

From supply to demand driven water governance: challenging pathways to Safe Water Access in Rural Uganda

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ABSTRACT

Since 1990, Uganda has experienced a major policy shift from a supply-driven to a demand-driven approach in rural water provision. This paper looks into the critical aspects of safe water access in rural areas of Uganda within the changing policy frameworks. The qualitative text analysis of document and problem centred interviews with key informants at national, district and community levels is based on the ‘Social-ecological systems’ framework. Since the implementation of the demand-driven approach in the early 1990s, rural safe water coverage has slightly improved but maintenance of water sources still poses a great challenge. Operation and maintenance seem to be the critical challenge to sustained access to safe water in rural Uganda. The incomplete policy change and competing signals from old and new policies created uncertainty and ambiguity about responsibilities, rules and incentives. This result in a viscous circle of lack in user fees collected for maintenance and repair, unreliable water supply and missing control and sanctions resulting in further reluctance to contribute to community services. The analysis shows the importance of taking into account context and path-dependencies and points out some aspects not fully covered by the SES-framework.

Key words: supply-driven, demand-driven, safe water, access, Uganda, social-ecological systems framework

INTRODUCTION

There are at least 1.1 billion people across the world that do not have access to safe drinking water the majority of whom live in rural areas of the developing world (WHO/UNICEF 2000; Agnew et al. 2011). In Africa, safe water supply is estimated at 62% with 47% coverage in rural areas (Mathew 2004). Uganda’s national rural water coverage is estimated at 55.6% (DWD 2006; 2011). Lack of access to safe water is both a symptom and a cause of poverty (UN 2000; GoU 2005; Mathew 2004). Effects of lack of access to safe water include ill health resulting from water-borne diseases. Studies conducted in Uganda indicate that the birth and under five mortality rates for households without access to safe water is twice as high as in those households with adequate access to safe water (MoH 2002; MoFPED 2002). Water development provides numerous benefits to human livelihoods such as improved hygiene, labour availability and income (Moriarity and Butterworth 2003). Given the centrality of water to human health and dignity “not having access” to safe water is a form of deprivation that threatens life, destroys opportunity and undermines human dignity (UNDP 2006). In a bid to eradicate poverty, Uganda has grappled with provision of safe water to its population and these efforts are anchored in the Poverty Eradication Action Plan (PEAP); the overarching national planning framework and mid-term planning tool that identifies provision of safe water as a key requirement for poverty eradication in the country under its “pillar 5” on Human Development (PEAP 2001; revised PEAP 2004)

1. Policy reforms in the rural water sector

In Uganda social service provision has been characterized by different approaches under different policy regimes. In traditional Uganda – before the onset of colonialism, communities under their kings, local leaders, clan leaders and elders mobilized their subjects (community members) for community self-help projects. During this pre-colonial era, a community

problem was a shared problem – everyone’s problem, and hence the use of collective strategies to address it. This collective communal approach to problem remained in force till the onset of colonialism in the last quarter of the 19th century in Uganda (Manyire and Asingwire 1998; Nabuguzi 1995).

The welfare model, referred to in this paper as the supply-driven approach characterized the supply of social services in Uganda from the colonial period to the time of the country’s political independence in 1962 (Manyire and Asingwire 1996,; 1998; Muhangi 1997). Thus, Uganda’s post-independence regimes inherited a supply-driven approach from their former colonial masters, which guided social service provision. Under the supply-driven approach, safe water provision was solely the responsibility of the government and no pre-conditions were set for communities to fulfil before safe water provision. The aim was to have equitable socio-economic development and hence realize universal accessibility to services. However, two areas of concern emerged under the supply-driven approach. These included (i) ensuring a fast pace in providing the majority of the population in rural areas with safe water, and (ii) ensuring long term sustainability of water services particularly considering operation and maintenance of water sources (DWD 2001; 2004; 2011). These concerns constrained the government from realizing the national objective of providing safe water to the majority of the population. Hence shifts in the paradigms from the supply-driven to demand-driven approach was considered as the way forward to the realization of national goals of achieving sustained water access in Uganda and therefore implemented in 1990 on a pilot basis under the Government of Uganda - Danish International Development Agency (DANIDA) funded project of Rural Water and Sanitation Eastern Uganda (RUWASA II) (Asingwiire 2008). In a bid to complement government efforts, various NGOs involved in safe water delivery also made attempts to shift from supply-driven to demand-driven approach to the provision of water services to the majority of the population in rural areas. The reform was intended to correct the perceived error of ineffective service delivery as a result of direct state -provision amidst economic crisis in developing countries. The model of state provision as considered fragile and less fiscally resilient (Batley 2004; World Bank 1999). However, the players involved in rural water supply made the shift from supply to demand-driven approach without policy backing at least at the time of implementation. Reference to policy back-up can only be traced much later in rural water sector guidelines such as O&M framework (2004; revised 2011) and the National Water Policy (1999). The National Water Policy (1999) formalized demand-driven approach as a sustainable approach for maintenance of installed rural water supply systems and one of the six guiding principles of the National Water Policy is stated as: “provision of services through demand- driven approaches in which users are fully involved and contribute to the cost of facilities and services to promote ownership and sustainability (GoU1999).

The demand-driven approach in rural safe water supply emphasizes three interrelated values (i) individual decision-making, (ii) personal responsibility, and (iii) citizen participation (Asingwiire 1998). The demand-driven reform efforts with implications on rural safe water supply, accessibility and sustainability include a move toward market-oriented provision, decentralization (reliance on local governments) and communities for service delivery (community participation), user fees and cost recovery and private sector involvement. All these have varying implications for safe water management, equity and sustained access to safe water (Regmi and Fawcett, 2001). Gibbs (1998) also recognizing the difficulties with the reforms, points to two outstanding difficulties;(i) the costly increase in bureaucratic mechanisms to monitor the operation of decentralized management processes, and (ii) lack of assurance of equity and access so that the disadvantaged can obtain access.

Unlike the situation under the supply- driven approach, where equity and the right to access safe water are “guaranteed”, the demand-driven approach impose pre-conditions for service provision, a requirement which contradicts the provisions of the Constitution of the Republic of Uganda of 1995. The Constitution provides for safe water as a fundamental right to be enjoyed by all Ugandans (GoU 1995; 1999). This is in tandem with the National Water Policy (1999) objective which is stated as being:

To provide sustainable safe water within easy reach based on management responsibility and ownership by the users to 77% of the population in rural areas by the year 2015 with an 80-90% effective use and functionality of water facilities (GoU 1999, 14)

Related to the above objective is the national goal for Rural Water Supply and sanitation (RWSS), which is to achieve sustainable safe water supply and sanitation facilities based on management responsibility and ownership by the users within easy reach of 100% of the rural population with effective use and functionality of the facilities (MoWE/DWD 2005). This is further supported by the Water Statute (1995) whose one of the main objectives is to promote the provision of a clean, safe and sufficient supply of water for domestic purposes to all persons.

