionality at two schemes, and three schemes run by windmills experienced a lack of sufficient wind power. Frequent interruptions in power supply can significantly affect the reliability of water services and thereby limit the overall sustainability of the scheme. At the same time, finding

1. See 'Triple-S Uganda (2012): Community Management of Water Services. Approaches, Innovations from Lango and Rwenzori regions' for examples of good practices in Uganda.

alternative sources of power is likely to be beyond the capacity of the local water committee.

Take into consideration the multiplicity of factors affecting scheme sustainability particularly the relation between user satisfaction and CBM governance: in addition to governance-related factors, water quality and water availability emerged as strong factors affecting sustainability in all three countries. The data also showed the strong interrelation between water quality levels and governance factors that ultimately affect scheme sustainability. This finding confirms indications from the wider literature that the user satisfaction of the service is an important factor for achieving sustainable water supply. The findings of this synthesis report show a wide range of possible water quality problems: managing fluoride treatment in Ethiopia's Rift Valley, issues with salty water in Same, Tanzania, and rusty pipes leading to brownish water and corroding infrastructure in Uganda. Each problem requires a different monitoring and related remedial strategy.

At district level, GWI could support water sector offices to further build a strategic outlook on supporting sustainability of services. There are already some positive developments in improving O&M capacities at district level, for instance in Uganda, in facilitating the establishment of hand pump mechanic associations. Such efforts need to be taken further to arrive at a situation where district water offices are able to provide strategic and systematic support to CBM structures.

GWI could support local water offices in their efforts to advocate for an increased operational budget, staffing levels and skilled staff, depending on what is most needed in the specific district. Furthermore, GWI could highlight the need to close the policy-practice gap when it comes to monitoring identified in this report. All three countries have national monitoring formats that contain some of the governance parameters used in the GiFT questionnaire but none to do regularly collect, let alone analyse such data in the GWI-supported districts.

GWI could work towards moving sustainability higher up on the political agenda in Ethiopia, Tanzania and Uganda. Internationally, momentum is currently building up through the negotiations of the Sustainable Development Goals, which will replace the current MDG after 2015. A sector consensus has been built around an international consultation document that suggests new targets and indicators. However, the content of the post-2015 monitoring agenda is still under negotiation. In the meantime, policy learning initiatives such as the GWI can support a sustainability agenda in the East Africa region by drawing attention to the findings of this report i.e.:

- low levels of scheme sustainability presenting the two different measures of functionality,
- the key governance factors affecting functionality, and the interaction of different governance and non-governance factors;
- the current policy practice gaps in functionality and governance-related monitoring at strategic sector meetings.

1 INTRODUCTION

From 2007-12, the Global Water Initiative (GWI) supported service delivery to improve access to domestic water supply and sanitation in Kenya[2], Ethiopia, Tanzania and Uganda. GWI's intention of supporting sustainability monitoring is to identify parameters that are likely to predict the sustainability of water supply schemes, and to feed this information back to communities, water committees, local government and mechanics.

GWI has been experimenting with various monitoring instruments since 2010, which have continuously been amended to reflect the most significant factors affecting water service sustainability. The latest questionnaire, the Governance into Functionality Tool (GiFT), focuses on various governance aspects including the technical and financial management capacity of the community-based management organisation (usually a water committee), the committee's transparency and accountability to its user base and the external support it receives. GWI is committed to continue sustainability monitoring of the schemes implemented between 2007 and 2012 until 2017 so that a longitudinal body of data on factors affecting scheme functionality can be built up and continuous, timely feed-back can be provided to support water services sustainability until then.

This regional approach paper brings together the findings from three country-studies carried out by national consultants in July/August 2013. In total, the 2013 GiFT monitoring exercise captured 219 schemes (151 schemes in Otuke district, Uganda (serving 53,508 people), 57 schemes in Bora, Dugda and Miyo woredas, Ethiopia (serving 101,415 people), and 11 schemes with 47 water points and cattle troughs in Same district, Tanzania, serving 18,786 people).

The national consultant teams used a mixed-methods approach to assess factors affecting rural water scheme sustainability in the districts. The teams conducted semi-structured, key informant interviews with relevant sector staff, political representatives and sector professionals such as mechanics, at and below the local government level to obtain information on existing monitoring practices and capacities (see Annex 1). This was complemented with a structured questionnaire, called GiFT (Governance-into-Functionality Tool), assessing scheme functionality and various governance factors assumed to affect scheme functionality and their wider sustainability (see Annex 2). The GiFT questionnaire is a revised version of questionnaires used by GWI in previous years to assess the relationship between scheme functionality and governance, pre-tested and slightly amended by the Ugandan consultant team[3]. Based on the lessons learned from the 2013 survey, some further minor amendments are proposed for the 2014 monitoring round (see Annex 3).

Further to the country-specific analysis of the national consultant reports, this synthesis contributes insights from the wider literature on factors affecting rural water supply scheme sustainability, and provides a cross-country comparison and regional analysis of the governance factors that showed a significant association with scheme functionality. It is important to note that the findings from this study are not representative of the countries or the region more widely. The findings are valid for the surveyed schemes and monitoring capacities and practices in the respective districts. While the findings from this study cannot be generalised, they do provide a good indication of functionality and governance issues in places where similar conditions apply.

The report is structured as follows. Section 2 presents the results from the literature review to situate the GiFT survey and semi-structured interviews within the wider sector debates and research on factors affecting rural water supply sustainability. Section 3 provides a brief situation analysis of policy frameworks related to rural water supply scheme sustainability in Ethiopia, Tanzania

2. The programme discontinued in Kenya stalled and is therefore not included in this report.
3. The Ethiopian team collected data before the questionnaire was field tested. The main difference to results in Uganda and Tanzania is that no data was collected with regard to water quality perceptions in Ethiopia.

and Uganda, and of monitoring practices and capacity in the five districts with rural water schemes implemented by the GWI. Section 4 analyses the results from the GiFT survey across the GWI schemes in the three countries, including a cross-country comparison of significant governance factors affecting sustainability, and the possible causes for these differences and related priorities for improving scheme sustainability in the different contexts. Section 5 concludes and provides regional level policy recommendations.

2 FACTORS AFFECTING THE SUSTAINABILITY OF RURAL WATER SUPPLY: EVIDENCE AND RELATED ACTIVITIES IN THE SECTOR

The sustainability of rural water supply schemes has been a concern since the 1980s when, during the first Water and Sanitation Decade, the limitations of top-down and supply-driven approaches to delivering water services became obvious (Sara and Katz, 1997). The Dublin Principles (UN, 1992) promoted the view of water as an economic good and established that water should be managed at the lowest appropriate level, with users involved in project planning and implementation. A key argument for introducing community-driven development was to make services more responsive to demand with the intention to enhance their sustainability (Dongier et al., 2002). In the water sector, this model is referred to as Community-based Management (CBM); for rural water supply, it is the predominant service delivery model in most sub-Saharan African countries. In Ethiopia, these CBM structures are referred to as WASHCOs (Water, Sanitation and Hygiene Committees), in Tanzania as COWSOs (Community Owned Water Supply Organisations) and in Uganda as WUCs (Water User Committees).

Despite the widespread use of the CBM model since the 1990s, evidence from rural water supply functionality data sets in sub-Saharan Africa suggests that non-functionality i.e. of hand pumps continues to be poor. A study by the Rural Water Supply Network (RWSN) found functionality rates ranging from 30% to 65% based on estimates and studies conducted across 20 sub-Saharan African countries between 2003 and 2009 (RWSN, 2009)[4]. The indication of poor functionality in the data collated by the RWSN is also reflected in other qualitative and quantitative studies into the sustainability of community-managed services. A critical review (Mansuri and Rao, 2004: 18) of the CBM model finds that many studies – most of them reporting evidence from the water sector – highlight the continued need for external support agencies in order to achieve sustainable services. The emphasis on the need for ongoing institutional support for rendering water services sustainable is also highlighted by Harvey and Reed who investigated building blocks for hand pump sustainability (Harvey and Reed, 2004) and by recent multi-country research focusing on rendering rural water supply services more sustainable (Lockwood and Smits, 2011). The recognition that the traditional CBM model needs to complemented by external follow up and support is expressed in the term 'community management plus' coined by sector stakeholders nearly a decade ago (RWSN, 2005). Yet, as discussed further in Section 3, the necessary operationalisation of government-led support and oversight structures is still lacking in all GWI-supported areas covered in this study.

2.1 Government and NGO monitoring of rural water supply service sustainability

When it comes to monitoring the sustainability of rural water supply services in sub-Saharan Africa, a number of trends can be observed: internationally, since the beginning of the new millennium, the monitoring focus in the sector has been on MDG achievement (water supply access), carried out by the Joint Monitoring Programme of the WHO and UNICEF. At country level, sector ministries include the operational status of schemes in regular reporting formats, and in several countries, sector ministries carried out nation-wide water facility inventories, which include a measure of scheme functionality. However, functionality data tends not to be updated regularly and consistently.

The General Comment 15 on the human right to water (UNESC, 2002), adopted in 2010 by the UN General Assembly, includes various factors related to the sustainability of services, and the recent consultation JMP document on post-2015 water supply targets and

4. An updated analysis based on a new compilation of data sets confirms the original trend: Based on three recent national surveys in Liberia, Sierra Leone and Tanzania, initial findings are that around 20% of hand pumps fail in the first year after installation, and that, after eight years, approximately one third of hand pumps are non functional (email communication with Sean Furey, RWSN)

indicators suggests including targets measuring the sustainability of rural water services (WHO and UNICEF, 2012). Some sustainability-related factors are already included in national monitoring frameworks in Ethiopia, Tanzania and Uganda, but frequently, sector operational budgets do not provide sufficient resources to collect and analyse this data on a regular basis, a point that is discussed in more detail in Section 3.

Among NGOs, bi- and multilateral donors, there is also a trend towards strengthening their internal reporting and monitoring practices to capture the sustainability of water services they provide[5]. One bilateral donor goes as far as requesting implementing organisations to carry out sustainability monitoring for 10 years after project completion[6]. Various sector-based NGOs and learning organisations developed conceptual models on rural water sustainability[7], and several initiatives support the development of sector-wide approaches to improve sustainability monitoring[8].

In comparison to the 1990s, sustainability is high on the political agenda, and there are now more stakeholders who actively engage in sustainability monitoring efforts. Furthermore, advances in Information and Communication Technologies provide new avenues for collecting publicly sharing information on rural water supply services (Pearce et al., 2013). The next section explores in more detail what sustainability monitoring entails.

2.2Factors affecting sustainability: what thought models and evidence exist?

In this study, sustainability is understood as in Harvey and Reed's (2004: 7) definition of rural water supply sustainability:

"A water service is sustainable if the water sources are not over-exploited but naturally replenished, facilities are maintained in a condition which ensure a reliable and adequate water supply, the benefits of the project continue to be realised by all users indefinitely and the service delivery process demonstrates a cost-effective use of resources that can be replicated."

Over the years, studies have identified a number of inter-related factors affecting sustainability of rural water services. Sara and Katz (1997) establish the effect of the quality of the project implementation process on the subsequent sustainability of services i.e. the ability of communities making an informed choice about their services and that of training. Mukherjee and van Wijk (2002) draw attention to significantly positive effects of addressing gender and economic equity during project implementation on subsequent water service sustainability. Based on that, they identify five sustainability dimensions: technical, social, financial, institutional and environmental. Harvey and Reed (2004) build on Mukherjee and van Wijk's study (and Abrams 1998, WELL 1998) in their identification of building blocks for hand pump sustainability. They particularly stress the interdependence of different sustainability dimensions already identified. WaterAid's sustainability framework (2011) adds to the understanding of sustainability factors by making an explicit distinction between factors

5. Examples include WaterAid's Post Implementation Surveys (Hinds, 2013), Water for People's Re-imagine Reporting (Burn, 2013), sustainability checks by USAID (Rainey, 2013), and by a UNICEF-supported project in Mozambique (Godfrey, 2013), as well as the sustainability monitoring of schemes implemented under the Global Water Initiative in East Africa since 2010 with one particular emphasis on governance and finance factors (Pankhurst, 2013).
6. See: http://waterservicesthatlast.wordpress.com/2013/04/10/sustainability-checks-clauses-and-compacts-usaid-and-dgis-lead-the-way/ (accessed 31/10/2013)
7. See, for example, WaterAid's sustainability framework (2011), Water First and Improve International's 'Water for Life Sustainability Rating Criteria' (Davis and Smith-Nilson, 2013), and the 'Sustainable Services at Scale' project managed by the IRC International Water and Sanitation Centre (Lockwood and Smits, 2011).
8. This includes a decision support tool developed under the Sustainable Water Service Delivery project in Ghana (Ryan and Sulemani, 2013), the Triple-S project's service delivery indicators (Adank et al., 2013b) and various capacity building initiatives supported by the Dutch Netherland Development Organisation SNV (2013).

during project design and implementation that affect sustainability of services, the effectiveness of the CBM Operation and Maintenance (O&M) system in place and external support provided to CBM after the water system has been constructed. The Triple-S framework (Lockwood and Smits, 2011) takes this further by identifying a new set of building blocks for sustainability, applied to different levels of service provision: the service provider, service authority, and the national enabling environment. Their analysis of sustainability factors takes more of a bird's eye view, focusing on different sector-wide institutional aspects that need to be fulfilled to enable sustainable services[9].

The different factors affecting sustainability by the above studies can be clustered under the following headings:

Quality of project implementation: the quality of the project design and implementation process determines whether the technical and social preconditions for an enabling environment for CBM are established. This relates to the quality of workmanship, construction materials and design works. It also includes the quality of the social mobilisation process to support local ownership (clearly establishing demand including for other purposes than drinking)[10] [11], supporting community informed choice of technology and service, user contribution[12], and the establishment of gender, economic and otherwise representative community management structures[13] and the quality of their training[14]. Many of the consulted studies examining the quality of project implementation are geared at testing the validity of the CBM model rather than as a monitoring indicator for the sustainability of water services.

The users' satisfaction with the service provided: this relates to the quality, quantity, accessibility and reliability of services provided; in particular, whether service represents a relative improvement to alternative sources previously used by community members. How much the service is valued by community members, and in how far it satisfies users' needs can be a key factor affecting scheme O&M and thereby its sustainability.

O&M management, including financial management: this relates to the capacity of the community management structures and the level and supply of local repair work, particularly whether funds cover operational and minor maintenance expenditures[15], the availability of skills and spare parts in case of breakdown (supply chain) and wider support structures to carry out capital maintenance. These factors are contained in early monitoring-for-sustainability reports i.e. the sustainability snapshot developed by WaterAid Malawi (Sugden, 2003). It also captures aspects related to the day-to-day functioning of the committee, namely whether it understands and actively updates its rules, keeps functionality records up-

9. Their building blocks are: professionalisation of community management, increased recognition and provision of alternative service provider options beyond community management, sustainability indicators and targets, post-construction support to service providers, capacity support to decentralised government, learning and sharing of experience, planning for asset management, financial planning support to cover life-cycle costs and regulation of rural services and service providers (Lockwood and Smits, 2011: 2).
10. A study of 121 rural water supply projects by Narayan (1995) found a significant relationship between participation and the overall effectiveness of community-managed water systems.
11. A WaterAid comparative case study in two villages in Ethiopia found that a significant reason for the higher sustainability was the level of priority attributed to water by the community (WaterAid, 2011).
12. Opinions are divided over the importance of capital contribution by communities in fostering ownership and sustainability (WaterAid, 2011). Marks and Davis (2012) find a significant relationship in Kenya but caution that 80% of the targeted households had a private tab, and that there might therefore be a confusion between a wider sense of ownership of the water system and the sense of ownership related to the private tab. Furthermore, they found a low to medium sense of ownership for household who contributed labour compared to those who actively participated in decisions about the system.
13. Established by Mukherjee and van Wijk (Mukherjee and van Wijk, 2002)
14. This is one of the conclusive findings in the study by Sara and Katz (1997).
15. For example, WaterAid (2011) finds that implementers are often not clear about recurrent costs and do not convey clear financial management frameworks to community-based structures and that tariffs are not adjusted upwards to compensate for exemptions; Adank et al (2013a) in a study of three districts in Ghana found that despite high tariffs annual revenues of water user committees struggled to cover O&M expenditures, mainly because of low consumption rates and consumption of no-revenue water. A study by Ryan and Sulemani (2013) in Ghana found that water points at which revenue was raised were more likely to be to be rehabilitated more quickly than those that did not have user fees.

to-date, holds regular meetings and organises re-elections when necessary.

Accountability and transparency: this set of factors describes the representation and the relationship between the community management structure and its user base; for instance, whether the committee represents the broader user community, women's role in the committee, and whether it is free from political capture. Transparency can be measured via, for example, financial record keeping. Accountability relates on the one hand to the user base, measuring the reports back to users, but also in how far the government holds user committees into account via external oversight activities such as audits, and by encouraging CBM structures to obtain a legal standing[16].

External support: this relates to support and control from the service authority such as district-based sector offices including regular monitoring, financial auditing, refresher trainings, and response in case of breakdowns. Indicators related to these factors are captured mainly in recent monitoring initiatives by Water for People and Triple-S.

The predecessors of the GWI GiFT questionnaire build directly on Sugden's (2003) sustainability snapshot, bringing in further governance factors as the tool evolved over the years (Pankhurst, 2013). When comparing the different factors referred to above with the GiFT monitoring indicators of GWI East Africa, GWI's governance monitoring tool covers many of the aspects identified across different studies and reports. The aspects least covered in GiFT are related to the quality of the project design and implementation process and the level of service itself[17]. In comparison with the reviewed documents, GiFT is strongest on the accountability and transparency related factors. As discussed in more detail in Section 4, an insight emerging from the 2013 GiFT survey is that, usually, a combination of different factors affects water scheme functionality and wider rural water service sustainability.

16. Ryan and Sulemani (2013), based on a study of 441 committees in three regions in Ghana found that the following significant relationships between governance factors and scheme sustainability: presence and internal workings of a watsan committee, including gender composition, agreement to make financial contributions for construction and maintenance of water point, representation of non-local ethnic groups in community management structures, role of elders in settling disputes, and the authority of the committee within overall authority structure of the community.
17. GWI included monitoring indicators related to project implementation in previous years, when this measure was relevant to the ongoing implementation process.

3. GOVERNMENT MONITORING FRAMEWORKS, PRACTICES AND CAPACITY RELATED TO O&M OF RURAL WATER SCHEMES IN GWI-SUPPORTED AREAS

This section sets out the key areas of government policy and monitoring frameworks related to rural water supply O&M (Operation and Maintenance) in Ethiopia, Tanzania and Uganda, and analyses to which degree they have been operationalised in the GWI-supported districts.

3.1 National O&M policy models and their operationalisation

The rural water policies in Ethiopia, Tanzania and Uganda rely on the CBM (Community-based Management) model discussed in Section 2 as a backbone for operating and maintaining rural water supply schemes. The CBM model stipulates that O&M of rural water supply schemes rests primarily with the water committees, the WASHCOs in Ethiopia, COWSOs in Tanzania and WUCs in Uganda.

Concerning the gender composition of water user committees, all three countries have similar guidelines. In Uganda, the national O&M guide recommends that WUCs have at least an equal distribution between men and women on committees, and encourages women to take on executive positions (MWE, 2011). In Ethiopia, legal proclamations related to WASHCO establishment hold that at least 50% of water committee members should be women (Woldemichael and Debalike, 2013), and in Tanzania the National Water Policy of 2002 stipulates and equal representation of men and women in COWSOs (Mahay, 2013).

By law, water user committees are to be registered as legal entities who own their infrastructure in all three countries (The United Republic of Tanzania, 2009, MWE, 2011, Woldemichael and Debalike, 2013). However, in all GWI locations visited by the national consultants, legal registration of committees was not fully realised and, in Ethiopia, there was also substantial ambiguity concerning WASHCO asset ownership in at least one case[18].

In all three countries, the national water policies set out that community-based organisations are responsible for the O&M of their rural water facilities, including cost-recovery (MoWR, 1999, The United Republic of Tanzania, 2009, Nyeko et al., 2013). However, in reality, it is recognised that communities may not always be able to afford maintenance costs. In Uganda and Tanzania, policy documents provide that user committees can apply for financial support with local governments (The United Republic of Tanzania, 2009, MWE, 2011). In Uganda, an often mentioned ceiling for WUCs' capital contribution to maintenance costs is 300,000 Ugandan Shillings (116 US Dollars), and in Ethiopia, regional and lower level sector offices allocate maintenance budgets towards capital repairs.

There are different provisions regarding skilled labour to carry out scheme repairs. In all three countries, local government water sector office human resources plans provide for at least one technician, but to which extent these positions are filled varied in GWI-supported districts. Staff levels were lowest in Uganda (see also Table 2). At the same time, Uganda spearheaded strategic support to the private sector via the establishment of Hand Pump Mechanic Associations at district level[19].

The existing O&M arrangements point to a weak operationalisation of the CBM model in all three countries. Next, we turn to national rural water supply monitoring frameworks and their level of implementation in the districts supported by GWI.

18. In Ethiopia, the consultants observed at least one case where the local government water sector office removed assets from one scheme to replace them in a different scheme. This example illustrates the lack of understanding of committees' asset ownership.
19. Yet, evidence about actual preventative maintenance carried out was still lowest in Uganda: only 17% of the surveyed schemes in Uganda reported the implementation of preventative maintenance in the last year compared to 20% of GWI schemes in Ethiopia and 4 out of 10 GWI supported schemes in Tanzania.

3.2 Functionality targets and sustainability-related monitoring

Ethiopia and Uganda have set ambitious functionality targets for rural water supply. The Ugandan National Water Policy of 1999 sets a specific water scheme functionality target of 80-90% (Nyeko et al., 2013). In Ethiopia, the revised Universal Access programme aims to achieve functionality rates above 90% (MoWR, 2009) and in Tanzania functionality targets were under discussion as part of the country's evolving national 'big results now' policy framework[20]. The countries' actual functionality rates, based on recent national scheme inventories (implemented in Ethiopia in 2011, in Uganda in 2010, and in Tanzania in 2013) are displayed in Table 1. They differ widely across the three countries, Uganda, with an 81% functionality rate in 2010 being closest to reaching its actual national target.