Despite the implementation of demand-driven approach, O&M is still a great challenge to rural water facilities in Uganda that has kept full functionality of rural water facilities nationally at slightly over 53%, although functionality in general (full and partial) is considerably high (82%). As devolution trends are spreading internationally, changes from supply to demand driven water policies have taken place in various setting, such as Costa Rica (Roger et al. 2011, Ghana (Imoro et al., 2011; World Bank 2005), India (Prokopy 2005), Mozambique (Boroczak and Parkinson 2005), Malawi and Tanzania (Mathew 2004). However, we always have to keep in mind that the variability of socio-economic and bio-physical situations and the general difficulty of transplanting institutions from one context to another (Meinzen-Dick 2007) ask for context-specific analyses.

2. Objectives and questions guiding the analysis

The shifting policy paradigms and the resulting dynamics and challenges for the rural population’s actual access to safe water are the topic of this article. The guiding questions of this study are: i) what are the challenges to sustained access to safe water in rural Uganda? ii) What are the implications of the shift to a demand-driven approach for access to rural safe water in rural Uganda?. The objective of this paper is to identify the critical aspects of water provision within the changing policy frameworks as perceived by key-stakeholders and documented in relevant texts.

The analysis is guided by the social-ecological systems framework that is presented in the next section after a definition of the policy objective of sustained access to safe water. The following sections present the methods and the results, which are then discussed in comparison with the international literature. The paper concludes with some general findings regarding the usefulness of the analytic framework and the implications for further institutional analysis in water management.

3. Concepts applied

3.1 Safe water

The term safe water as used in this paper and in the context of Uganda water policy objectives refers to water that does not contain organisms, chemical or impurities, and is not harmful for

human consumption. Safe water stems from a protected source such as a deep borehole, shallow well, gravity flow scheme and protected spring.

3.2 Access to safe water

Access as used in this paper refers to the availability of at least 20 litres per person per day from a source within one kilometer of the user's dwelling (WHO/UNICEF 2000).

3.3 Sustained access

Sustained access to safe water depends on long-term functionality of the water infrastructure, thus sustained access as used in this paper refers to a situation where a water source provides the planned service and functions over a prolonged period of time. For this to be fulfilled, the water source needs to be maintained and operated by the communities with minimum external support.

3.4 Sustainable ecological systems

"Institutions are the rules of the game in a society" (North 1990, 3). Formal and informal rules, conventions or modes of interaction provide structure and orientation in everyday decisions and activities and thus reduce uncertainty about the behaviour of others. Appropriate institutions are the key for effective management of water demand and supply (Saleth et al. 2007).

There is no theory explaining the link between institutions and water provision, however there are some ontological frameworks that help to structure the analysis. As water provision needs a complex interaction between nature (water sheds), technology (infrastructure such as bore holes or gravity feed piping systems) and humans (operation and maintenance, land use decisions affecting the demand as well as influencing the quality and quantity of water recharged, we opted for the Social-Ecological Systems (SES) framework (Ostrom 2007; 2009) that builds on the long-standing IAD (Institutional Analysis and Development) framework (Elinor et al. 1994) that has been continuously developed and finally extended with major ecological aspects to facilitate the IAD's application to complex coupled social-ecological systems (Ostrom 2011). The IAD respectively SES framework convinces because of its long-term application in various resource and geographical contexts, among them also several empirical studies on water management in developing countries (Madrigal et al. 2011; Meinzen-Dick 2007; Mokhtar et al. 2011; Asquer 2011; Toriman et al. 2012).

SES's – like IAD's - primary value lies in providing a set of related categories of variables and thus structure to an analysis. "It does not tell us what will happen, and it does not tell us whether what happened was necessarily good or bad (Blomquist and deLeon 2011). The framework's core (see Figure 1) is the conceptual unit called the action situation, defined as the social place where actors interact, make decisions, solve problems or fight (Ostrom 2007). The character of the action situation therefore shapes activities, interactions and exchanges among individuals which produce the outcomes (e.g., infrastructure condition, effective long-term access to safe water). The framework identifies a set of variables that characterize and influence an action situation (see Figure 2). For instance participants may decide to take actions according to the level of choice they have or the information they possess about how actions are linked to potential outcomes and their potential benefits and costs (Ostrom 1994).

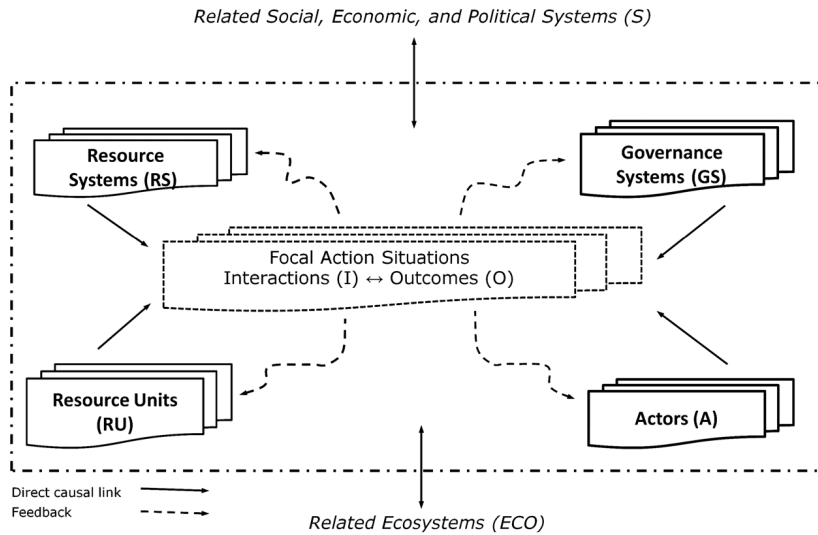


Figure 1: SES framework first tier components (Source: Ostrom and Cox 2010).

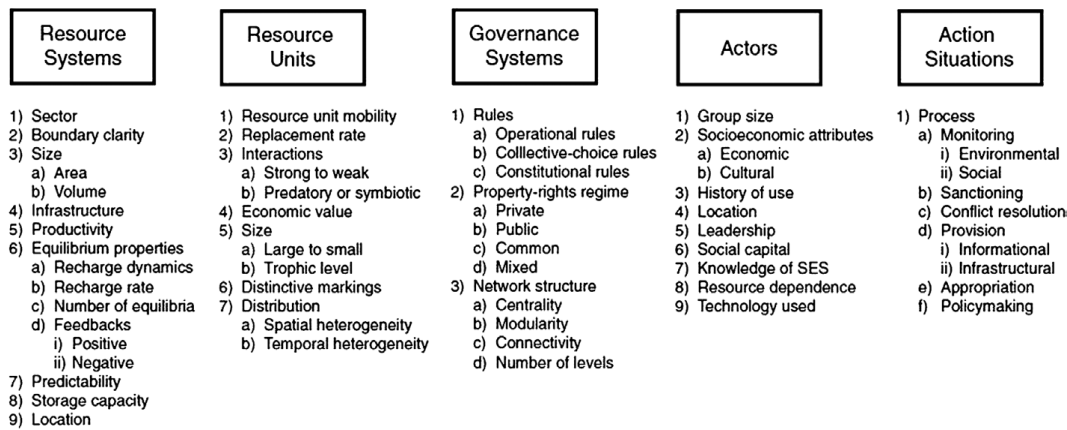


Figure 2: SES framework second tier variables (Source: Ostrom and Cox 2010).

In the text analysis of interview transcripts and documents we use this conceptual map to analyse the patterns of interaction of actors involved and outcomes observed in the Uganda drinking water system.

METHODS

The purpose was to integrate existing knowledge on water management in Uganda as documented in scientific literature, evaluation reports and policy documents (as detailed in a table attached)ⁱ with additional problem-based interviews. The research design was guided by the SES framework while being open for any additional hints relevant for the research questions posed in the introduction, i.e. also allowing for explanations not included in the analytic framework, which can provide indications for possible blind spots of the framework.

Data was collected in April 2012 through document analysis and guided problem-based interviews. The interviews were conducted with key informants at national, district and community level, purposively selected based on their roles, experience and knowledge of the rural water supply system as well as with randomly selected water users in Masha sub-county

(Isingiro district). The respondents included three policy makers at the Ministry of Water and Environment\Directorate of Water Development (MoWE\DWD), four research consultants with the MoWE/DWD, and policy consulting, two representatives of water authorities at the district and seven at community level. The latter include two water source caretakers, two members of the Water User Committees, two randomly selected female water users and one randomly selected male water user. A total of 16 participants were interviewed. The interviews at district and community level were carried out in Masha sub-county Isingiro district, western Uganda. Out of 112 districts of Uganda, Isingiro was selected because it is one of the water scarce areas in Uganda with a population of 396,700 of which 28 per cent has access to safe water (DWD 2010). Moreover, functionality of water sources in Isingiro is estimated at 50 per cent and therefore as far below the national desired level of 80-90 per cent effective use and functionality of facilities (DWD 2006; 2010; 2011).

Interviews were recorded, transcribed and – like the documents - analyzed with deductive codes (Henderson 2009; Creswell 2004) derived from the SES framework (see section figure 2). The qualitative nature of the analysis of both, the guided interviews and the documents, allowed to identify aspects that might be neglected by the current version of the SES-framework (inductive codes). Information from documents and the various interview transcripts were triangulated to increase validity (Yin 1994).

RESULTS

1. Water scarcity: resource base and deficits of infrastructure

Key informants at community level reported the challenge of unequal *distribution of water resources* in different districts in Uganda. While most areas in Uganda are endowed with water resource, Isingiro district is one of the water scarce areas. The water scarcity in Isingiro district is exacerbated by the main source of livelihood in the area. Unlike other districts which are predominantly crop farming, most parts of Isingiro carry out both crop and animal farming. This does not only contribute to water scarcity but also a situation where both humans and animals compete for the same water source. Closely related to water scarcity, is the variability of water supply over time and the disperse location of water sources. This result in the need for walking long distances without certainty about the actual availability of water as was particularly stressed by all the local women interviewees: *“It is very frustrating to walk all the way for nothing; the problem is that water is not available all the time.”* (KIc6, 19.04.2012)) She observed that the long distance and long queues at the water source are too time-consuming especially given the other domestic related responsibilities such as child care. This was further supported by a male informant at national level who noted that women and children bear the brunt of the lack of sustained access to safe water in Uganda by walking long distances. Water scarcity does not only limit accessibility of water to communities but also has bearing on the motivation of communities to contribute towards O&M. Water users are reluctant to invest into potentially unreliable water sources (see result section 4).

Despite the high functionality rate of the *infrastructure*, the hygienic conditions of most water sources are deplorable especially protected springs and shallow wells. Non-functionality of water infrastructure especially the boreholes is due to poor O&M emanating from users failure to pay for source repairs, corrosion and sinking of water pipes, salinity of the water leading to community abandoning of the source. Non-functioning of protected springs is mainly associated with deepening of the water table, partly due to lack of protection of the catchment area while for gravity flow scheme, it is mainly due to failure to replace the taps. In some areas where there are several alternative water sources, it takes long to report any breakdown and even paying for O&M becomes difficult (DWD 2011).

Water user committees and water source caretakers reported lack of spare parts as one of the greatest challenges faced in an effort to execute their roles and duties of ensuring a functional and effectively maintained water sources in Isingiro district. There were no spare parts outlets in the villages. The source caretakers interviewed in the Isingiro district had to outsource for the spare parts within a distance of over 5 kilometres. This was noted as not only contributing to delayed repairs but also leading to other challenges such as costs of transport and inability of community members to verify the actual costs of the spare parts, which was reported as a major source of mistrust and misunderstanding among water user committee members and the source caretaker.

A male informant at national level observed that some boreholes were expensive and spare parts not readily available, thus supported the need for more affordable and appropriate technology. He advocated for community involvement in the technology choice and design as a means of minimizing the problem. He noted: *“The present technology is expensive that is why government and communities cannot afford. There is need to involve communities in technology design and choice and also promote rain water harvesting among rural communities in order to reduce costs.”* Within the demand-driven approach, the community should have this collective choice right as they have to propose the technology in their application (as required in the water and sanitation sector district implementation manual (MoWE 2007))

A male informant at national level emphasized the importance of ensuring the management of the *catchment area* to avoid water contamination rendering the water unsafe for human consumption. Furthermore, non-functionality of the protected springs is mainly associated with lowering of the water table, partly due to lack of protection of the catchment area (DWD, 2011). Maintenance of the sources apart from functionality remains a challenge as most tend to unhygienic environs leading to contamination of water. For instance the study (MoWE/DWD 2011) revealed that out of 160 sources sampled, 52 (32.5%) had clean surroundings with well cut grass. The drainage channels for a number of protected springs were blocked with backflow. Fences were also missing for most of the water sources which exposed water sources particularly the protected springs to invasion by animals.

2 Governance structures and mechanisms

While water scarcity and the infrastructure characteristics are critical issues, the problem of access to safe water in rural areas is also closely linked to the governance structure and mechanisms in place at the national, the collective choice and the operational level.