Table 1 National functionality rates based on government scheme inventories

	Ethiopia (2011)[1]	Tanzania (2013)[2]	Uganda (2010)[3]
Country-wide functionality	74%	55%	81%

Sources: 1(Debela, 2013), 2(Compiet, 2013), 3(MWE, 2010)

Further to occasional national scheme inventories, Ethiopia, Tanzania and Uganda's government monitoring frameworks contain comprehensive functionality and sustainability-related monitoring indicators, including governance parameters[21]. For instance, in Uganda, the sector quarterly reporting format for rural water supply schemes collects data on the WUC's existence, gender composition, the committee's functionality, and major reasons if this is not the case. In Ethiopia, the WASHCO annual reporting format covers a wide range of parameters, including the committee's gender composition and women leadership, frequency of meetings, tariff and its capacity regarding O&M measured by using Sugden's (2003) sustainability snapshot. In Tanzania, the District Operational Manual includes monitoring parameters related to level and quality of services, COWSO performance, and environmental management (Mahay, 2013). This means that, in theory, much governance data contained in the GiFT questionnaire is captured in the three countries' sector O&M frameworks.

Yet, in reality, monitoring by government is not carried out on a regular basis, and not all the information contained in the format is reported upwards and analysed. The discrepancy between monitoring procedures set out in the policy framework and their actual operationalisation is illustrated in the examples from the GWI locations. In Ethiopia, none of the WASHCOs were informed about their reporting requirements set out in the detailed annual format. In the sector offices of all three woredas, the national reporting formats were not present and sector staff had not carried out any quarterly or annual monitoring, except for Dugda woreda, where the water office implemented an additional scheme inventory in 2012, using a locally designed format. None of the woreda sector offices had a standard filing system that would allow them to consistently store information about the operational status and O&M of individual schemes and related WASHCOs.

In Otuke district, Uganda, where the district water office is required to carry out quarterly monitoring, this task was not performed every quarter. In Same district, Tanzania, the District Water Office, in principle, received monthly reports from COWSOs, but their comprehensiveness could not be established. An NGO, ONGAWA, had previously

20. Personal communication with Janneke Compiet, SNV
21. The government monitoring formats for Ethiopia, Tanzania and Uganda can be found in the national consultant reports.

supported the district government by developing an Access-based data base, but this data was lost in a computer crash, and district staff lacked the necessary computer skills to redevelop and update the database.
The government O&M monitoring practices in the GWI supported districts indicate substantial shortcomings in the implementation of regular monitoring procedures in the three countries. A closer investigation of water sector offices' capacities in the GWI supported districts sheds light on some of the reasons behind this policy-practice gap.

3.3 Water Sector Office working environment and capacity

This section investigates the local government water sector offices' working environment and capacity to monitor and support community-based organisations in scheme O&M. The key findings are summarised in Table 2. In all three countries, district water sector office efforts focused on the construction of new schemes. Furthermore, the following case-specific work environment and capacity constraints emerged:

In Ethiopia, the three woreda water sector offices had four to seven professional staff but the offices' low operational budget of 50-90 US Dollar equivalent per year seriously affected their capacity to monitor and support WASHCOs in scheme O&M. While each woreda employed a pump mechanic, their support to WASHCOs in preventative maintenance and scheme repair was severely hampered by the water offices' lack of budget to cover per diem, transport and access to spare parts. These challenges negatively affected the pump mechanics' motivation to carry out their duties. Furthermore, none of the offices had access to training manuals and standard formats to provide basic support to WASHCOs in matters of financial or other management.

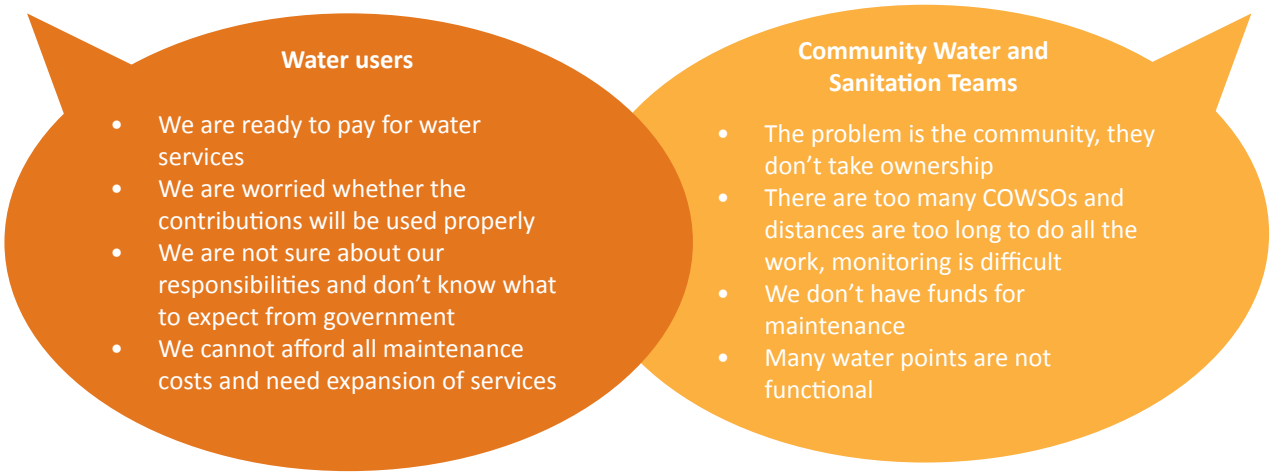
In Otuke district, Uganda, human resources were most scarce. There was only one full-time employed person, the district water officer, who simultaneously acted as the district's engineer. Scheme monitoring, using the government format, was carried out by an intern, and not at the suggested intervals because of budget constraints. The district water officer highlighted the weakness of the local Hand Pump Mechanic Association as a further bottleneck. He was concerned also about inadequate information sharing by partners (NGOs) and the lack of cooperation from the side of communities as a key constraint for implementing O&M activities in the district.
In Same district, Tanzania, the district water office had a high number of staff (22 in total) compared to the districts in the other countries, but the office's capacity to carry out its duties was limited by the lack of professional skills, exacerbated by a high staff turnover. In Same, the district water office also served a higher population (just under 270,000) compared to the Ethiopian (60,000 – 175,000) and Ugandan (80,000) districts. While the actual annual operational budget could not be established for Same, the district office noted that its limited financial resources seriously affected the office's capacity to carry out monitoring field visits and hold meetings. While the office had six computers and laptops in total, only three of the 22 staff members were computer-literate. In practice, the office was not able to operate the MS Access database introduced by the NGO ONGAWA.

Table 2 Water sector office human, financial and logistical capacity and to monitor and support water committees

	Ethiopia Bora, Dugda, Miyo woredas	Tanzania Same district	Uganda Otuke district
Human Resources / water officer to district population ratio and skills	4-7 district staff; woreda population: Miyo 60,160, Bora 70,558, Dugda 174,887 (2012)	22 staff, of which 3 are engineers, District population 269,807 (2012),	1 staff (who is also acting district engineer) and 1 intern; for a population of 80,600 (2010 projection)
Pump mechanics	1 government pump mechanic in each woreda		12 hand pump mechanics across the district
Yearly operational budget	3% of overall district budget, 33-55,000 ETB (50-80USD)	No data	5% of conditional grant for water supply and sanitation to be allocated to monitoring
Vehicles	1-3 motor cycles	1 vehicle (mostly used by an implementing partner), 4 motor cycles	1 vehicle, 1 motor cycle
Computer and internet	2 computers but no internet access	3 laptops, 3 computers, no internet, only 3 staff have computer skills	1 computer, no internet

The evidence from the GWI-supported locations in Ethiopia, Tanzania and Uganda indicates that the capacity of the water sector local government offices to monitor and support the CBM model remains weak in all three countries. In addition to the limited operationalisation of national O&M and related monitoring frameworks, and the sector office capacity constraints outlined above, prejudices and mismatching expectations further hamper the communication between CBM organisations and government offices responsible for supporting them. Figure 1 illustrates underlying concerns of these two stakeholder groups that can lead to communication problems based on the NGO's SNV experience in Tanzania:

Figure 1 Concerns of water users and district water officers, based on a case study in Tanzania



The next section turns to the results of the 2013 GiFT study in the three countries, exploring in detail the factors affecting scheme functionality of GWI-supported rural water supply schemes.

4 SUSTAINABILITY MONITORING RESULTS FROM 2013 GIFT STUDY FOR GWI EAST AFRICA

The 2013 GiFT (Governance into Functionality) survey of GWI-supported water supply schemes covered 219 schemes in total, of which 57 were in Bora, Dugda and Miyo woredas, Ethiopia, 11 in Same district, Tanzania, and 151 in Otuke district in Uganda. As shown in Table 3, a very diverse set of water schemes were implemented or rehabilitated under GWI[22], differing also widely in user numbers. The largest scheme supported by GWI, a gravity scheme in Same District, serves as many as 8,000 people. Compared to that, hand-dug wells constructed under GWI in Uganda's Otuke district serve 271 people on average. Depending on the type of scheme, different governance issues arise. For example, motorised boreholes with high operational costs require greater financial management skills, while water catchment harvesting systems in the drylands of Miyo woreda, Ethiopia, are dependent on careful environmental management of the wider catchment area to sustain water availability at the scheme.

Table 3 Surveyed water facilities by country, scheme type and total number of users

Scheme type	Ethiopia	Uganda	Tanzania
Motorised borehole	25		6
Borehole with hand pump	5	96	
Water point expansion	5		
Roof catchment (rainwater harvesting)	12		
Catchment water harvesting system (sand dam, rock, paved ground)	5		
Traditional well	5	24	
Hand dug well		31	1
Gravity scheme			4
Total number of schemes	57	151	11
Total number of users	101,415	53,508	18,726

This section presents the key findings of governance factors affecting scheme functionality across the GWI supported locations in the three countries, making reference to overall trends but also pointing out differences where these become relevant. While not statistically representative of factors affecting functionality for the region more widely, the findings are valid for the study areas. This notwithstanding, this study's findings provide insights on governance issues that will be relevant in other locations across the region with similar conditions.

4.1 GWI scheme functionality and reasons for poor operational status

The GiFT survey used two different measures of functionality: the scheme's functionality on the day of the survey, which is widely used in sector government water scheme surveys across sub-Saharan Africa, and the focus groups' judgment of the scheme's overall functionality since its establishment.

Depending on the measure of functionality, the results differ. Functionality is most positive in Tanzania, where all 11 schemes were working on the day of the survey[23], followed by a 78.8% functionality rate in Uganda and 61.4% in Ethiopia, leading to an overall functionality figure of 75% for all surveyed GWI schemes. Importantly, this is a sharp drop compared to regional functionality rates in previous years: 92% in 2011, and 95% in 2012[24]. The increase in non-functionality levels for GWI schemes in 2013 reflects wider trends in non-functionality reported across the sub-Saharan Africa reported in Section 2. It indicates the

22 The choice of scheme type depended, among other factors, on water availability and the best suited form of water extraction in the GWI intervention areas.

23 In Tanzania, the 11 schemes supplied a total of 43 taps and 4 cattle troughs, of which 11% were non-functional on the day of the survey.

24 Note that the functionality rates are based on slightly different GWI scheme numbers which limits the validity of a direct comparison across years.

weakness of the Community-based Management model and the importance of investigating and addressing water service sustainability issues.

Table 4 GWI scheme functionality on the day of the survey from 2011 - 2013

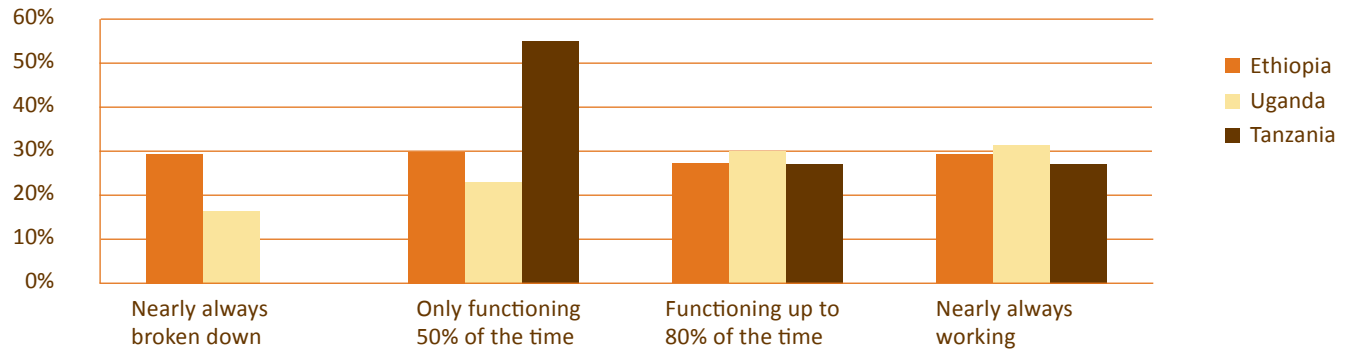
Functionality on the day of the survey	Ethiopia (%)	Uganda (%)	Tanzania (%)	Overall (%)
2013	61.4	78.8	100	75
2012	97	no data	no data	95
2011	94	94	100	92

The results were controlled against a number of contextual factors that might skew functionality rates across the three cases, namely the date of construction/ rehabilitation and schemes that are designed to provide water for only part of the year. Concerning the date of construction/ rehabilitation, there was no important difference across the data: in the three countries, the average construction rehabilitation year was 2010. With regard to seasonality, all the schemes designed to provide water for only part of the year (traditional ponds in Ethiopia), were recorded as functional.

Analysing the country data by type of scheme, in Ethiopia, the highest non-functionality rate (42%) was recorded for roof catchments at schools and health institutions. The same schemes stood out for not having water user committees, a clear indication for a strong interrelationship between non-functionality and governance. In Uganda, non-functionality was higher at traditional wells (33%) and hand-dug wells (35%) than for boreholes (14%). Non-functionality at traditional wells (which are effectively open wells) was due to flooding, which negatively impacted on water quality and made scheme maintenance tedious for the user community.

When taking functionality since establishment as the measure for functionality, a different picture emerges from the one based on functionality on the day of the survey. Uganda performs best, with 31% of the surveyed schemes nearly always working, Ethiopia second with 29% of schemes nearly always working, and Tanzania last with only 18% of the schemes falling in this category.

Figure 2 Functionality status since scheme establishment for Ethiopia, Tanzania and Uganda



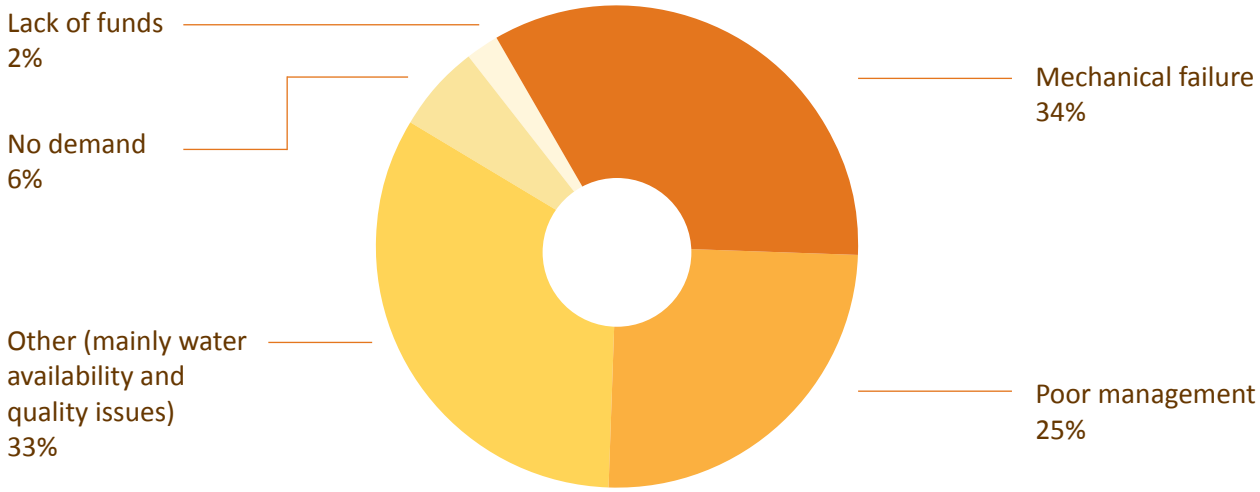
Overall, measuring functionality since the scheme's establishment indicates a less positive picture than the snapshot taken on the day of the survey. Across the three countries, focus group discussants classified 41% (89 of 217 schemes) of the schemes as functioning poorly or very poorly.

Across the three countries, mechanical failure (34%) was the most often given reason for poor functionality, followed by lack of or poor quality water (33%) and poor management (25%). This is illustrated in Figure 3. When analysing the country data in more detail, some further reasons for poor functionality other than governance, emerge. In Ethiopia,

12% of the poorly functioning schemes were related to faults in the original design according to the consultant report. In Uganda, the consultants noted that poor siting led to low yield and, as a consequence, low functionality at two hand-dug wells. Another design issue encountered at the Ugandan GWI schemes was the use of iron pipes, which rusted within two years of installation resulting in poor quality (brownish) water and holes in the pipes, and eventual scheme breakdowns. Design problems negatively impact on governance by putting an undue burden on community management. For instance, low water tables due to poor siting and rusty pipes, two issues encountered in Uganda, require substantive and expensive maintenance activities such as well deepening or pipe replacement. In Tanzania, poor design like elevation of water taps above water tanks affected functionality at two schemes, three schemes run by windmills experienced a lack of sufficient wind power, and at one scheme, functionality was affected by competing water users (khat production) further upstream.

When interpreting the different reasons given for poor or very poor functionality, it is important to note that several reasons may apply for the same scheme and, in fact, influence each other. For example, poor water availability may lead to the overuse of a hand pump, which, in turn, can eventually cause a mechanical breakdown. If the scheme's overall water availability is poor, the committee may be discouraged from repairing the scheme and users may be less willing to contribute to repair costs.

Figure 3 Reasons given for poor and very poor functionality



Water quality is a dimension of water access identified as an important factor affecting scheme sustainability in the wider literature in Section 2. In Uganda and Tanzania, the GiFT questionnaire captured perceptions of colour and taste[25]. In Uganda, 31% of all schemes were judged to have low or medium water quality based on a combination of these two parameters (brownish water due to rusty pipes at boreholes, worms at hand-dug wells and turbidity at traditional wells), and in Tanzania, respondents noted poor or medium water quality for seven out of the 11 schemes. In Uganda, when testing water quality against other variables related to the scheme functionality, there is a significant association with the functioning of the water user committee, fund raising and the scheme's functionality since establishment. Furthermore, there is a nearly significant relationship between water quality and the percentage of people living within the area using the scheme. All these associations point to the complex

25 In Ethiopia, this parameter was not measured because the team used a previous version of the survey tool. This notwithstanding, the Ethiopia report highlights water quality, particularly related to fluoride treatment, as a key area of concern.

relationship between the users' satisfaction with the service (here water quality), the committees' capacity to operate and maintain the scheme and the scheme's functionality.

4.2 Governance factors likely to affect functionality since establishment

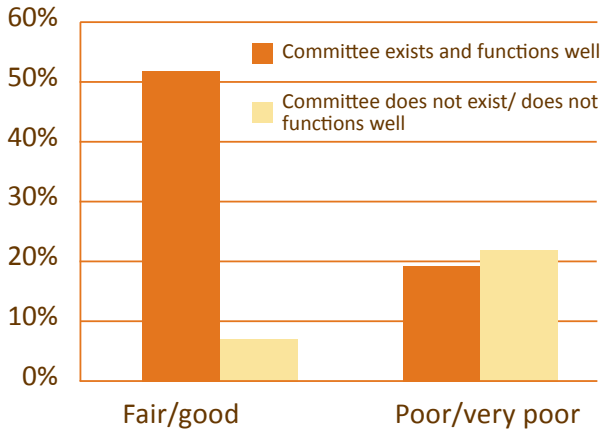
We used the Fisher – Exact test to examine the relationship between scheme functionality since establishment and the results of different variables obtained from the GiFT survey[26]. The test highlighted that some variables are significantly related with functionality while others are not[27]. For Tanzania, no significant relationships emerged because of the small overall sample size (11 schemes). For Ethiopia and Uganda, some overlapping and some different significant associations emerged between governance and scheme functionality since establishment. The results for this test for all countries and comparing significant results between the three countries are documented in Annex 4. Figures 4-6 show the nature of the significant relationship found based on the Fisher-Exact test. For example, in Figure 4, displaying the relationship between committee performance and functionality since establishment, the columns show clearly that schemes with well performing committees have a higher functionality status than those without or poorly performing committees.

The next section examines the significant associations between governance factors and functionality since establishment that apply to the data from all three countries.

4.2.1 Significant associations between governance and functionality relevant overall

Among all the governance factors captured in the GiFT questionnaire, the following emerged as significant across the three countries: the committee's overall performance, frequency of holding meetings, its ability to raise O&M funds, whether there is a care taker or pump minder, keeping functionality records up-to-date, well understood bye-laws, rules and procedures, re-elections since the first round of committee elections, and reporting back to users. Among those, the committee's performance, frequency of meetings and its ability to raise O&M funds showed the highest significance levels (0.00), and these three governance aspects are therefore presented and discussed in more detail below.

Figure 4 The relation between water user committee performance and scheme functionality using all country data



User committees existed in 92% of all schemes, with the exception of water wells in Ethiopia at schools and health institutions. In 24% of all schemes, committees did not perform their tasks well[28]. Figure 4 shows that 51% of the well functioning schemes also had well performing user committees compared to only 8% of the poorly functioning schemes. In their national reports, the Ethiopian and Ugandan consultants commented that causality (whether the committee's performance affects scheme functionality or the other way round) differed from case to case. In some cases, water user committees with poor financial management and who hold no or few meetings may lead to poor scheme functionality. But, the opposite relationship also applies: in some cases, the

26 Functionality since scheme establishment was used because this measure brought up more significant associations in most cases compared to functionality on the day of the survey. To test its association with governance, the variable was clustered into two categories: (1) very poor and poor and (2) fair and good.
27 P-values are two-sided and based on the Fisher-Exact test. For this test, a p-value <0.05 is considered significant at the 95% confidence level.
28 The functioning of a committee is based on a more detailed assessment of a number of sub-questions, related to the operation and maintenance capacity and practices of the water user committee.

technical breakdown of a scheme caused the committee to stop holding meetings and collecting funds, particularly if community members have access to alternative – protected or unprotected water sources. This association therefore needs to be interpreted by looking at additional factors that may affect scheme sustainability.