In Uganda, drinking water is managed in a multi-level and multi-actor *network structure*, involving various actors from government, private and civil society who decide, act and interact from the national to the local level. Despite this multi-level network structure, the governance is still very much centralized at the national level. The national government holds the overall responsibilities of policy initiation, regulation, monitoring, setting national standards and priorities for water provision development and management. The different actors involved in the Community Based Management System (CBMS) of rural water facilities, their relationships and roles, are shown in the figure below.

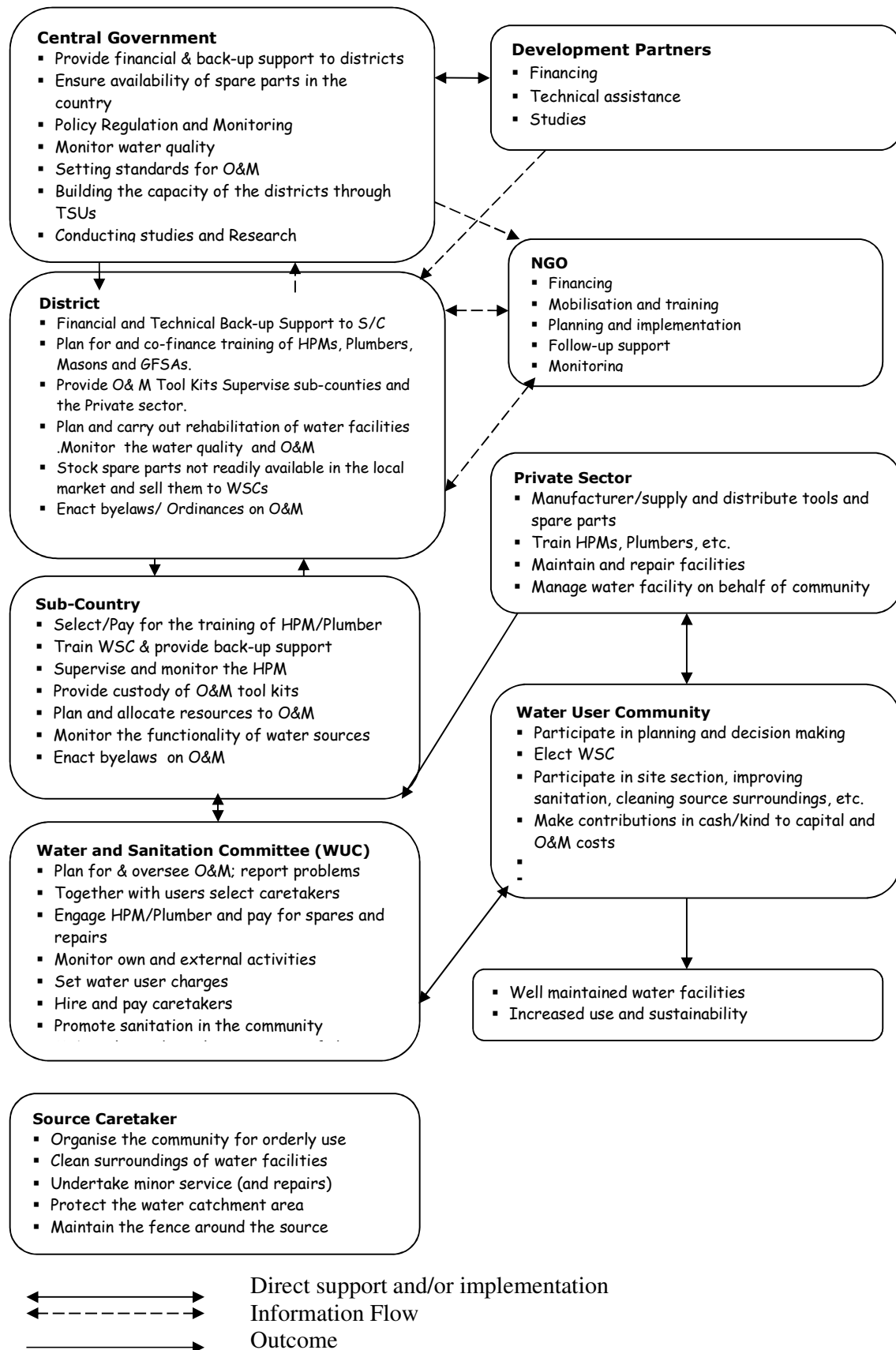


Figure 3: Roles of key Actors in the CBMS of Rural Water Facilities (DWD 2011).

However, with the reform of 1990 which emphasise community based management system as one of the best options for O&M of communal water supply facilities in rural areas and rural growth centres the, implementation has been passed on to lower tiers of local government that is district and sub-counties and to the private sector.

For simpler technologies like protected springs, or shallow wells and with good community organization, CBMS may be modified to minimize or eliminate government involvement. Many protected springs in rural Uganda are following this system, however depending on the location and type of water source, boiling of water before consuming it is advisable since water quality monitoring is not carried out.

A Water and Sanitation committee (WSC)/Water user committee (WUC) is the executive organ of a water user group. A WSC/WUC is a key requirement before water infrastructure instalment and is established at each improved water point. Therefore the communities (through Water User Committees, (WUC) need to provide an up-front monetary contribution and a formal application before the water infrastructure can be put in place with the state covering the biggest share of the costs. Hand pump mechanics and source caretakers are to be nominated by the WUC and are trained by district authorities. The WUC members are required to pay the hand pump mechanic for the repairs carried out, financing the everyday operation and maintenance work done by a hand pump mechanic and source caretaker. However, it is generally agreed that most rural communities cannot at present afford to meet the full cost of O&M, and that there is need for external support to meet such costs. Government acknowledges this and had made a provision within the current conditional grants funding for major repairs beyond community capacity. These include replacement of hand pumps and borehole desilting and repairs. With a reform-driven devolution of some responsibilities to the local community particularly sole responsibility of O&M, it is important in O&M planning to clearly identify and specify what aspects are to be financed by whom (DWD 2011).

While the WUCs are taken to be in charge of water sources on behalf of the communities, they lack the legal status because they are not registered, their mandate, roles and responsibilities are not defined, they are not remunerated and do not keep record of accounts, they are not adequately answerable to the community and lack authority and motivation. This may have implication on communities motivation to contribute towards O&M because of communities lack of awareness on how to demand for accountability from WUCs that seem not to be adequately answerable to them (DWD 2011).