Figure 5 displays the relationship between the frequency of committee meetings and scheme functionality since establishment, using all country data. Among all schemes, 45% showed a good functionality and committees holding regular meetings, while only 14.5% held regular meetings at poorly functioning schemes. The frequency of committee meetings could be interpreted as a proxy-indicator for the overall level of activity of the water user committee.

Figure 5 The relationship between the frequency of committee meetings and functionality using all country data

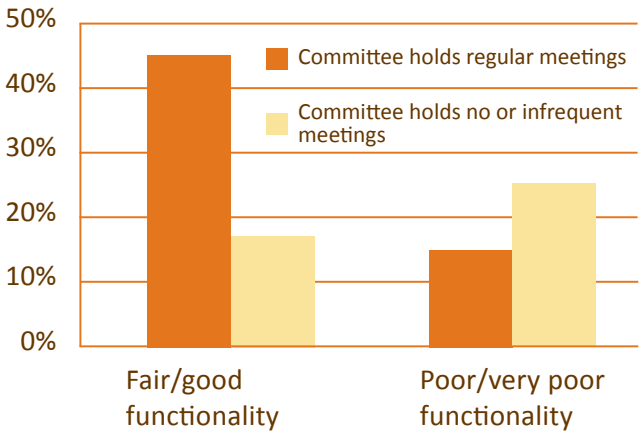
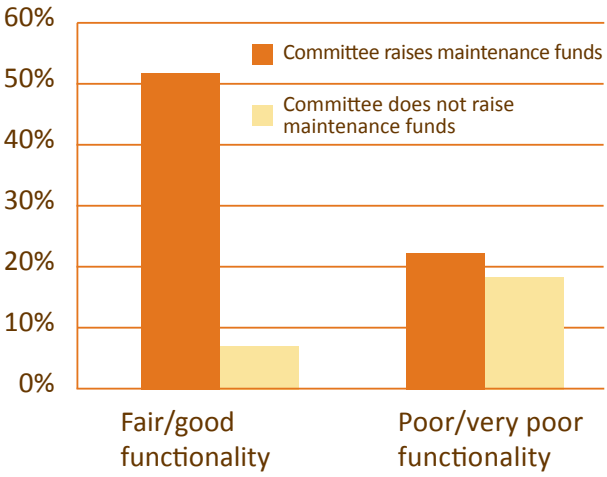


Figure 6 presents the relationship between fund raising and scheme functionality since establishment using all country data. In 51% of all cases schemes, maintenance fund collection coincides with a fair or good functionality while only 8% of all schemes with a fair/good functionality no maintenance funds were raised. The importance of financial management applies to schemes with low operational costs (traditional and hand-dug wells, and boreholes fitted with hand pumps) in Uganda as well as for the more mixed set of schemes in Ethiopia. The finding indicates that priority could be given to continued engagement with supporting user committees in their financial management capacity.

Figure 6 The relationship between raising maintenance funds and functionality across using all country data



The next set of factors showed a significant two-sided value association with functionality in only Ethiopia or Uganda.

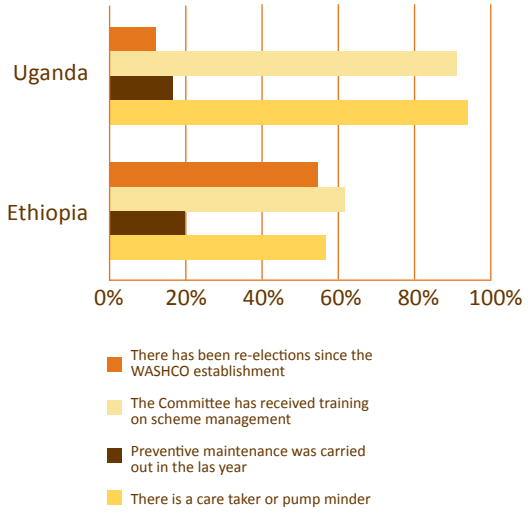
4.2.2 Significant governance factors affecting functionality relevant in one country only

For Ethiopia, the following additional factors were significantly related to scheme functionality since establishment:

- the existence of a care taker or pump minder;
- preventative maintenance;
- whether there have been re-elections since the first water user committee election; and
- whether the water user committee has been trained on scheme management.

The results for these parameters, displayed in Figure 7, provide some explanation as to why there is a significant relation for Ethiopia but not Uganda. Concerning re-elections and training received, Ethiopia shows a much higher number of re-elected committees (55%) compared to Uganda (12%). Conversely, in Ethiopia, less than two thirds of the committees (62.5%) had received training on scheme management compared to Uganda where 91% had received training. This indicates that, in Ethiopia, re-elections of user committees need to be followed up with refresher trainings to support scheme functionality.

Figure 7 Comparison of governance factors



Concerning the existence of a care taker, this factor might not be significantly related with functionality in Uganda because nearly every committee (94%) had a care taker, whereas in Ethiopia, only 57% engaged such a person[29]. More analysis might be needed as to which of the schemes do not employ a care taker in Ethiopia before recommending a particular course of action.

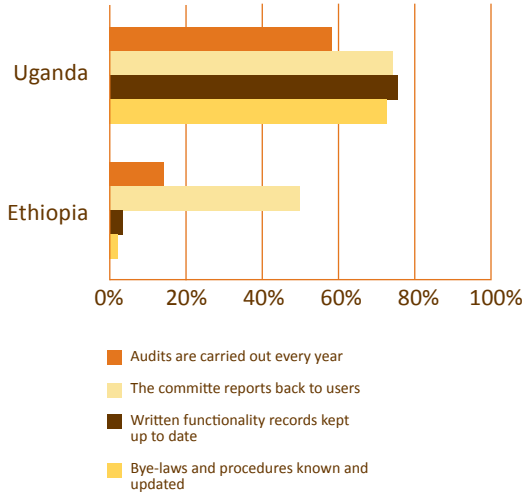
Finally, preventative maintenance was carried out in 20% of all Ethiopian schemes compared to 17% of the Ugandan schemes. While the percentage figures are similar for both countries, this factor was significantly related to functionality only for Ethiopia. This significant relationship in Ethiopia but not Uganda could be because of the more complicated technologies in the former country's GWI-supported schemes – be it motorised boreholes, fluoride treatment technology or water catchment-related schemes – which all require regular maintenance or environmental management activities. Importantly, the Ugandan consultant team highlighted preventative maintenance as vital for scheme functionality despite the non-significant relationship in the 2013 GiFT survey.

In Uganda, the following factors, displayed in Figure 8, broadly related to transparency and accountability, were significantly related to scheme functionality:

- that bye-laws, rules and procedures are known and updated;
- functionality records are kept up-to-date;
- the committee reports back to users; and
- audits are carried out every year.

An interesting trend across the governance variables significant for Uganda but not Ethiopia is their higher overall percentage of the specific tasks being delivered compared to Ethiopia. For example, in Uganda 59% of all surveyed schemes had audits carried out every year compared to only 13% for the Ethiopian GWI schemes. Similarly, in Uganda, 75% of the visited committees kept full records and 72% of all committees stated that they had well understood bye-laws, rules and procedures. In Ethiopia, where just 2.5% of the committees had up-to-date functionality records and 0.5% were clear about their bye-laws, this was not significantly related to functionality. This may be because in cases where nearly no communities keep records, it is difficult to discern a relationship but in cases where differences between committee practices occur, up-to-date records and well understood bye-laws can be interpreted as proxy indicators for the performance of the water user committee. This means that, potentially, these factors might also show a significant relationship with functionality once a more nuanced picture emerges for GWI schemes in Ethiopia.

Figure 8 Governance factors significant for Uganda but not Ethiopia



29 The existence of a care taker is one variable that showed a higher significant association with functionality on the day compared to functionality since scheme establishment.

The next section briefly visits some of the governance factors that were not significantly associated with scheme functionality, such as the women's role in water user committees, a governance issue of importance in GWI's Phase 1 interventions.

4.2.3 Governance factors that did not show a significant association with functionality

The gender composition of water committees and women's role in committees did not come out as a significant factor for scheme functionality in the country-specific and overall analysis. Across the three countries, women representation exceeded that of men for 33% of the committees. In Ethiopia, women representation reached above 50% in 15% of the schemes, compared to 35% in Uganda and 67% in Tanzania.

Figure 9 Women's decision making power in water user committees

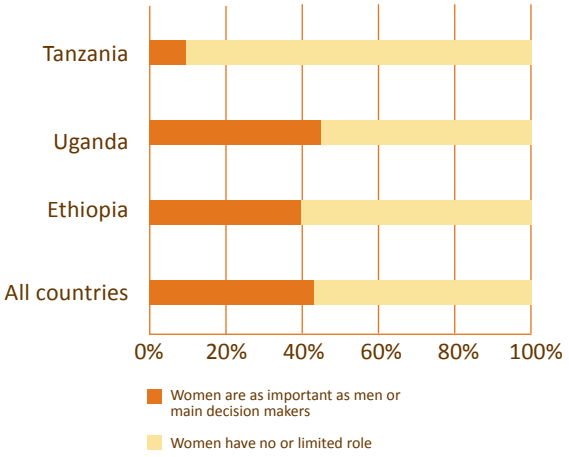


Figure 9 displays the role of women's voices the water user committees' scheme-related decision making. Despite the high representation of women in committees in Tanzania (more than men for 6 out of 9 schemes), women's role in committees were weakest there (11%), followed by Ethiopia (40%) and Uganda (45%). While women generally still play a less important role than men, the data for Uganda and Ethiopia is encouraging. At the same time, it is interesting that the results from this survey do not confirm that women's role in scheme management is associated with scheme functionality. This issue might require further investigation, looking in more detail at other governance factors facilitating or inhibiting gender roles and scheme functionality.

Another parameter worth mentioning for not suggesting a significant relationship with scheme functionality is whether there is a mechanic within the community who undertakes repairs. Sugden (2003) suggests access to maintenance skills as one of three key inputs for scheme functionality. The reason why this seems not to influence the functionality may have something to do with the formulation of the question. While there may not be such a person in the community, the water user committee may still be able to gain access to repair skills from the wider area.

The next section discusses this survey's results in light of identifying factors that are likely to predict rural water scheme functionality.

4.2.4 Which factors are best suited to predict water system sustainability?

Overall, the results from GWI's GiFT survey confirm the findings from the wider literature discussed in Section 2, that scheme sustainability is affected by a combination of factors. The factors affecting scheme functionality in the case of GWI schemes included:

- Issues related to the project implementation process: in this case, physical design issues that negatively affect scheme functionality or make scheme management more tedious and costly or weaknesses in establishing CBM structures such as the lack of committees at schools and health institutions in Ethiopia or failure to support legal registration of CBM structures in Tanzania;
- user satisfaction with the service: for GiFT survey results, this relates to various water quality issues such as worms, brownish and turbid water in Uganda, salty water in Tanzania and health hazards due to high fluoride contents in Ethiopia;
- a well functioning CBM structure, including its O&M

capacity and functioning accountability structures: under GiFT, significant factors across the three countries emerged for the committee's overall performance, frequency of holding meetings, its ability to raise maintenance funds, whether there is a care taker or pump minder, keeping functionality records up-to-date, well understood bye-laws, rules and procedures, re-elections since the first round of committee elections, and reporting back to users;

- the provision of external support and oversight: i.e. provision of training, preventative maintenance and financial audits were found to be significant in the GiFT survey.

The strongest association between scheme functionality and governance factors across the three countries was found for the water user committee's overall performance, the frequency of their meetings and their capacity to raise maintenance funds. Regardless whether poor management affects scheme functionality or whether scheme breakdown leads to a subsequent breakdown of management structures, these findings confirm that water user committees require continued follow up from local government water sector offices, particularly regarding financial management, in the form of auditing, refresher trainings and other forms of support such as linking financial savings to village savings and loan associations.

Access to financial resources is one of three indicator's used in Sugden's (2003) sustainability snapshot related to O&M capacities, the cluster of sustainability indicators most widely referred to in the literature. The other two indicators used by Sugden are access to maintenance skills and access to spare parts. The GiFT survey did not find a significant association between scheme functionality and whether there is a mechanic within the community who undertakes repairs, and it did not include a question about spare part availability. However, spare part availability was noted as a constraining factor by water sector staff in Ethiopia and the non-significant association with repair skills may be related to the specific formulation of the question in the GWI survey.

A finding that comes out strongly via the association between water quality perceptions and various governance factors is the level of complexity determining the relationship between a number of different governance and non-governance related factors, which, together impact on scheme functionality. An important condition for good scheme governance, and related to that, scheme functionality, is whether the user community values the service it receives. Data from Uganda shows that schemes with water quality issues have a lower user base from among the community residing the scheme catchment area. In addition, the Uganda data also finds a significant association between perceptions of water quality being poor and the water user committee's performance, its capacity to raise funds and scheme functionality. This indicates that levels of user satisfaction provide important additional insights to governance-related indicators to predict water service sustainability.

The differences in significance of governance factors affecting scheme functionality in Ethiopia and Uganda highlight the importance of investigating in more detail the relationship between individual governance factors and scheme functionality, and of using contextual information for further interpretation. For example, in Ethiopia, the combination of a higher percentage of re-elections, in combination with fewer committees who had received training indicates the need for refresher trainings. Finally, it is important to go beyond overall statistical analysis and to differentiate between management needs related to different scheme types and to local contexts: this is evident in Ethiopia where (catchment related) schemes in dryland areas such as sand dams and rock catchments require continued environmental management activities, while motorised boreholes with high operational costs and schemes with complicated fluoride treatment arrangements require strong financial management and technical skills. In Tanzania, where competing demands over water from upstream users for irrigated agriculture affected water availability at some schemes, the legal registration of water user committees and supporting them in establishing their water rights may provide entry points for improving service levels.

5 CONCLUSIONS AND RECOMMENDATIONS

This regional synthesis paper has brought together findings from a literature review on factors affecting rural water sustainability with findings from a three-country study of GWI-supported schemes in a total of six districts in Ethiopia, Tanzania and Uganda. The study combined a structured questionnaire (GiFT) conducted at 219 GWI-supported schemes with semi-structured interviews with district water sector stakeholders, investigating the monitoring and support practices and capacities to water user committees in GWI supported local governments.

5.1 Summary of findings

The literature review of existing approaches to measuring water service sustainability found that a complex set of governance and non-governance related factors affects rural water supply sustainability. The factors identified in the sector literature can be clustered under the following headings:

- quality of project implementation (related to hardware design and implementation and to the setting up of CBM structures),
- user satisfaction with service provided (related to water quality, quantity, lack of alternative sources),
- water user committees' O&M capacity (i.e. ability to raise funds, access to repair skills and spare parts),
- water user committee transparency and accountability to their user base, and
- external support to water user committees (e.g. via an enabling sector policy framework, and functioning support structures available at local government level).

The GiFT survey found that scheme functionality on the day of the survey across GWI schemes in Ethiopia, Tanzania and Uganda was 75% in July 2013. This represents a sharp drop of functionality levels of GWI schemes compared to 92% in 2011 and 95% in 2012, the functionality rates recorded under GWI Phase 1. Scheme functionality since the scheme's establishment confirmed concerns related to sustainability of the services: in 42% of all cases focus group discussants classified their schemes as functioning poorly (less than 50% of the time) or very poorly (nearly always broken down). The sharp drop in functionality rates and overall poor service levels after only one year of completing GWI phase 1 reflects wider trends from country wide data sets. For example, recent figures for hand pump functionality based on recent country-wide scheme surveys in Liberia, Sierra Leone, and Tanzania show a 20% drop in hand pump functionality after the first year of installation.

When analysing the governance factors that significantly affect scheme functionality of GWI schemes, the overall performance of water user committees (including its frequency in holding meetings), and the committees' financial management capacity emerge as most significantly related to scheme functionality across the three countries. Additional governance factors emerged for Ethiopia and Uganda, but not for Tanzania where the sample size was low (11 schemes).

In Ethiopia, non-functionality was highest at schools and health institutions that did not have a dedicated CBM structure in place. Also in Ethiopia, where 55% of committees were re-elected since the scheme's establishment, and where 37.5% of the committees had not received training, these two factors also showed a significant relationship with scheme functionality. These results point to a gap in the provision of refresher trainings when new CBM representatives are elected. Another significant factor in Ethiopia was preventative maintenance (20%) and the existence of a care taker or pump minder (in place in 57% of the committees). The significance of this factor may be related to the higher technical skills related to scheme management for the Ethiopian GWI-supported schemes.

In Uganda, additional factors supporting the assessment of the committee's transparency and accountability emerged as significant, particularly the committee's knowledge about bye-laws, rules and procedures (72%), whether the committee kept functionality records up-

to-date (75%), whether it reported back to its user base (74%) and whether an external audit was carried out in the last year (59%). For Ethiopia, fewer committees practiced these management activities, which may explain why they did not show a significant relationship.

Further to governance factors, the GiFT survey found that perceptions of poor water quality were significantly related to the committee's performance, including on financial matters, and to the scheme's functionality. Design problems during project implementation that were not rectified after the project implementation phase were shown to directly or indirectly impact on scheme functionality (directly by leaving the scheme non-functional, and indirectly by rendering scheme management more tedious and/or costly, thereby negatively impacting on the scheme's functionality on the medium to long run).

In cases where GWI schemes experience design issues, GWI can take direct remedial action to improve scheme functionality and sustainability. Further to that, the governance issues impacting on scheme sustainability point to the need for continued support of CBM structures also identified in the wider literature.

When analysing local government water sector offices' capacity to support and oversee CBM committees in GWI supported districts, clear gaps emerge that mirror the governance problems experienced by water user committees. All districts experienced a combination of serious human resources, financial resources and logistical capacity constraints that strongly hampered government water sector staff abilities to carry out the duties stipulated in the national O&M and related sector monitoring frameworks. For example, financial management problems at CBM level were mirrored with a lack of skills and operational funds to adequately train, support and oversee financial management of water user committees. In Otuke, Uganda, human resource constraints were most pronounced: the district water officer, the only full time sector staff member, simultaneously acted at the district engineer while overseeing the 394 water schemes in Otuke. In Ethiopia, budget constraints were a key inhibiting factor to supporting CBM structures. The three district water offices only had the equivalent of 50 to 80 US dollars available to them per year for all operational activities, including monitoring. This meant that government employed pump mechanics were often not able to carry out their preventative maintenance duties or to respond to repair requests. The absence of manuals and even of reporting formats at all three woreda offices further indicates the lack of overall operationalisation of O&M arrangements in Ethiopia. In Tanzania, while staff levels were more positive (a total of 22 staff members) only three members actually had computer skills thereby limiting the office's capacity to properly manage scheme data received from water user committees.

The capacity constraints of local government water offices points to wider political economy factors that limit the provision of sufficient support and oversight to CBM structures in the water sectors of the three countries. For instance, while Uganda and Ethiopia had set functionality targets (between 80-90% in Uganda and over 90% in Ethiopia), the responsibility and burden for making services sustainable rested with the CBM structures without the provision of adequate support from the side of the water sector offices.

Because of the predominant project delivery cycle as a policy model in all three countries, water staff engagement concentrated on the project implementation phase compared to support and oversight once water schemes are handed over to CBM structures. Furthermore, a diverse set of actors including NGOs are involved during the project implementation phase, but once the project is completed, support diminishes substantially, leaving poorly capacitated and incentivised sector offices in a position where they are hardly able to carry out their professional duties.

As long as the main responsibility for O&M rests with the CBM organisation, water sector staff incentives for carrying out regular monitoring and addressing poor functionality/ enabling greater sustainability of CBM organisations is

likely to remain limited. Addressing the overall incentive structures and related policy frameworks may be necessary to significantly move along the responsiveness of sector government to CBM organisations.

The final section of this synthesis paper draws out recommendations related to national and regional sector governance. Further detailed recommendations related to GWI-supported schemes are contained the national consultant reports.

5.2 Recommendations

The GiFT analysis shows that across all countries, two governance factors stand out as most significantly related to water services sustainability: financial management and the performance of the CBM structure linked to the water scheme. These two factors are the subject of the first two recommendations:

Strengthen financial management at scheme level to improve sustainability. A number of activities at district level can be implemented to support CBM financial management including:

- encourage CBM structures to link to existing Village Savings and Loan Associations or establish such schemes
- revise and deliver financial management trainings, including refresher trainings that provide a realistic assessment of individual scheme income and expenditure dynamics with recommendations for tariff setting;
- more regular, external audits of CBM income and expenditures.

Support internal CBM governance. The results from the country studies indicate that different entry points are needed in each country/local government. For example, in Ethiopia, functionality was significantly related with high levels of committee re-elections (55%) and low levels of trained committees (37.5% not trained). Health institutions and schools did not have any committees, clearly making this a priority support area at GWI-supported schemes in Ethiopia.

In Same, Tanzania, supporting CBM structures in obtaining a legal status to strengthen their standing in claiming their water rights is a recommendation in at least one case where the community's demand for domestic water clashed with upstream water demands for cash crops.

Further to governance, the country reports also indicate that GWI may want to revisit design-related functionality problems. For instance, in Same, Tanzania, water point was elevation above the water tank affected functionality at two schemes, and three schemes run by windmills experienced a lack of sufficient wind power. Frequent interruptions in power supply can significantly affect the reliability of water services and thereby limit the overall sustainability of the scheme. At the same time, finding alternative sources of power is likely to be beyond the capacity of the local water committee.

Take into consideration the multiplicity of factors affecting scheme sustainability particularly the relation between user satisfaction and CBM governance: in addition to governance-related factors, water quality and water availability emerged as strong factors affecting sustainability in all three countries. The data also showed the strong interrelation between water quality levels and governance factors that ultimately affect scheme sustainability. This finding confirms indications from the wider literature that the user satisfaction of the service is an important factor for achieving sustainable water supply. The findings of this synthesis report show a wide range of possible water quality problems: managing fluoride treatment in Ethiopia's Rift Valley, issues with salty water in Same, Tanzania, and rusty pipes leading to brownish water and corroding infrastructure in Uganda. Each problem requires a different monitoring and related remedial strategy.