After application by the WUC, a technical engineer investigates the source. The local communities have to provide evidence of *property rights* to the land such as land title or agreement, before the water facility is built (e.g., by drilling a well). One of the main issues that affects management and maintenance of communal water facilities is the understanding of *ownership*. The national Water Policy (1999) describes the community as the owners of a water facility. However, the Water Statute vests the ownership in DWD, with the community managing and maintaining it for their joint benefit. The issue of community ownership is made difficult by the loose nature of the 'community' as an entity. In such instances, it becomes difficult for communities to assume full responsibility and accountability for the maintenance of facilities. However, apart from community contributions there are other requirements to facilitate community ownership such as land ownership. As confirmed by an interviewee working for the Ministry of water, land ownership by - communities is one of the key requirements for water source application and support. Communities are required to satisfactorily prove (e.g with written agreements, land titles) that all potential and foreseeable

land access and ownership issues have been resolved beforehand. After putting the infrastructure in place, the local community however becomes responsible for O&M. Lack of perceived ownership and the subsequent effect on O&M was emphasized as a key-problem by a male informant at national level who illustrated the effect using an experience from the top-down approach formerly used by the Ministry of water. *“There was an observation by the Ministry of water that boreholes placed by the government without community participation were breaking down fast in the same locality where water sources constructed by communities or with participation of local communities were not. .”* (Kin3, 12.04.2012) He further explained that joint venture between communities and government tends to yield better results in terms of community mobilization and ownership than when government works independent of communities. According to this informant, the failure to partner with communities leads to the tendency for people to take it for granted that government will be responsible for the O&M.

Regarding *rules in use*, first of all we have to mention the ‘*National Framework for Operation and maintenance of Rural Water Supplies*’ in March 2004 and revised it in July 2011. The O&M framework sets out the “rules of the game” for all sector players in provision of water facilities to rural communities. The O&M is in line with the CBMS where by, community members are responsible for operation and maintenance of their water supplies. While the O&M framework provides for demand-driven approach, the framework contradicts with other statutory and regulatory frameworks such as the Constitution.

Evidence at national level indicates that the current statutory and legal framework is still in harmony with the supply-driven approach and in most cases in contradiction with the principles of a demand-driven approach (GoU 1999). A related challenge is that only segments of the water sector were reformed. For example the reform covered only rural water supply but fell short of addressing water for irrigation and urban safe water supply (DWD 2009). There are contradicting signals regarding the rights to water: Is there a right to water for everyone (as stated in the constitution of Uganda) or can only those access water that apply for and manage to put together the up-front contribution and the user fees (as precondition of the demand-driven approach)? In the same line, a male key informant at national level argued that demand-driven approach put an economic spin to an otherwise public good. This would not only limit access to particular groups but also contradict the right to water as stated in the constitution of the Republic of Uganda.

In contrast, another male informant at national level observed *“water is not free, there is need to ask communities to contribute towards O&M even when the government can afford. That is when they will take care of water resource; keep the water clean, they will not let anybody graze cattle at the water source because they have participated and contributed towards the water source. It is like a tax versus gift, if you have paid you feel the pain. If you don’t contribute you think it will always come anyway”*.

The inconsistencies within the legal and institutional frameworks do not only undermine the implementation process of the demand-driven approach but also result into contestations of the rules of the game. One interviewee argued that contradicting signals can raise resistance from different sections of the population.

3 Actors

With the shift from the supply- to the demand-driven approach the *roles and responsibilities* of different stakeholders in rural water supply have changed. As a result of decentralization, the communities are responsible for management and maintenance of their water facilities through contribution of O&M funds for preventive maintenance and repairs, sub-county has

the mandate to plan and oversee implementation of development programmes, prepare plans and budgets incorporating O&M aspects and train WUCs and hand pump mechanics (HPM) local governments (districts and sub-counties) who are also responsible for regulating demand in an effort to support beneficiary communities. Local government facilitation is done by capacity building and raising community awareness about the demand-driven approach in order to stimulate demand for water services. The role of the private sector is to construct and maintain water facilities. The HPMs, masons and plumbers carry out maintenance work and are paid by communities. The central state government is no longer charged with local implementation but rather to play a facilitative role. A Water and Development Fund, i.e. a joint partnership fund of government and many donors, meets the largest portion of the capital cost through District Water and Sanitation Conditional Grants to facilitate infrastructure development at community level.

To compliment government efforts, various – however not all - NGOs involved in safe water delivery also made attempts to shift from the supply-driven to the demand-driven approach by demanding community contributions towards capital costs and or expecting communities to take responsibility of O&M of the water facility. Thus, there are still pluralistic strategies to support water provision in Uganda. Donors and development partners, such as World Bank have played a significant political and financial role in the water sector in general and particularly in promoting the shift to the demand-driven mode of water provision. The distinctive nature of the involvement of external actors in developing countries, acting not only as “technical” advisers but as financial sponsors of the policy reforms, increases their influence in the policy making processes.

Despite the central government’s responsibility for capacity building, local governments are still grappling with issues of *capacity* as there has been little effort by the central government for capacity building in the communities and private sector. In recognition of capacity gaps, the DWD established eight technical support units (TSUs) to support districts in building their capacities for implementing their sector mandate in 2002. The evaluation of TSUs in 2005 revealed that although there was a noticeable achievement in strengthening capacities at the level of districts, many capacity gaps still remain at both district and community level. These gaps were largely attributed to the inadequate role played by the government to effectively empower and nurture the private sector in water supply (DWD/MoWE 2005). And despite the communities’ dependence on water as resource for survival, local water users know little about water supply and the underlying ecological conditions (e.g. as regards contamination by cattle), as well as about technological (appropriate technologies, O&M) and organizational factors (who has the right or duty to make choices, to use, to pay or contribute, to monitor the resource and to take sanctions). Only 38.1 per cent of the existing WUCs had received training, and 9.4 per cent had received refresher training (DWD 2011).

DWD (2011 8) confirmed the role of governance structure and noted a lack of documentation clearly specifying the *roles and responsibilities* of each party involved in the water supply related activities. For instance, a study carried out for all districts in Uganda indicated that only about a sixth of all WUCs received guidelines at their inauguration, guidelines which clearly spell out what they are expected to do, how they are supposed to perform their duties, and what is expected to be done by the sub-county, district and central government authorities (DWD 2011). The study further indicated that while it was a condition for each water source to set up an elected WUC and a water source caretaker (WSCT) prior installation of the water source, only about three quarters of the water sources had WUCs and that all WUCs performed below 50 per cent on most of their designated roles and functions (DWD 2011).

Furthermore, national authorities also do not effectively supervise contracts (MoWE/DWD, 2005).

In relation to this, a male informant at national level cautions:

“You see it is very easy to blame the challenges in water accessibility and operation and maintenance on community.... One needs to question the broader management structure at national and community level.”

The lack of capacity and performance at the community level was reported to be posing a great challenge to providing and sustaining access to safe water since communities are often unable to repair and maintain the water sources without having to seek external support from the district. This is particularly due to a lack of technical capacity at the community level (to handle technical breakdown of the water sources) and a lack of knowledge on the impacts of land use on water quality. Although each source was supposed to have a knowledgeable source caretaker, some communities reported having none.