At district level, GWI could support water sector offices to further build a strategic outlook on supporting sustainability of services. There are already some positive developments in improving O&M capacities at district level, for instance in Uganda, in facilitating the establishment of hand pump mechanic associations. Such

efforts need to be taken further to arrive at a situation where district water offices are able to provide strategic and systematic support to CBM structures.

GWI could support local water offices in their efforts to advocate for an increased operational budget, staffing levels and skilled staff, depending on what is most needed in the specific district. Furthermore, GWI could highlight the need to close the policy-practice gap when it comes to monitoring identified in this report. All three countries have national monitoring formats that contain some of the governance parameters used in the GiFT questionnaire but none to do regularly collect, let alone analyse such data in the GWI-supported districts.

GWI could work towards moving sustainability higher up on the political agenda in Ethiopia, Tanzania and Uganda. Internationally, momentum is currently building up through the negotiations of the Sustainable Development Goals, which will replace the current MDG after 2015. A sector consensus has been built around an international consultation document that suggests new targets and indicators. However, the content of the post-2015 monitoring agenda is still under negotiation. In the meantime, policy learning initiatives such as the GWI can support a sustainability agenda in the East Africa region by drawing attention to the findings of this report i.e.

- low levels of scheme sustainability presenting the two different measures of functionality,
- the key governance factors affecting functionality, and the interaction of different governance and non-governance factors;
- the current policy practice gaps in functionality and governance-related monitoring at strategic sector meetings.

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Annex 1: key informant interview guide on monitoring practices and capacity at local government level

Water, sanitation and hygiene related actors and their levels of collaboration with water office: Which NGOs are currently operating in the districts – on water supply, sanitation and hygiene, but also maybe other development programmes? What is the current level of collaboration with the district government / water office? Is there currently any active collaboration between water, health and education (and possibly other sectors) regarding water supply, sanitation and hygiene activities?

Previous monitoring exercises in the area: Was there a water point mapping survey carried out recently? When? What aspects did it cover (e.g. get data collection format)? Does the water office have the data? If yes, in which format? What does it use it for? Could we get access to the data? How? Is there a contact person that we could get in touch with regarding the data? What additional data would the water office like to obtain to support the monitoring of scheme sustainability?

Data on functionality: What is the most recent data on scheme numbers and functionality rates, ideally by sub-district, and any data available on sanitation, what is the total population of the district?

Local water office capacity for monitoring: What is the current capacity of the water office (human resources: number of employees, their positions, education level), vehicles, time, operational budget / expenditures, access to computer, internet; who, among the water office staff has computer skills, including excel or access?
Monitoring practices: What monitoring activities does the local water office currently carry out? How often?

Annex 2: GiFT (Governance into Functionality Tool) 2013

Introduction: We are (Names) a team of consultants contracted by CARE to review the functionality and sustainability conditions as well as develop monitoring systems for GWI 1 water schemes in [] district. To do that, we are conducting assessment by interviewing community, districts leaders and NGOs implementing water projects in the district. The overall objective of the assessment is to identify governance and other factors affecting scheme functionality, and to develop a community-based, local government supported monitoring strategy / protocol to strengthen the governance of water schemes.

Effective governance of water and sanitation schemes is central to their long-term functionality. This tool provides a snapshot of the governance and functionality status of water and sanitation schemes and is thereby a way to explore current scheme preparedness for future sustainability and to plan how best to strengthen governance in order to support longer-term functionality, including at times of acute water stress in low-rainfall years. The tool is an assessment by users and managers; it identifies areas that require their attention, as well as that needed from those charged with providing external support, including government, NGOs and the private sector.

The interview will last approximately 30-45 minutes. We will take as little time as possible. Are there any questions before we start?

Snapshot table:

Data type	Answers			Notes
1. Basic data				
1.1 Date of interview (dd/mm/yy)				
1.2 Identification of scheme				
1.3 Scheme name				
1.4 Scheme type				
1.5 Extraction type				
1.6 Date of scheme establishment				
1.7 Date of rehabilitation				
1.8 Partner				
1.9 Village				
1.10 Sub-county				
1.11 GPS coordinates of WP	X:	Y:	Z:	
1.12 No of people served by the water scheme				
1.13 Total community population (village)				
1.14 Respondent composition	Male_____	Female_____		
2. Functionality snapshot				
2.1 Is the scheme working and providing water today?	Yes _____	No _____		
	If no, how long has it not been working? _____(approx. # of days)			

2.2 What has scheme functionality been like since establishment?	1. Very poor (nearly always broken down) 2. Poor (only functioning 50% of the time) 3. Fair (functioning up to 80% of the time) 4. Very good (nearly always working)		
2.3 If poor or very poor, why?	1. No demand for scheme 2. Lack of funds 3. Mechanical failure 4. Poor management 5. Conflict 6. Other, please specify:		
2.4 If the scheme has sometimes stopped, how was the problem fixed?	1. Only resolved after other outside intervention, e.g. NGO 2. Only resolved after government intervention 3. Resolved internally, people paid 4. Other, please specify:		
2.5 Has there been wider water resource protection around the scheme?	Yes _____	No _____	
2.6 If yes, what has been done?	1. Buffer Zone protection 2. Terracing 3. Tree planting 4. Other ridging and bunding 5. Artificial recharge 6. Other, please specify:		
2.7 How do you describe the taste water?	1. Salty 2. Tasteless 3. Others (specify)		
2.8 How do you describe the color of water?	1. Milky 2. Clear 3. Brown 4. Others (specify)		
2.9 Has there been routine water quality check?	Yes_____	No_____	
2.10 If users consume water for production, what is it for?	1. Horticulture 2. Animals 3. Brick making 4. Food / drink preparation 5. Other, please specify		
3. Sanitation Sustainability			
3.1 What proportion of the community has access to latrine?	_____ %		
3.2 What proportion of latrines has accompanying hand-washing facilities?	_____ %		
3.3 If there are new community members, what have they done to access latrine?	1. Built their own latrines 2. Used existing latrines 3. Don't use latrines		
4. Scheme Financing			

4.1 Does the community raise funds to maintain water and sanitation facilities?	Yes _____	No _____	
4.2 How are funds raised?	1. Pay per use (jerry-can) 2. Flat rate per household 3. Other, please specify:		
4.3 Do these funds adequately cover operation and maintenance?	Yes _____	No _____	
4.4 Do these funds cover capital replacement costs?	Yes _____	No _____	
4.5 Is there a VSLA scheme linked to the water supply scheme?	Yes _____	No _____	
4.6 Has there been preventative maintenance carried out in the last year?	Yes _____	No _____	
5. Management approach			
5.1 What is the situation regarding the WASHCO?	1. Does not exist 2. Exists but does not function 3. Exists and functions		
5.2 Does the WASHCO hold meetings?	4. Regular meetings 5. Sometimes holds meetings 6. Never holds meetings		
5.3 Has WASHCO been trained on water scheme management?	Yes_____	No_____	
5.4 Is there a caretaker or pump minder?	Yes _____	No _____	
5.5 If yes, what is the situation regarding care-taking?	1. Exists but does not function 2. Informal voluntary based system exists for care-taking of the scheme 3. Formal system exists, care-takers are paid for their service		
5.6 Is there a mechanic within the community who undertakes repairs?	1. Does not exist 2. Exists and has repaired, but not successfully 3. Exists and has repaired successfully		
5.7 What is the role of women within WASHCO decision making?	1. No role 2. Limited role 3. As important as men 4. Main decision makers		
5.8 What is the composition of the WASHCO	Male_____	Female_____	
6. User group			
6.1 For people living within the water scheme's coverage area, who uses the scheme?	1. Very few households (less than 10%) 2. Less than 50% of households in the community 3. More than three quarters of households 4. All households		
6.2 What is the dynamic in number of households around water scheme?	1. Reducing 2. Relatively stable 3. Growing		

7. Accountability and Responsiveness			
7.1 Have WASHCO elections held been open and transparent?	1. No		
	2. Elections are held but they are neither open nor transparent		
	3. Yes, both		
7.2 After the first WASHCO elections, has there been re-elections?	Yes _____	No _____	
7.3 Does the WASHCO have by-laws, i.e. clear rules and procedures that are known and updated as required?	1. No		
	2. Some rules and procedures known but there is some uncertainty over them		
	3. Yes, known and updated as required		
7.4 Does WASHCO report back to users, e.g. about financial status of the scheme?	Yes_____	No_____	
7.5 If yes, what is the mechanism of reporting back to users?	1. Meeting		
	2. Notice		
	3. Report		
	4. Other (specify)		
7.6 Are written functionality records kept up-to-date?	1. No		
	2. Some records are kept but they are incomplete		
	3. Yes, full records are kept		
7.7 Are there audits and/or other financial checks carried out every year?	1. No		
	2. Yes, but not every year		
	3. Yes, every year		
7.8 Have you had any assistance with major problems/break-downs which were beyond the community's ability to resolve?	Yes _____	No _____	
7.9 If yes by whom	1. Local government		
	2. Private sector		
	3. NGO		
	4. Other (specify)		

8. Follow-up actions (enter 1 where action is needed 1 or 2 where action is not needed)						
Action	Time frame		Responsible		Level of importance to future sustainability	
8.1 Minor repair Description:	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.2 Major repair or rehabilitation Description:	Six months		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.3 New scheme Description:	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.4 Election of WASHCO	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	

8.5 Recruitment of care taker	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.6 Recruitment of pump mechanic	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.7 Payment of user fee	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.8 Accountability (bye-laws, financial audit, financial reporting)	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.9 Water scheme protection (construction/rehabilitation of fencing water point, construction/rehabilitation of apron and soak pit)	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.10 Spare parts	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.11 Tool kits	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.12 Training WASHCO (describe)	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.13 Training Pump mechanics (describe)	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	

Annex 3 GiFT (Governance-into-Functionality Tool) 2014 suggestions

Introduction: We are (Names) a team of consultants contracted by CARE to review the functionality and sustainability conditions as well as develop monitoring systems for GWI 1 water schemes in [...] district. To do that, we are conducting assessment by interviewing community, districts leaders and NGOs implementing water projects in the district. The overall objective of the assessment is to identify governance and other factors affecting scheme functionality, and to develop a community-based, local government supported monitoring strategy / protocol to strengthen the governance of water schemes.