Limited *sector funding* by the state and/or by the beneficiaries was noted as another main challenge impeding access to sustained water services. As a result, local governments inadequately perform their roles of capacity building and monitoring of water supply related activities. Care takers do not have the funds to buy spare parts or tools for O&M (ref to the interview). Also local water users, even if they wanted to contribute to the long term viability of the water infrastructure by paying their fees, have to meet other, more urgent priorities of everyday life first. Several reasons contribute to this situation such as the thinking that water provision is the responsibility of the state and also existence of other alternative water sources (although unsafe) is identified as one of the contributing factors to poor contribution towards O&M of improved/safe water sources in rural areas (DWD 2011). One interview concluded that *“It should be a partnership between government and communities. Communities should be involved providing labor, material .And if they don’t have money let them provide materials.”* (Kin3). However, according to the requirements, community contribution towards the construction cost is required in cash. The Sector Schedules (2007/08) further specify that if items are given in-kind they must be sold (for cash) by the community themselves. This requirement further constraints community contributions.

There appears to be a connection of the O&M associated problems in the area of study with the public *policy changes* initiated in the rural safe water sub-sector in the 1990s. The demand-driven approach was reported to have had a negative effect on the mechanisms in place to steer the O&M at the community level. One male key informant at national explained: *“You see demand-driven approach was a foreign discourse to begin with, so in a way it disorganized local initiatives.”*

Another male informant at national level pointed at the false assumptions contradicting the history of local water use:

“So they are making assumptions that the community knows how to preserve what to them is an otherwise natural resource. It is like you find Guavas and pick and then somebody tells you to maintain the tree when you know that the tree is there and you just go to pick the Guavas when they are ready. Similarly O&M has been a challenge because:

- *we don’t have defined roles and responsibilities*

- *we have not appreciated the capacities of communities*

we have not empowerment communities to handle the roles and responsibilities shifted to them.”

The communities were hardly involved in the transition process but rather were informed about the change afterwards during village meetings by the community leaders. A female informant at community level observed:

“The chairman informed us during the village meeting that we have to contribute towards construction capital costs and that operation and maintenance is our sole responsibility.”

4 Outcomes and action situation

Once the biophysical constraints, the actors attributes, the governance and rules in use are taken into consideration, the action situation, the patterns of interaction and consequently the outcomes are to be seen as consequence thereof (Polski and Ostrom 1999). As we have referred to resulting consequences for the action situation already above, we will start here with outcomes and give then a synopsis of the underlying action situation and interactions.

Data at national level (DWD 2011) indicate a relationship between the year of construction and functionality status as shown in the figure below whereby sources constructed after 2000 are rather functional than those constructed before (see Figure 3). If the age of infrastructure, and therefore the vulnerability for infrastructure-break down was considered, is not detailed in the report.

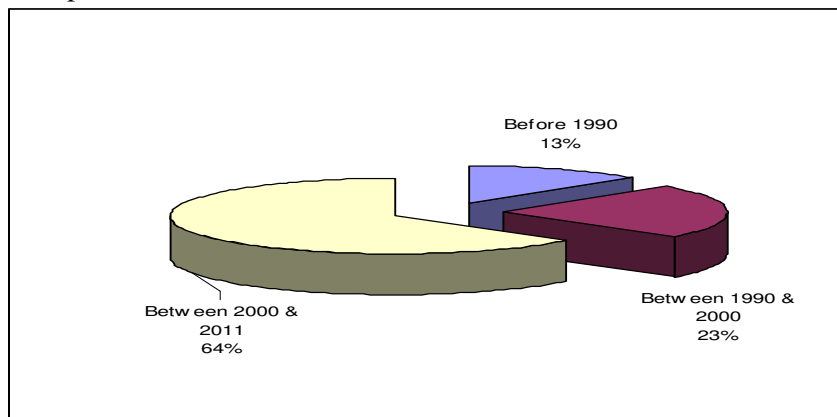


Figure 3: Functional water sources by year of construction (DWD\MoWE 2011)

In addition to this, an increasing trend of safe water access was indicated for Uganda from 1990 to 2008 (see Figure 4).

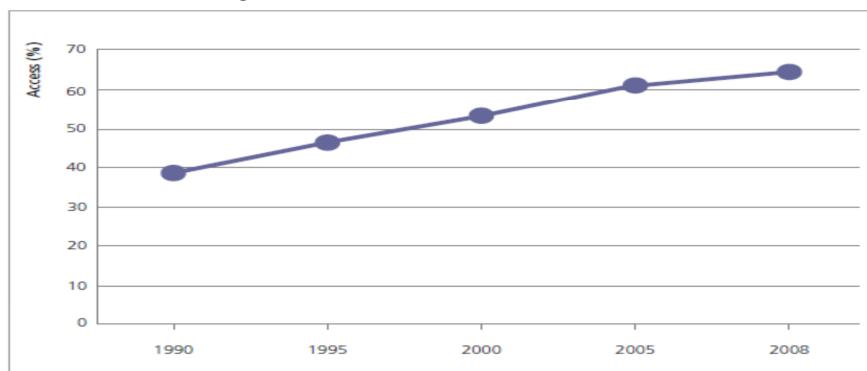


Figure 4: Rural access to improved water supply in Uganda, 1990 – 2008 (Overseas Development Institute, United Kingdom, 2011).

Figure 4 indicates increased water coverage in rural areas from estimated 39 per cent in 1990 to 64 per cent in 2008, which means that about 12 million rural people gained access to improved water sources (ODI 2011). However, it seems that a systematic application of the demand-driven approach in provisioning of water sources was not possible all over rural Uganda. Thus, a number of newer sources are provided without necessarily the community meeting all the requirements of the demand-driven approach. This is due to communities' failure to fulfil the conditions of the demand-driven approach but also other actors involved in water service delivery such as NGO's whose motive is community's need rather than ability to fulfil certain conditions of demand-driven approach (DWD 2011). Therefore, it might be misleading to attribute the increased sustainability of water sources in and increasing trend in access to safe water in Figure 4 to the policy change alone.

The findings at national level (MoWE/ DWD,2005) revealed that while the government had made strands towards accessibility to safe water, sustainable access still is the greatest challenge faced by the rural population in Uganda. National data show that failure in due operation and maintenance account for over 50 per cent of non-functionality of the water sources in the district analysed (DWD, 2011). According to the DWD (DWD 2008; 2009; 2010; MoWE 2010; 2011), poor O&M accounts for over 50 per cent of non-functionality of water sources especially boreholes in most districts in Uganda. This problem is related to users' failure to pay for repairs leading to the abandonment of the source. In relation to this, an informant at national level questioned "*Why do communities don't want or refuse to contribute? Is it because they cannot afford, is it because there are no structures to manage their funds?*"

Despite the over-all progress in water access, the policy shift might have limited access of some sections of the population (types of rural communities that do not fulfil the conditions of the demand-driven approach such as collectively preparing the upfront cash contribution towards and application for the initial capital costs or for providing O&M as required. As indicated by the national level interviewee, the approach leads to the abdication of the state responsibilities to communities that may not be well equipped and prepared to take on the responsibilities. He further observed that both approaches (demand-driven and supply-driven approach) limit access to the much needed resource because under the supply-driven approach someone else – possibly miss-managed state authorities with limited resources or NGOs – have to supply while under the demand-driven approach a section of the population living in particular communities might be unable to effectively demand for and operate water infrastructure.

The demand driven approach seems to affect different sections of the population differently. For instance, women seem to be negatively affected by the policy shift. Just like in most sub-Saharan countries, women are in a private domain rather than in a public domain. Yet the demand-driven approach requires collective choice and action among the community members. Although household provision of safe water is considered the primary role of women, they are likely to be excluded from decisions at the community level. Women would be most direct beneficiaries of water development efforts as emphasised by male and female informants at national and community level respectively. Furthermore - as noted by a male informant at the national level - women often have to bear the cost of water: "*I believe there are many who see paying for O&M as a burden, but even the men will shift the burden to*

women, water like firewood is a responsibility of women. Therefore, men will tell women to find free water - which is not paid for.”

Whereas about 25 % of rural communities have got access to water by infrastructure built in the last two decades, sustaining the long-term functionality of this infrastructure still is a major challenge. The benefits accruing from water infrastructure can only be sustained in a situation where the water facility is well operated and maintained, which is not the case for more than half of all communities. Due to poverty and clear priorities on surviving the next days, water users are not able or very reluctant to contribute user fees for the maintenance of the water infrastructure. Unreliable water provision, missing sanctions for not contributing their fees or polluting the catchment area, mistrust in water user committees and source care takers as well as missing control over the use of the fees provide further incentives for free riding. Furthermore, local fee payers do not have any mechanisms to control and monitor how their money is used, e.g. by written statements or oral reports on what goods and services the money was used for. As also resources for central government control and monitoring activities are low, mistrust with the source care taker is a result. Data about the actual fees collected in rural communities, on delinquency rates or actual sanctions for delinquency are not available. There are however indications that beneficiaries are reluctant to contribute to O&M and that there are good reasons for free-riding by using the water without contributing to O&M (no sanctions, unreliable supply, no trust in use of money, etc.). Not all communities have a care taker (see above). Others that have a source caretaker are ill equipped to handle technical problems: *“I was trained for three month at the district headquarters, but I was not given tools to use. It was hoped that the community would contribute money towards the purchase of the tools”*. This ineffective water management system seems to feature a vicious circle as illustrated in Figure 5.

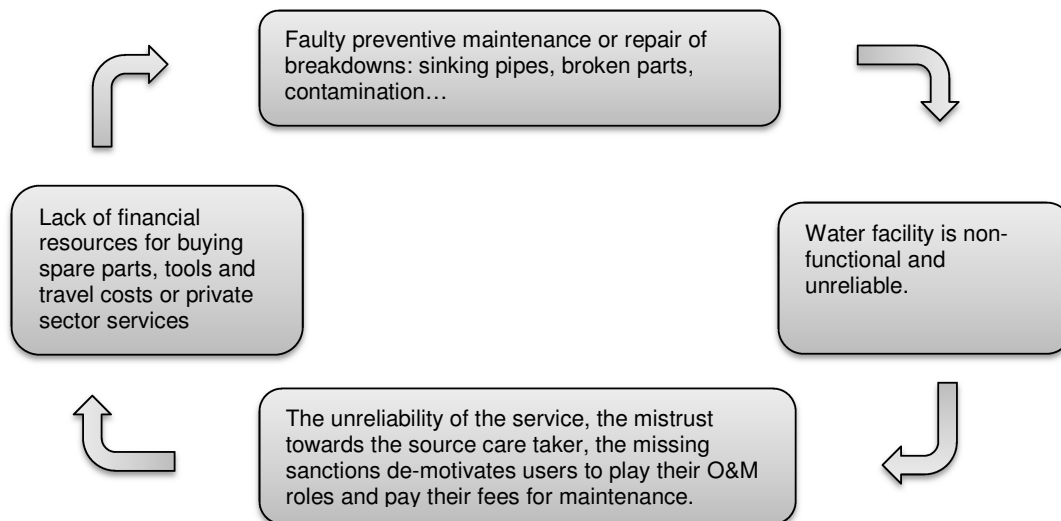


Figure 5: The vicious circle of inadequate institutions challenging effective O&M and sustained access to safe water

This action situation and resulting interactions explains the high degree of non-functionality of more than 50% of the water sources in the district analysed.

DISCUSSION

1 Discussion of results

The following discussion puts the results from Uganda in the context of existing theoretical and empirical literature on water management and water policy reform. It also reflects on the implications of the policy reform in Uganda on distributional effects and financial viability.

In the study area, the demand-driven approach seems to be effective in terms of building new infrastructure and hence extending access to safe water to another 25% of communities. However, the long term collective action needed to operate and maintain the infrastructure seems to pose major challenges. Our findings about ineffective water management mechanisms at national and particularly at community level are in line with the third UN World Water Development Report (WWDR 2009) that attributes the water crisis in developing countries to water mismanagement. Lack of local management mechanisms do not only culminate into unsustainable access but also poor protection of catchment areas resulting into contamination thus exposing rural communities in Uganda to dangers of consuming unsafe water.

Several of the challenges, can also be attributed to the situation of policy change and resulting inconsistencies in the institutional framework. The devolution of management responsibilities from the central to the local level under the demand-driven approach has been based on the assumption that collective action at community level exists, but in the worst case might even have destabilized past community initiatives. That the reform might have been based on wrong assumptions on future community behaviour as elaborated by our key informants is confirmed by Ruth Meinzen-Dick (2002, 649). She asserts that policies of devolving resource management generally assume that users will organize and accept the necessary management tasks. Whereas the first stage of up-front contribution and application seems to be manageable by many communities with the support of external support, there are deficits regarding collective action for O&M of the infrastructure.

In our case study district, the local population does not actually feel responsible for maintaining the water infrastructure in the long run so far, in a country where the national constitution postulates a right to water for everyone and where water in cities is still supplied by public authorities. The sense of responsibility and ownership has been identified as critical factor for successful infrastructure projects (Gibson et al. 2005). The importance of clear responsibilities between community, government and donors for effective management is confirmed by experience from Ghana (McGarry 1991 in Fielmua 2011) and more generally for successful reform processes (Cornwall and Gaventa 2000; Dobelstein 1996; Mensah 2000; Seppala 2002; Batley 2004).