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1.11 GPS coordinates of WP	X:	Y:	Z:	
1.12 No of people served by the water scheme				
1.13 Total community population (village)				
1.14 Respondent composition	Male_____	Female_____		
2. Functionality snapshot				
2.1 Is the scheme working and providing water today?	Yes _____	No _____		
	If no, how long has it not been working? _____(approx. # of days)			

2.2 What has scheme functionality been like since establishment?	1. Very poor (nearly always broken down) 2. Poor (only functioning 50% of the time) 3. Fair (functioning up to 80% of the time) 4. Very good (nearly always working)		
2.3 If poor or very poor, why? (you can provide more than one reason)	1. No demand for scheme 2. Lack of funds 3. Mechanical failure 4. Poor management 5. Conflict 6. Other, please specify:		
2.4 If the scheme has sometimes stopped, how was the problem fixed?	1. Only resolved after other outside intervention, e.g. NGO 2. Only resolved after government intervention 3. Resolved internally, people paid 4. Other, please specify:		
2.5 Has there been wider water resource protection around the scheme?	Yes _____	No _____	
2.6 If yes, what has been done?	1. Buffer Zone protection 2. Terracing 3. Tree planting 4. Other ridging and bunding 5. Artificial recharge 6. Other, please specify:		
2.7 How do you describe the taste water?	1. Salty 2. Tasteless 3. Others (specify)		
2.8 How do you describe the color of water?	1. Milky 2. Clear 3. Brown 4. Others (specify)		
2.9 Has there been routine water quality check?	Yes_____	No_____	
2.10 If users consume water for production, what is it for?	1. Horticulture 2. Animals 3. Brick making 4. Food / drink preparation 5. Other, please specify		
3. Sanitation Sustainability (Suggest not to collect this data)			
3.1 What proportion of the community has access to latrine?	_____ %		
3.2 What proportion of latrines has accompanying hand-washing facilities?	_____ %		
3.3 If there are new community members, what have they done to access latrine?	1. Built their own latrines 2. Used existing latrines 3. Don't use latrines		

4. Scheme Financing			
4.1 Does the community raise funds to maintain water and sanitation facilities?	Yes _____	No _____	
4.2 How are funds raised?	1. Pay per use (jerry-can) 2. Flat rate per household 3. Other, please specify:		
4.3 Do these funds adequately cover operation and maintenance?	Yes _____	No _____	
4.4 Do these funds cover capital replacement costs?	Yes _____	No _____	
4.5 Is there a VSLA scheme linked to the water supply scheme?	Yes _____	No _____	
4.6 Has there been preventative maintenance carried out in the last year?	Yes _____	No _____	
5. Management approach			
5.1 What is the situation regarding the WASHCO?	1. Does not exist 2. Exists but does not function 3. Exists and functions		
5.2 Does the WASHCO hold meetings?	1. Regular meetings 2. Sometimes holds meetings 3. Never holds meetings		
5.3 Has WASHCO been trained on water scheme management?	Yes_____	No_____	
5.4 Is there a caretaker or pump minder?	Yes _____	No _____	
5.5 If yes, what is the situation regarding care-taking?	1. Exists but does not function 2. Informal voluntary based system exists for care-taking of the scheme 3. Formal system exists, care-takers are paid for their service		
5.6 5.6 Does the committee have access to a mechanic who undertakes repairs?	1. Does not exist 2. Exists and has repaired, but not successfully 3. Exists and has repaired successfully		
5.7 What is the role of women within WASHCO decision making?	1. No role 2. Limited role 3. As important as men 4. Main decision makers		
5.8 What is the composition of the WASHCO	Male_____	Female_____	
6. User group			
6.1 For people living within the water scheme's coverage area, who uses the scheme?	1. Very few households (less than 10%) 2. Less than 50% of households in the community 3. More than three quarters of households 4. All households		

6.2 What is the dynamic in number of households around water scheme?	1. Reducing				
	2. Relatively stable				
	3. Growing				
7. Accountability and Responsiveness					
7.1 Have WASHCO elections held been open and transparent?	1. No				
	2. Elections are held but they are neither open nor transparent				
	3. Yes, both				
7.2 After the first WASHCO elections, has there been re-elections?	Yes _____		No _____		
7.3 Does the WASHCO have by-laws, i.e. clear rules and procedures that are known and updated as required?	1. No				
	2. Some rules and procedures known but there is some uncertainty over them				
	3. Yes, known and updated as required				
7.4 Does WASHCO report back to users, e.g. about financial status of the scheme?	Yes_____		No_____		
7.5 If yes, what is the mechanism of reporting back to users?	1. Meeting				
	2. Notice				
	3. Report				
	4. Other (specify)				
7.6 Are written functionality records kept up-to-date?	1. No				
	2. Some records are kept but they are incomplete				
	3. Yes, full records are kept				
7.7 Are there audits and/or other financial checks carried out every year?	1. No				
	2. Yes, but not every year				
	3. Yes, every year				
7.8 Have you had any assistance with major problems/break-downs which were beyond the community's ability to resolve?	Yes _____		No _____		
7.9 If yes by whom	1. Local government				
	2. Private sector				
	3. NGO				
	4. Other (specify)				
8. Follow-up actions (enter 1 where action is needed 1 or 2 where action is not needed)					
Action	Time frame		Responsible		Level of importance to future sustainability
8.1 Minor repair Description:	Six month		WASHCO		Not critical
	One year		NGO		Critical
	Others		Government		Very critical
8.2 Major repair or rehabilitation Description:	Six months		WASHCO		Not critical
	One year		NGO		Critical
	Others		Government		Very critical
8.3 New scheme Description:	Six month		WASHCO		Not critical
	One year		NGO		Critical
	Others		Government		Very critical

8.4 Election of WASHCO	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.5 Recruitment of care taker	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.6 Recruitment of pump mechanic	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.7 Payment of user fee	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.8 Accountability (bye-laws, financial audit, financial reporting)	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.9 Water scheme protection (construction/rehabilitation of fencing water point, construction/rehabilitation of apron and soak pit)	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.10 Spare parts	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.11 Tool kits	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.12 Training WASHCO (describe)	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	
8.13 Training Pump mechanics (describe)	Six month		WASHCO		Not critical	
	One year		NGO		Critical	
	Others		Government		Very critical	

Annex 4: Results from the Fisher Exact test

Fisher-Exact Results. Analysis of all country data. Data analysis.

Population using/served by the scheme

User group variable	Score	Functionality		P value (2 sided Fisher Exact)	P value (2 sided Fisher Exact test using functionality on day rather than functionality status since establishment)
		Poor/very poor	Fair/very good		
6.1 For people living within the water scheme's coverage area, who uses the scheme?	Less than 50% of households in the community	35	16	0.000	0.000
	More than three quarters of households	54	111		
Population served by scheme	Low/medium 0-599	51	82	1.000	0.212
	High 600+	25	40		
Population served by scheme	Low/medium 0-299	33	44	0.371	0.730
	High 300+	44	79		

Management approach

Management approach variable	Governance score	Functionality		P value (2 sided Fisher Exact)	P value (2 sided Fisher Exact test using functionality on day rather than functionality status since establishment)
		Poor/very poor	Fair/very good		
5.1 What is the situation regarding the WASHCO?	Low/medium (exists and does not function/doesn't exist)	48	18	0.000	0.000
	High (exists and functions)	41	109		
5.2 Does the WASHCO hold meetings?	Low/medium (no/ sometimes)	48	33	0.000	0.000
	High (yes, regularly)	29	90		
Has WASHCO been trained on water scheme management?	Low/medium (no)	16	13	0.061	0.229
	High (yes)	60	110		
Is there a caretaker or pump minder?	Low/medium (No)	26	18	0.010	0.001
	High (Yes)	63	108		
5.6 Is there a mechanic who undertakes repairs?	Low/medium (No)	73	106	0.855	0.537
	High (Yes)	16	21		
5.7 What is the role of women within WASHCO decision making	Low/medium (no role/ limited role)	36	60	1.000	0.863
	High (as important as men/ main decision makers)	39	63		
5.7 What is the role of women within WASHCO decision making?	Low/medium (no role/ limited role/as imp as men)	60	102	0.704	1.000
	High (main decision maker	15	21		

Scheme financing

Scheme financing variable	Governance score	Functionality		P value (2 sided Fisher Exact)	P value (2 sided Fisher Exact test using functionality on day rather than functionality status since establishment)
		Poor/very poor	Fair/very good		
Does the community raise funds to maintain water and sanitation facilities?	Low/medium (no)	42	18	0.000	0.000
	High (yes)	47	110		
If the community raises funds, do these adequately cover operation and maintenance?	Low/medium (no)	20	26	0.021	0.012
	High (yes)	27	86		
Is there a VSLA scheme linked to the water supply scheme?	Low/medium (no)	73	110	0.474	0.049
	High (yes)	6	14		
Has there been preventative maintenance carried out in the last year?	Low/medium (no)	73	98	0.297	0.077
	High (yes)	14	28		

Accountability and responsiveness

Accountability variable	Governance score	Functionality		P value (2 sided Fisher Exact)	P value (2 sided Fisher Exact test using functionality on day rather than functionality status since establishment)
		Poor/very poor	Fair/very good		
Have WASHCO elections held been open and transparent?	Low/medium (Not held or held but not open or transparent)	6	4	0.190	0.461
	High (Held and open and transparent)	71	118		
After the first WASHCO elections, have there been re-elections?	Low/medium (No)	10	31	0.047	0.407
	High (Yes)	67	91		
Does the WASHCO have by-laws, i.e. clear rules and procedures that are known and updated as required?	Low/medium (No or some but uncertainty)	39	41	0.017	0.082
	High (Yes and known)	37	81		
Does WASHCO report back to users, e.g. about financial status of the scheme?	Low/medium (No)	29	31	0.084	0.026
	High (Yes)	49	91		
Are written functionality records kept up-to-date? (WASHCO only)	Low/medium (No/ some but incomplete)	38	41	0.038	0.009
	High (Yes, full records)	39	79		
Are there audits and/ or other financial checks carried out every year? (WASHCO only)	Low/medium (No/yes but not every year)	45	50	0.014	0.010
	High (Yes, every year)	31	72		

Significant at the 95% confidence level. P-values are two-sided and based on the Fischer Exact test. A p-value <0.05 is considered significant at the 95% confidence level.

Comparison of significant factors by country for functionality status since establishment

	Uganda	Ethiopia	Tanzania
5.1 What is the situation regarding the WASHCO?	0.000	0.000	-
5.2 Does the WASHCO hold meetings?	0.000	0.003	-
Has WASHCO been trained on water scheme management?	1.000	0.000	-
Is there a caretaker or pump minder?	0.317	0.002	1.000
5.5 If yes, what is the situation regarding care-taking?	0.621	1.000	1.000
5.6 Is there a mechanic within the community who undertakes repairs?	0.690	-	0.524
5.7 What is the role of women within WASHCO decision making? (as important as men/main decision makers)	0.868	0.681	-
5.7 What is the role of women within WASHCO decision making? (main decision makers)	1.000	0.175	1.000
5.8 What is the composition of the WASHCO (half or more than half women)	0.865	1.000	0.226
5.8 What is the composition of the WASHCO? (more than half women)	0.219	1.000	0.464
7.5 Have WASHCO elections held been open and transparent?	0.382	0.448	1.000
7.6 After the first WASHCO elections, have there been re-elections?	0.318	0.033	1.000
7.7 Does the WASHCO have by-laws, i.e. clear rules and procedures that are known and updated as required?	0.000	1.000	1.000
7.8 Does WASHCO report back to users, e.g. about financial status of the scheme?	0.014	0.761	-
7.8 Are written functionality records kept up-to-date?	0.000	1.000	1.000
7.9 Are there audits and/or other financial checks carried out every year?	0.002	0.072	-
4.2 Does the community raise funds to maintain water and sanitation facilities?	0.000	0.000	-
4.3 If the community raises funds, do these adequately cover operation and maintenance? (only those who said yes)	0.238	0.011	1.000
4.3 Using all data rather than just said who answered yes to 4.1	0.001	0.000	1.000
4.5 Is there a VSLA scheme linked to the water supply scheme?	0.317	-	1.000
4.6 Has there been preventative maintenance carried out in the last year?	0.653	0.01	0.400