Altering the regulatory, monitoring and enforcement mechanisms related to water development, allocation and management implies transaction costs (Saleth and Dinar 2005). If the resources to accompany policy reforms are not available and therefore the reform remains fragmented, policy change can become a cause instead of a remedy as initially hoped for. This might be also partly true for the case of Uganda, where the demand-driven approach seems to be in conflict with existing values, formal and informal institutions as well as local priorities on surviving the next day rather than contributing to the long-term viability of the water infrastructure. Inconsistent institutional frameworks compromise the successful implementation of the reform, as we also have observed for the Uganda water sector. Seppala (2000) also notes that in developing countries, policy and institutional changes have in many cases, been pushed through too rapidly, without adequate consideration for the transition and adequate capacity building.

A demand-driven approach has been hoped for to be pro poor and gender sensitive (World Bank 2000). The results from the interviews and document analysis, however, indicate that the shift from the supply-driven to a strictly implemented demand-driven approach can lead to reduced water accessibility for particular groups in situations of rampant community poverty, and hence an inequitable distribution of water access. Polski and Ostrom (1999) point out distributional effects as one possible criteria for evaluating the outcome and success of a policy. Two changes in the distribution of costs and benefits were mentioned by the interviewees: that regarding costs and burdens from men to women, and that regarding the preconditions for applying for state support that favours more affluent and better organized rural communities compared with others not able to successfully organize and formulate a collective application. Due to high illiteracy rates, poor communication and interaction, not all communities are aware of choices and scope of action, are endorsed with knowledge and ability to act (Kishindo 2000).

The former model of direct state supply was considered fragile and less fiscally resilient (Batley 2004; World Bank 1999)., However, it is still to be proven that local water user committees are more successful in securing the collective financial contributions to O&M. Our explorative study shed some lights on the underlying factors contributing to the reluctance of the local water users to contribute their fees and capacities. If the state is not able to secure taxes, how should local WUC with much less power, with little or no possibilities to exclude users from point sources or without realistic option of sanctioning be able to secure the financial resources needed for buying spare parts? Upward accountability of WUC to the state are regulated in a performance contract, de facto however are limited due to missing regulative mechanisms (financial controlling as well as technical monitoring), and there is no downward accountability of WUC and care takers to the fee payers. Therefore, those contributing to O&M with their fees cannot be sure, if their money was actually used for maintaining the water infrastructure. Without accountability, there is no check on opportunistic behavior (Polski and Ostrom 1999).

2 Discussion of analytic framework and research design

Being aware that institutions for water management are context sensitive, we were cautious in transferring an analytic lens from one place to another. As there was not yet an empirical study applying the SES or IAD framework to water supply in Uganda, we opted for a research design that was open enough to also include aspects not part of the SES framework.

Several variables seem to contribute to the problem of water access in rural Uganda. According to our analysis, some aspects are relevant for understanding water access in rural Uganda, which are not fully considered in the SES framework. Clear roles and responsibilities, overall financial resources (government budgets as well as financial health of the local Water User Committees) and most of all the dynamic processes associated with a policy reform. Several of the challenges for rural water supply in Uganda can be attributed to the policy shifts in the 90s and the resulting dynamics rather than actual attributes of the resource system or the new rules and new stakeholders involved. Institutions are path dependent (North 1990). They are not easily changed but evolve slowly. Therefore, a static perspective on the situation in Uganda, without looking into the history could be misleading. Path dependencies and the need to adjust new policies to the existing institutional framework rather require a dynamic perspective taking dynamics processes into account.

The SES from its conception is used for analyzing the sustainability of socio-ecological systems, with a particular focus on analyzing present or planning future resource management

systems. Dynamic processes over time such as the implications of a policy reform in the rural water sector of Uganda are more difficult to grasp. There is only one variable (history of use) that has an explicit time dimension to it. Apart from this restriction, the SES framework was considered helpful

Our explorative analysis is limited by the quality of the documents included and the number of interviews on the national level and in the study area. It forms a first step, in understanding the causal mechanisms that explain non-functionality of water infrastructure in rural Uganda. It can help to derive hypothesis (e.g., legal pluralism and contradicting rules, missing downward accountability, gender specific outcomes) that can form the basis for future in-depth analyses.

CONCLUSION

Drawing on our results of the key informant guided interviews and document analysis, we conclude that unsustainable access to safe water in rural Uganda is largely an issue of local governance and ambiguity and uncertainty created by the transition toward a demand-driven water policy framework. The sustained access to safe water depends on collective choice for and contribution to O&M and goes beyond the ability of the communities to demand for water (demand-driven approach) or the capacity of the government to supply the water (supply-driven approach). A local governance structure needs to be in place to support and sustain the water infrastructure demanded by the communities or supplied by the government or donors. The question to pose is therefore not necessarily the approach used in water service delivery, but rather how to provide a consistent multi-actor and multi-level governance structure that supports local water users to co-operate in maintaining and sustaining the existing water infrastructure. Therefore, clear responsibilities and rules on the local use and contribution to infrastructure maintenance are needed, down-ward and upward-accountability for fighting opportunistic behaviour, a feeling of local ownership, and capacity building at several levels. Despite the 20 years that have passed since the introduction of the demand-driven approach, the current situation is still characterized by legal pluralism, contradicting institutions and consequently by ambiguity, uncertainty and most of all by missing financial resources at all tiers of public administration. We hope that context specific analyses considering dynamics of the past can support the step-by-step development of a resilient fit-for purpose multi-actor and multi-level governance system in Uganda.

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Appendix 1: List of national reports and policy documents analysed

Author/organization (year)	Full title and further document information
DWD 2011a	MoWE\DWD (2011) Assessment of the effectiveness of the community-based maintenance system for rural water supply facilities report
DWD 2011b	MoWE\DWD (2011) Updated National Framework for operation and maintenance of rural water supplies in Uganda
MoWE 2010	MoWE (2010), Uganda Water Supply Atlas 2010, Directorate of

	Water Development, Ministry of Water and Environment
MoWE/SPR 2010	MoWE/SPR, September (2010), Water and Environment Sector Performance Report 2010, Ministry of Water and Environment, September 2010
MoWE 2009	MoWE (2009), Strategic Investment Plan and Sanitation Sub-sector
MoWE 2010	The Water and Environment Sector Performance Report (2010)
MoWE/DWD 2005	Uganda National Water Development Report
GoU 1999	The National Water Policy (1999), Ministry of Water and Environment
DWD 2004	The Operation and Maintenance Framework for Rural Water Facilities (2004)
MoWE/DWD 2001	The rural water and sanitation strategic investment plan 2000-2015
GoU 1995	The Constitution of the Republic of Uganda, Ministry of Justice and Constitutional Affairs
MoPED 2001	Poverty Eradication Action Plan, Ministry of Planning and Economic Development
